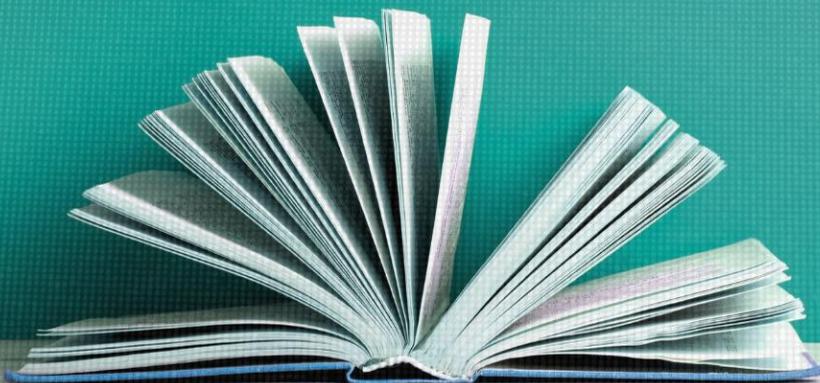


TEACHING & LEARNING BEYOND THE CLASSROOM

Dr. Mary Jane S. Carandang
Editor



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Preface

Education in the twenty-first century is increasingly defined by change, diversity, and innovation. The rapid shifts brought about by globalization, technological advancement, and the COVID-19 pandemic have challenged schools, teachers, and policymakers to rethink how learning is facilitated, sustained, and expanded beyond traditional classroom walls. This eBook, *Teaching & Learning Beyond Classroom*, is a collection of scholarly works that reflect such transformations, presenting research-based insights into pedagogy, instructional models, learner diversity, and the design of instructional materials.

The chapters collectively capture the evolving landscape of education particularly in the Philippines while resonating with global discussions on equity, adaptability, and learner-centered approaches. Each contribution highlights how theory and practice intersect to foster meaningful educational experiences, providing readers with perspectives that are both locally grounded and globally relevant.

Chapter I, Linking Foundations and Futures: Instructional Models and Flexible Learning in Education, examines the theoretical bases of teaching and learning, the development of instructional models, and the integration of flexible modalities accelerated by the COVID-19 pandemic. It situates foundational concepts within the realities of an ever-changing educational environment.

Chapter II, Reframing Philippine Education: Learners, Modalities, and Inclusive Pedagogical Practices, highlights the complexities of

Philippine education by addressing learner diversity, multiple intelligences, blended learning, and inclusive approaches for marginalized contexts. It emphasizes the imperative for policies and practices that respond to the varied needs of learners.

Chapter III, Contextualized Teaching and Learning: Strategies from Kindergarten to High School Classrooms, presents pedagogical innovations across educational levels. From corrective feedback and kindergarten strategies to physics peer discussions, mathematics applications, and ecological integration, this chapter showcases how contextualized methods enhance engagement and deepen understanding.

Chapter IV, Learner Engagement through Instructional Materials: From Game-Based Strategies to Cultural Integration, focuses on the role of instructional materials in promoting literacy, numeracy, creativity, and cultural awareness. It underscores the importance of developing resources that not only support curriculum delivery but also respond to learners' contexts and interests.

As a collection, these chapters contribute to advancing dialogue on effective, inclusive, and adaptable education. They reaffirm the importance of grounding practices in sound theory while embracing innovation and contextual responsiveness. It is hoped that *Teaching & Learning Beyond Classroom* will serve as a valuable reference for educators, researchers, policymakers, and stakeholders committed to reimagining education for resilient and equitable futures.

Acknowledgement

The completion of *Teaching & Learning Beyond Classroom* would not have been possible without the invaluable contributions of many individuals and groups who dedicated their time, knowledge, and expertise.

We extend our deepest gratitude to the research contributors whose scholarly works form the foundation of this collection. Their commitment to exploring innovative teaching practices, contextualized strategies, and learner-centered approaches has enriched this volume with depth, relevance, and originality. Each study included reflects their perseverance and passion to advance education in meaningful ways.

We also wish to recognize the participants, teachers, learners, and community members whose insights, experiences, and cooperation made the research endeavors possible. Their voices gave life to the data and ensured that this book remains grounded in real educational contexts and practices. Special thanks are due to mentors, peer reviewers, and institutional partners who guided, refined, and supported the development of these studies.

This eBook stands as a collective achievement, shaped by the dedication of all who contributed. Together, they made it possible to envision and share new pathways for teaching and learning beyond the traditional classroom.

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Chapter 1

Linking Foundations and Futures: Instructional Models and Flexible Learning in Education

The unprecedented shifts in education over the past decade, particularly during and after the COVID-19 pandemic, underscore the need for rigorous theoretical foundations and innovative instructional practices. This chapter brings together three interrelated discussions that bridge theory and practice in contemporary education. The first examines the theoretical foundations of teaching and learning, providing conceptual bases for pedagogy. The second explores the development of instructional models, translating theory into classroom frameworks. The third situates these within the Philippine context, focusing on flexible learning modalities. Collectively, these discussions emphasize innovation, adaptability, and resilience in advancing meaningful learner outcomes.

Theoretical Foundation of Teaching and Learning Models

Padauk Win

Educators and school leaders have recognized that the classroom environment and students' interests have evolved in the twentieth century. Simultaneously, the educational system has experienced a significant shift, prompting decision-makers in education to review and reconsider the curriculum. This shift marks a move from the traditional, lecture-focused instructional model to a new learning paradigm. The new paradigm is a holistic, student-centered approach designed to promote learning, develop critical thinking skills, and foster the discovery and construction of knowledge. This approach establishes powerful and effective learning environments. Consequently, such a transformation is both appropriate and necessary (Lantis, 2000, as cited in Saber, 2015).

Experiential Learning Theory

Experiential learning theory draws on the work of many scholars who placed experience at the core of their theories of human learning and development, such as John Dewey, Carl Rogers, and Jean Piaget. They

promoted the development of a dynamic, holistic model of the learning process, emphasizing experience as a stimulus for learners' growth (Armstrong & Fokami, 2008, as cited in Saber, 2015).

According to Pinar et al. (2004), Dewey's impact on curricular and educational thought is immeasurable. His belief in experiential learning permeated his contributions to philosophy and education, as evidenced in works such as *The Child and the Curriculum* (1902, as cited in Pinar et al., 2004), *How We Think* (1910, as cited in Pinar et al., 2004), *Democracy and Education* (1916, as cited in Pinar et al., 2004), *Experience and Nature* (1925, as cited in Pinar et al., 2004), and *Experience and Education* (1938, as cited in Pinar et al., 2004). Dewey (1916, as cited in Pinar et al., 2004) defined experience, within the progressive thought movement, as the reconstruction or reorganization of experiences that add meaning and enhance the ability to direct the course of future experiences.

Dewey, recognized as the father of experiential education, was one of the prominent thinkers of the twentieth century. His theory of experience continues to significantly influence the design of educational methods such as outdoor education, experiential education, and adult training (Saber, 2015). He believed that experience was central to all learning and that children should actively participate in directing their own learning experiences. Throughout his career as an educator and philosopher, Dewey stressed that education should be relevant to students and serve as a means to promote the goals of a healthy society. The teacher's role was to create educational environments that connect to students' interests and guide them toward meaningful learning experiences (Dewey, 1998, as cited in Pinar et al., 2004).

According to Neil (2005, as cited in Saber, 2015), Dewey proposed that understanding the nature of human experience is essential for designing

effective education. His theory of experience is founded on two central principles: continuity and interaction. Continuity refers to the notion that each experience is stored and carried forward into the future, whether one desires it or not. Humans learn from every experience, whether positive or negative, and these experiences shape the nature of future ones. Interaction builds upon continuity, explaining how past experiences interact with present situations to form current experiences. This suggests that teachers must be aware of the prior experiences students bring with them to provide quality education that is relevant and meaningful.

Passel and Kalb (2009, as cited in Saber, 2015) describe experiential learning theory as a dynamic and holistic perspective on learning that involves the whole person. Learning through experience occurs in all human activities at all times, making this theory significant not only in formal education but in all areas of life. Its holistic nature means it operates at every level of human society, from individuals to groups, organizations, and society as a whole.

The 5Es Learning Model

The 5Es Learning Model, also known as the 5E Instructional Model, is a constructivist teaching framework consisting of five phases: Engage, Explore, Explain, Elaborate, and Evaluate. Created by Rodger Bybee and the Biological Science Curriculum Study (BSCS), it aims to guide students through inquiry and discovery, allowing them to construct their understanding of concepts.

Engagement. The engagement stage helps learners connect prior knowledge with current learning experiences. Within the constructivist framework, engagement refers to students' active participation in

pedagogically meaningful processes inside or outside the classroom that aim to produce measurable outcomes (Kuh, 2007, as cited in Mwanda et al., 2017). Krause and Coates (2008) similarly describe it as the extent to which students involve themselves in activities that contribute to learning outcomes. Effective engagement encourages learners to interact thoughtfully with the concept, process, or skill being introduced. They are expected to connect with the problem at hand, actively participate in problem-solving, process and interpret information, formulate hypotheses, and make decisions informed by their cognitive structures. Pratkanis et al. (2014) define cognitive structures as the core mental processes individuals use to interpret and organize information. Ultimately, it is the learner's personal experience that gives meaning to these educational opportunities.

Exploration. In the exploration phase, learners build a shared foundation of experiences. The instructor adopts an open-ended approach that allows students to identify and develop concepts, processes, and skills (Hanke, 2009, as cited in Mwanda et al., 2017). This stage encourages active investigation—exploring environments, manipulating materials, and making real-world connections through hands-on engagement. Teachers often present problems for learners to examine, guiding them toward uncovering underlying principles or truths (Hirst-Loucks & Loucks, 2013, as cited in Mwanda et al., 2017). Learners are encouraged to pursue answers to their questions (Boud et al., 2013) and to interact with tangible materials that provide authentic, firsthand experiences. In constructivist learning, hands-on exploration is essential, and advancements in technology have made such experiential learning more accessible, dynamic, and engaging.

Explanation. The explanation phase allows learners to uncover the content underlying the concepts they have explored. It provides opportunities to identify relevant skills and behaviors while acquiring

knowledge that is contextually meaningful (Ergin, 2012, as cited in Mwanda et al., 2017). After engaging with a topic, students can anchor new content knowledge to their prior experiences, enabling deeper understanding. This stage involves guiding learners to analyze and synthesize information, recognizing that each individual's comprehension is shaped by their unique background (Knowles et al., 2014, as cited in Mwanda et al., 2017). The teacher's role is to facilitate this process by encouraging dialogue across diverse perspectives and promoting higher-order thinking (Brookfield, 2015, as cited in Mwanda et al., 2017). Strategies include prompting students to articulate concepts in their own words, request and provide evidence, seek clarification, and critically evaluate others' explanations (Hannafin et al., 2014, as cited in Mwanda et al., 2017).

Elaboration. The elaboration phase extends and strengthens learners' conceptual understanding and skills. Within a constructivist framework, educators create opportunities for students to practice and refine their abilities in authentic, real-world contexts (Gregory & Chapman, 2012). Learners are encouraged to deepen their knowledge, integrate it into existing conceptual frameworks, and apply it both inside and beyond the classroom (Quinn et al., 2012). As Fink (2013, as cited in Mwanda et al., 2017) notes, active participation in diverse learning environments is essential for constructing meaning and purpose. During this stage, teachers promote cooperative learning, critical thinking, and collaboration (Prince & Felder, 2006), guiding students to transform insights into action. Learners apply concepts in new yet related situations, using formal terms and definitions with precision. Educators also encourage the consideration of alternative explanations and the evaluation of existing evidence when approaching unfamiliar problems (Bybee et al., 2006).

Evaluation. The evaluation phase enables both learners and educators to assess understanding and track skill development. Students reflect on their progress, recognize areas of mastery, and address concepts still in need of reinforcement (Plotnik & Kouyoumdjian, 2011, as cited in Mwanda et al., 2017). Teachers assess performance through a variety of methods, such as presentations, demonstrations, or other authentic assessments. Evaluation, as defined by Slavin (2009, as cited in Mwanda et al., 2017), involves using systematic approaches to determine the depth and accuracy of a learner's knowledge. Because understanding evolves over time, instructors must make thoughtful, evidence-based judgments about student achievement (Earl, 2012).

Example application of the learning models

Experiential learning in this study was structured around the 5Es Learning Model, which includes the stages of engagement, exploration, explanation, elaboration, and evaluation. In this application, the model was used to teach the physics topic of reflection on plane surfaces. Students drew upon their own experiences to support their ideas, integrating personal insights with new concepts. Findings suggest that incorporating personal experiences and hands-on activities enhances students' understanding of light reflection and strengthens their ability to connect physics principles with real-world situations.

Stage 1: Engagement

Before introducing new concepts, the teacher should first assess students' prior knowledge. The initial step is to guide learners in identifying what they already understand about the topic. To achieve this, the teacher organizes students into small, randomly assigned groups and prompts them

to recall their existing knowledge about the fundamental concept of mirrors. This is facilitated through a series of guiding questions, such as:

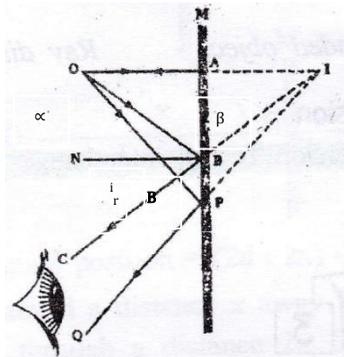
What is a mirror?

What is a plane mirror?

How often do you look at yourself in a mirror each day?

What observations do you make when you do so?

Each group draws upon its prior knowledge about mirrors to respond to the teacher's questions. The teacher then provides each group with an image to examine, prompting them to investigate how an object's reflection is formed.



Each group will investigate the picture as follows:

$i = r$ (by laws of reflection)

$i = \alpha$ (alternate angles)

$r = \beta$ (corresponding angles)

$\alpha = \beta$

$\Delta OAB \cong \Delta IAB$ and

$OA = AI$

Through this activity, each group will discover that the image appears the same distance behind the mirror as the object is in front, with both positioned at equal perpendicular distances from the mirror's surface.

Stage 2: Exploration

The teacher provides each group with a looking glass to investigate the properties of an image in a plane mirror, while actively monitoring and guiding their activities. Each group demonstrates, discusses, and shares observations as students examine their own reflections. A looking glass is a flat, smooth surface that reflects light. Students conduct their observations by:

Moving two steps away from or toward the mirror

Moving the looking glass two feet away from or toward themselves

Raising their left hand, then their right hand

Stage 3: Explanation

If necessary, the teacher asks guiding questions and supports each group in completing key points. Each group then presents and explains their findings, which highlight the following principles:

The image is the same size as the object (the viewer).

The image appears as far behind the mirror as the object is in front. The distance between the viewer and the mirror is called the object distance, while the distance of the image behind the mirror is the image distance.

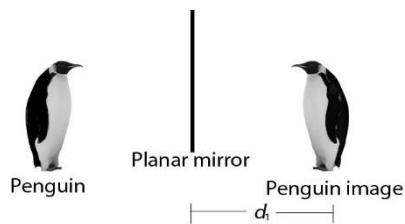
If the viewer moves two steps away from or toward the mirror, the image moves the same distance.

If the mirror is moved two feet away from or toward the viewer, the image shifts twice that distance.

The image is laterally inverted: when the viewer raises the left hand, the image appears to raise the right.

Stage 4: Elaboration

The teacher then displays a chart illustrating the properties of an image formed in a plane mirror, using the example of a penguin observing its own reflection.



The teacher asks each group to examine the differences between real and virtual images, using the chart as a reference. The discussion highlights one practical method of distinction: imagining a piece of paper placed at the location of the image. If the image is real, light rays actually converge at that point and the image can be projected onto the paper. If the image is virtual, light rays do not pass through the apparent location, and no image will appear on the paper. Thus, when students place a sheet of paper behind a plane mirror at the position of the virtual image, nothing is projected.

Stage 5: Evaluation

To assess understanding, the teacher poses questions related to the lesson:

What is meant by lateral inversion?

What are the differences between real and virtual images?

What are some important applications of plane mirrors?

Each group discusses and presents their answers. The teacher then introduces problem situations for the groups to solve, encouraging application of the concepts learned.

A pin, 2 cm high, is placed 6 cm in front of a plane mirror. If the pin is moved 1.5 cm closer to the mirror, by how much is the distance between the pin and its image reduced?

A man 5 ft 6 in tall, with an eye level 5 ft 2 in above the ground, looks at his image in a mirror. What is the minimum vertical length of the mirror required for him to see his entire body?

Each group will solve the given problems correctly. Thus, experiential learning in accordance with the 5Es model enhances students' understanding of key physics concepts.

Team-Based Learning in Constructivism

An important question to consider is: *“To what extent does group learning align with the principles of constructivist learning theory?”* Small-group learning is widely recognized as a valuable educational strategy, offering more opportunities for active participation and engagement than traditional lectures. Personal involvement fosters motivation and heightens interest in the subject matter, while collaborative work encourages learners to share and test their ideas, as well as to consider multiple perspectives on issues. For educators, small groups provide a practical avenue to understand students more deeply, observe their responses to course materials and activities, identify learning challenges, and address misconceptions through timely clarification.

Team-based learning (TBL) represents a distinctive and highly effective form of small-group instruction. It integrates the strengths of collaborative and social learning with well-defined accountability structures and systematic instructional sequences, thereby producing consistently strong learning outcomes. TBL is particularly suited for large classes, which are divided into smaller teams designed to maximize internal diversity while maintaining relative balance across groups. This is achieved by identifying key learner characteristics that contribute to team success and distributing individuals with these attributes evenly among the teams (Michaelson et al., 2008, as cited in Hrynchak & Batty, 2012). In doing so, each team draws upon a wide range of knowledge and experiences, enriching collaborative problem-solving and fostering deeper analytical engagement.

TBL is firmly rooted in constructivist theory and offers a promising approach to enhancing education. In TBL, the teacher assumes the role of facilitator by setting learning objectives, preparing study materials and assessments, and designing authentic problems for groups to solve. Rather than emphasizing passive strategies such as traditional lectures, TBL minimizes direct instruction and promotes active learner engagement. Constructivist learning theory highlights student-centered principles and scaffolding as essential supports, and TBL reflects this by encouraging learners to compare their own understandings with those of their peers, negotiate meaning, and debate differing viewpoints during readiness assurance tests and application exercises (Hrynchak & Batty, 2012). This process embodies the constructivist view that learning occurs through the integration of new experiences into existing mental schemas, resulting in deeper comprehension and transferable knowledge.

Essential elements of team-based learning

In a TBL course, students are intentionally organized into permanent groups for the duration of the term, and the course content is structured into major instructional units. Prior to class sessions, students are required to engage with assigned materials, as each unit begins with the Readiness Assurance Process (RAP). The RAP involves an individual test on key concepts, followed by a team retake of the same assessment in which members collaborate to reach consensus on their answers. Immediate feedback is provided on the team test, and students may submit evidence-based appeals for answers they believe are justifiable. The process concludes with a short, focused lecture designed to address common misconceptions revealed during the assessments and appeals. After completing the RAP, the remainder of the unit is devoted to application-oriented activities and problem-solving tasks that encourage students to actively apply their learning in authentic contexts (Michaelsen et al., 2009).

In TBL, careful attention is devoted to the creation and orientation of small groups to ensure effective collaboration. Accountability is reinforced through graded Individual Readiness Assurance Tests (iRAT) and team Readiness Assurance Tests (tRAT), both of which are scored immediately to provide real-time feedback for students and instructors. Continuous feedback is further sustained during the application phase through both peer and instructor input. Assignments are designed to be significant, with their purpose and relevance clearly explained to students. To maximize collective learning, all teams are given the same assignments, thereby emphasizing shared engagement with core concepts rather than isolated group outcomes. Moreover, tasks require students to make specific choices among plausible alternatives, promoting critical thinking and decision-making skills. Finally, simultaneous reporting of team decisions

ensures that groups work independently and mitigates the risk of teams being influenced by others' responses (Hugget, 2010).

According to Sibley et al. (2014), four essential elements underpin the effectiveness of team-based learning: (a) teams must be properly formed and effectively managed to ensure balanced group dynamics, (b) students must be motivated to come to class well-prepared, (c) learners must actively apply course concepts to analyze and solve problems, and (d) students must be held genuinely accountable for both individual and team contributions.

Element 1: Properly formed and managed teams. Research on team formation underscores the value of teacher-created, criterion-based groups in achieving optimal educational outcomes. Evidence indicates that instructor-formed teams consistently perform better than either randomly assigned or student-selected teams (Sibley et al., 2014). While students may prefer working with friends, studies reveal that self-selected groups often underperform because they tend to function as “social entities,” where pre-existing relationships and cliques interfere with group cohesion (Brickell et al., 1994, as cited in Sibley et al., 2014).

According to Michaelsen et al. (2009), team-based learning requires instructors to carefully oversee group formation in order to manage three key variables. First, groups must be provided with adequate and balanced resources to successfully complete assignments. Second, instructors should prevent the formation of membership coalitions that could undermine group cohesion. Finally, teams must be given the opportunity to grow and develop into effective, collaborative learning units.

It is recommended that team-based learning groups consist of five to seven students, a size slightly larger than that typically suggested in cooperative or collaborative learning, to match the complexity of the problems being addressed. Groups must be large enough to possess the

intellectual capacity to solve challenging tasks, while ensuring that each member remains accountable both to the instructor for preparation and to teammates for meaningful contributions. Team membership should remain consistent throughout the course to allow relationships and dynamics to strengthen over time. As teams typically progress through Tuckman's stages of group development, forming, storming, norming, and performing, cohesion is built through shared activities, common goals, and mutual accountability. The structured sequence of team-based learning activities and accountability mechanisms supports and reinforces this process (Sibley et al., 2014).

Element 2: Readiness assurance to ensure pre-class preparation.

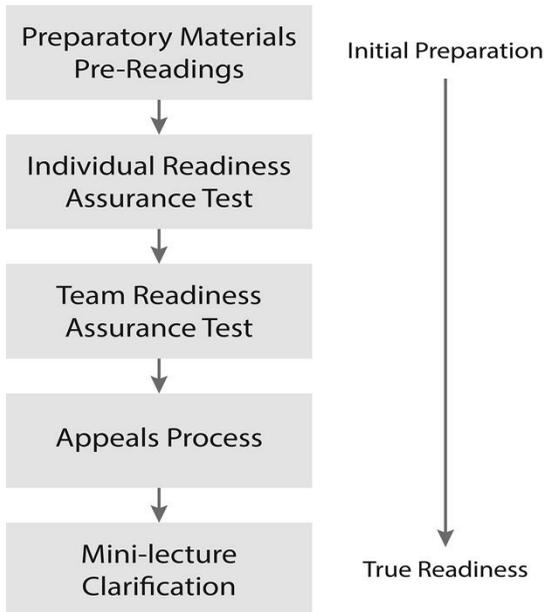
The second essential element of team-based learning is the Readiness Assurance Process (RAP), which ensures that students come to class well-prepared. Conducted at the beginning of each major instructional unit, the RAP holds students accountable for completing pre-class readings while confirming that they possess the foundational knowledge necessary for active in-class engagement (Tweddell, 2013). According to Sibley et al. (2014), this process not only reinforces students' initial preparation but also transforms it into genuine readiness for higher-level application activities.

Each instructional module in team-based learning begins with assigned preparatory materials, such as newspaper articles, journal articles, or textbook readings, which students are expected to complete before class. At the start of the module, the Readiness Assurance Process (RAP) is implemented through a sequence of multiple-choice assessments based on the readings. Students first complete the test individually (iRAT) and then take the same test collaboratively in their teams (tRAT). Following the team test, groups may submit structured written appeals if they find ambiguities in the questions or the assigned materials. The process concludes with a

brief instructor-led mini-lecture or clarification to resolve any remaining misunderstandings (Sibley et al., 2014).

Figure 1

The Readiness Assurance Process Stages



Source: Adapted from Sibley & Spiridonoff (2012)

During this five-stage process, which occurs at the start of each module, students move systematically from initial preparation to genuine readiness for problem-solving. The progression from pre-class preparation, to individual testing, team testing, structured appeals, and instructor clarification ensures that learners not only engage with the material independently but also consolidate their understanding through collaboration and feedback (Sibley et al., 2014).

Pre-class preparation. Students are assigned preparatory materials to review before the start of each module. These resources are designed to

emphasize key vocabulary and essential concepts that provide the foundation for problem-solving. Importantly, the materials focus only on what students need to get started, rather than covering all the content they are expected to master by the end of the module.

Individual Readiness Assurance Test (iRAT). To begin the classroom portion of the RAP, students take a 15–20-item multiple-choice test. They first complete the test individually (iRAT) and then repeat the same test with their team (tRAT). The iRAT ensures individual accountability by requiring students to demonstrate that they have acquired the essential foundational knowledge from the preparatory materials. Test questions are typically designed at Bloom’s lower to mid-levels—remembering, understanding, simple application, and analysis—providing a solid base for the more complex problem-solving activities that follow.

Team Readiness Assurance Test (tRAT). The tRAT is identical to the iRAT. If a team’s first choice is incorrect, members continue discussing the question and sequentially select other options until they arrive at the correct answer. This process fosters peer teaching and collaborative reasoning, turning the tRAT into a dynamic, high-energy learning event where students actively engage with the material and with one another.

Appeals. After the team test, the instructor circulates around the room and encourages teams to submit a written appeal for any questions they answered incorrectly. This process directs students back to the preparatory materials, reinforcing areas where they may still be struggling. To complete an appeal, the team researches the correct answer and submits a written form that includes: (a) a clear statement of their argument and (b) supporting evidence drawn directly from the preparatory readings. The instructor then collects and reviews these appeals after class, ensuring that student reasoning is acknowledged and misconceptions are clarified.

Mini-lecture. To conclude the RAP, the instructor delivers a concise mini-lecture that targets only the concepts students continue to find challenging, thereby reinforcing key ideas without repeating material already understood (Sibley & Spiridonoff, 2012).

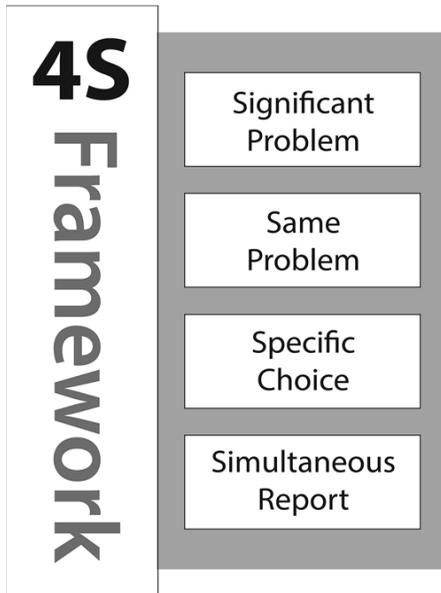
Element 3: Learning how to apply course concepts. The primary goal of any team-based learning course is to enable students to apply course concepts in solving significant and relevant problems. To achieve this, team-based learning employs the 4S framework, which guides the design and implementation of effective problem-solving activities. These application activities build directly on students' preparation and the foundational knowledge strengthened during the Readiness Assurance Process.

In each application activity, all teams engage with the same significant problem, ensuring that every student wrestles with the core concepts of the module. By applying the 4S framework, instructors can design activities that consistently foster engagement and stimulate rich, meaningful discussions during the reporting phase.

In the TBL classroom, most class time is devoted to student teams solving, reporting, and discussing solutions to relevant and significant problems. Using the 4S Framework to structure these problems harnesses the strengths of team processing while minimizing many of the challenges common in other small-group learning approaches (Sibley & Spiridonoff, 2012). This structure provides both individuals and teams with repeated opportunities to make decisions and receive timely feedback not only on the accuracy of their answers but also on the reasoning and processes they used to reach them.

Figure 2

The 4S Framework



Source: Sibley et al. (2014)

Significant problem. In TBL, a significant and relevant problem that captures students' interest is essential. The quality of the problem largely determines the effectiveness of the application activity. For the activity to be meaningful, the problem must challenge students to apply course concepts actively in developing a solution.

Same problem. Teams work on the same problem. In TBL, all teams work on the same problem, ensuring comparability of solutions and sparking meaningful discussion. A common task motivates students to defend their reasoning, challenge alternative viewpoints, and analyze one another's problem-solving approaches. This shared focus keeps students engaged, as each team becomes invested in the decisions and outcomes of others.

Specific choice. Teams select the best option from a limited set of choices, allowing easy comparison of decisions across groups. This comparability fuels rich reporting discussions, as teams critique one another's choices while defending their own reasoning.

Simultaneous report. When one team notices that another has chosen a different answer, they are naturally compelled to question and challenge that decision. This process sparks meaningful dialogue as teams defend their reasoning and critique others. Through reporting, teams must clearly articulate their thought processes, which strengthens understanding and deepens long-term learning (Sibley & Spiridonoff, 2012).

Element 4: The Importance of Accountability. TBL incorporates multiple levels of accountability. Students are individually accountable to the instructor through the iRAT, but what often proves most motivating is accountability to their teammates. A formal peer evaluation process further reinforces this responsibility. According to Sibley et al. (2014), while extrinsic motivators such as grades can encourage preparation, intrinsic motivation driven by accountability to peers is even more powerful and effective in promoting engagement and learning.

The cornerstone of success in TBL lies in the natural accountability embedded in its processes: students, teams, and instructors are all responsible for actions that promote learning. Students are accountable for attending class, preparing beforehand, and actively contributing to their team's work. Instructors, in turn, are responsible for providing the cognitive foundation students need to tackle meaningful problems and for offering opportunities to practice and develop their application skills (Parmelee & Michaelsen, 2010).

Peer Discussion

Peer discussion, which promotes active learning, is grounded in Piaget's theory of cognitive development and Vygotsky's sociocultural theory of learning, both of which are rooted in constructivism.

Constructivism is an educational approach designed to maximize student understanding by emphasizing the active role of learners in constructing knowledge. It is described in various ways: as teaching that highlights learners' active engagement in making sense of information (Woolfolk, 2006, cited in Cruickshank et al., 2009); as learners constructing knowledge while attempting to understand their environment (McCown, 2001, cited in Cruickshank et al., 2009); and as learning that occurs when students collaboratively formulate questions, explain phenomena, tackle complex issues, or solve problems (Gagnon & Collay, 2001, cited in Cruickshank et al., 2009). Constructivism draws on cognitive psychology, social psychology, educational research, and neuroscience, and its most profound impact has been to shift the focus of learning from teacher-centered instruction to student-centered engagement. In this framework, learning occurs when students actively apply the content and skills they are being taught (Adams & Burns, 1999, cited in Bell & Kahrhoff, 2006).

In recent years, the work of John Dewey, Jerome Bruner, and Lev Vygotsky, along with Jean Piaget's research on developmental psychology, has significantly shaped the broad framework of constructivism. Constructivism is commonly understood in two main forms: cognitive constructivism and social constructivism.

Cognitive constructivism is primarily based on Piaget's theory of cognitive development, which emphasizes the learner's active engagement. Learning is most effective when individuals interact with peers of equal status, fostering cooperation and creating a foundation for meaningful,

long-lasting understanding. Piaget also argued that learners must construct their own knowledge, building it through experiences that form mental models and facilitate learning (Piaget, 1985).

Social constructivism emphasizes the social context of learning. Vygotsky's sociocultural theory highlights the active involvement of peers, adults, and teachers in the learning process. He argued that cultural history, social context, and language significantly influence the patterns and pace of children's development. Central to his theory is the zone of proximal development, which posits that individuals can master concepts and skills beyond their independent capabilities with guidance from a more knowledgeable peer or instructor (Vygotsky, 1978, cited in Smith, 2007).

According to constructivist theory, effective teaching builds on students' prior knowledge, enabling them to connect new information to existing cognitive structures. It encourages learners to become active, self-directed participants, provides authentic learning opportunities, and promotes collaboration through small-group activities (Smith, 2007). In this approach, learners are the creators of meaning and knowledge, fostering critical thinking and developing motivated, independent thinkers. The learner acts as a sense-maker, while the teacher serves as a cognitive guide, modeling and supporting authentic academic tasks. Instructional designers play a key role in creating learning environments that allow students to interact meaningfully with content, including processes for selecting, organizing, and integrating information (Siddiqui, 2009).

Procedures for peer discussion

The impact of peer interaction is evident in the instructional method known as Peer Discussion. In this approach, students first respond individually to a conceptual question and then engage in discussion with their peers before answering again. Research by Mazur (1997) demonstrates

that such discussions not only increase the percentage of correct responses but also boost students' confidence in their understanding of the concepts.

In the Peer Discussion Method, as described by Mazur (1997, cited in Muise, 2015), classes move away from a traditional lecture-and-problem-solving format toward a more active learning approach. Course material is broken into brief mini-lectures, each followed by peer discussions (Muise, 2015). The format used in this study is summarized in Table 1. During discussion periods, students were instructed to explain not only which answer they selected but also the reasoning behind their choice. Peer groups were formed informally according to seating arrangements, typically consisting of one or two nearby students. To maintain the pace of traditional-style classes, each lesson included only two or three concept-focused questions per unit.

Table 1

General format for peer discussion method

Element	Time allotment
Grouping	5 min
Giving Brief Lecture	4 min
Posing a Conceptual Question	5 min
Discussion between Peers	15 min
Presenting the answer	5 min
Evaluating	5 min
Providing Feedback	6 min

Source: Harvey (2013)

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Developing Instructional Models

Padauk Win

Learning theories collectively emphasize fundamental aspects of the learning process, including the capacity to acquire knowledge, the role of practice and reinforcement, the influence of motivation, the importance of understanding and insight, as well as the dynamics of transfer, retention, and forgetting (Hilgard, 1986, as cited in Khin Zaw, 2001). Research consistently shows that learners engage more effectively with meaningful materials and tasks than with abstract or nonsensical content, underscoring the value of relevance and comprehension in fostering deeper learning. Furthermore, McConnell (1942, as cited in Khin Zaw, 2001) highlights that successful learning depends on the learner's ability to discriminate differences and to generalize across similarities, skills that are central to building adaptive knowledge and applying it across diverse contexts.

Constructivist theories emphasize the development of critical thinking and the understanding of broad concepts rather than the simple mastery of factual information. They propose that students who cultivate a deep grasp of essential principles through their own reasoning are better prepared for the complexities of a technological world. Constructivist

learning is inherently active; it requires the interaction of ideas and processes, where new knowledge is built upon prior knowledge. Learning becomes more meaningful when situated in contexts that are familiar and relevant to students. As Collins (2002, cited in Biggers, 2013) notes, learning is further enriched when students engage in discussions that explore these ideas and processes.

Constructivism highlights hands-on, activity-based teaching and learning, enabling students to build their own frameworks of thought. It underscores the personalized ways learners internalize, shape, and transform information, leading to the construction of new understandings through evolving cognitive structures. In this approach, the teacher creates situations that stimulate independent thinking rather than guiding students to predetermined answers, allowing them to form their own ideas and pathways. Within constructivist classrooms, learners are active participants, subject matter is rooted in authentic, real-life contexts, and thinking is encouraged to be open-ended and divergent.

The Application of Instructional Modelling

The Integrated Interactive Conceptual Instruction Model by Khwanda et al. (n.d.) was adapted to develop the Interactive Conceptual Instruction Model. In this adaptation, research-based learning materials in Part One, which emphasizes conceptual focus, are replaced with content-based materials. In Part Two, classroom interaction is integrated with analogy through the Teaching with Analogy (TWA) Model proposed by Alice (2011). Although the TWA model originally consists of six steps, only five were applied to strengthen students' conceptual understanding of physics at the basic education high school level. Finally, results and reflection are incorporated to emphasize student engagement and

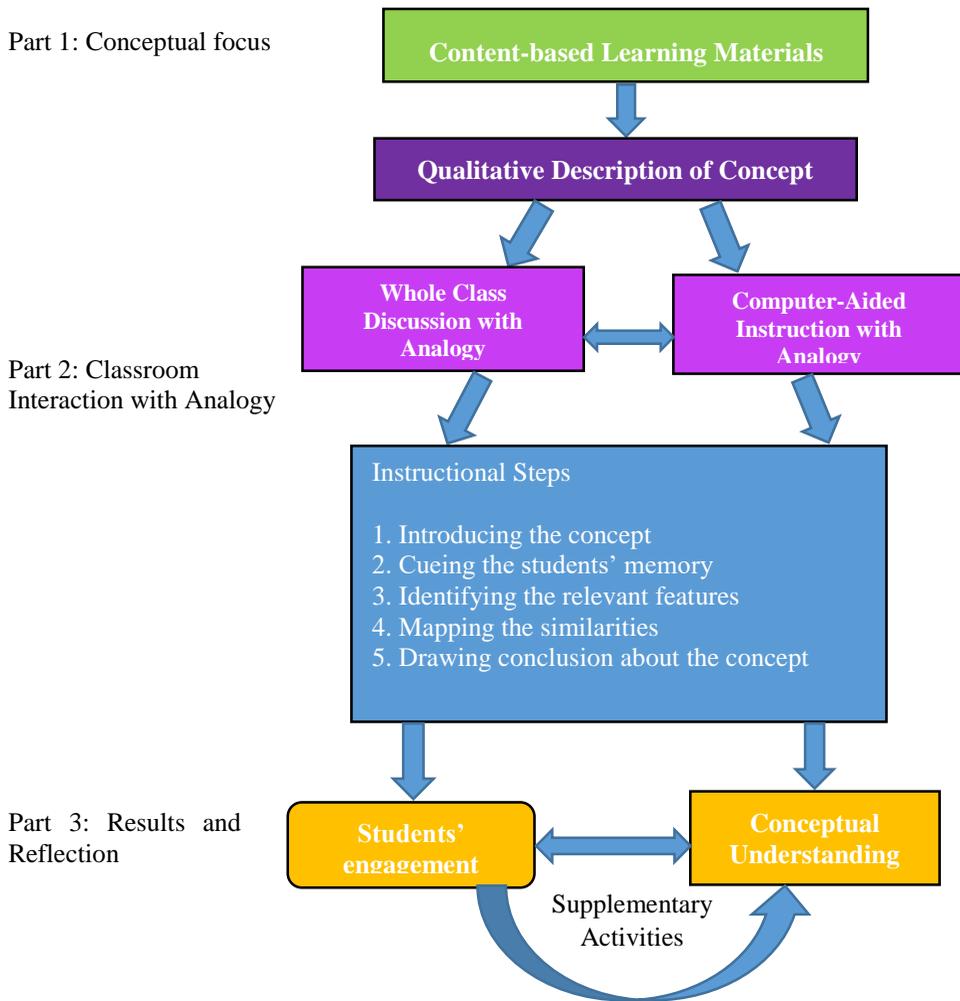
conceptual growth, with supplementary activities provided to further support interactive conceptual instruction.

Learning is the process of acquiring new information, while memory refers to the persistence of that learning in a form that can be accessed at a later time (Squire, 1987, cited in Gazzaniga et al., 2002). Both learning and memory are commonly described in three stages: encoding, storage, and retrieval. Encoding involves processing incoming information for storage and occurs in two steps: acquisition and consolidation. Acquisition registers inputs through sensory buffers and analysis, while consolidation strengthens these representations over time. Storage, the outcome of acquisition and consolidation, establishes and maintains a lasting record. Retrieval then draws on stored information to generate conscious representations or to guide learned behaviors, such as motor actions (Gazzaniga et al., 2002).

Transfer of learning between tasks is strengthened when teachers guide learners to focus on the specific skill being developed and encourage reflection on its potential applications. In this way, pupils enhance their thinking processes. The activities are intentionally designed to create cognitive conflict a state of dissonance that arises when learners encounter an event they cannot explain using their existing conceptual framework or methods of processing information (Adey, 1992:138, cited in Bartlett & Burton, 2012). The proposed model draws upon and integrates elements from Glaser's Basic Teaching Model, Talyzina's Psychological Cybernetic Model, Stolurow and Davis's Computer-Based Model, Flanders's Interaction Analysis Model, Dr. Khin Zaw's Multimodal Model, Gredler's Selection of Instructional Events, and established theories of memory. Grounded in these foundations, the new instructional design was constructed with three components, as illustrated in Figure 1.

Figure 1

Teaching model for interactive conceptual instruction



In Part One, the conceptual focus is introduced and discussed with the students. To enhance clarity, different colors are used in the content-based learning materials, allowing students to easily distinguish the prescribed materials outlined in the basic education curriculum.

This section aims to develop conceptual understanding through the use of content-based learning materials as the central link. At the high

school level, these materials are prescribed to strengthen students' comprehension of physics. The Grade Ten curriculum encompasses the entire upper secondary physics course, systematically organized into six major fields: (1) Mechanics, (2) Heat, (3) Waves and Sound, (4) Optics, (5) Electricity and Magnetism, and (6) Modern Physics. The sequence of topics was deliberately chosen, as each is considered essential for building the foundation of subsequent concepts. For instance, Mechanics must be studied first, as it underpins the understanding of other areas. Thus, the contents of Grade Ten overlap and are interconnected. This part also involves assessing students' prior knowledge through content-based learning materials, concept tests, questions, and demonstrations, all of which are designed to spark classroom discussion and promote learning through cognitive conflict strategies.

In Part Two, classroom interaction through analogy is emphasized as a core strategy for interactive conceptual instruction. To aid clarity, violet is used for qualitative descriptions of concepts, while lilac is used for other terms, allowing students to distinguish physics concepts from the instructional steps designed to teach them. This stage fosters classroom engagement through both whole-class discussions with analogy and computer-aided instruction with analogy. Since student interaction is central to constructivist theory, learners' prior knowledge is carefully considered. At this stage, each concept is explored through both discussion and technology-based analogy, enabling students to develop a deeper qualitative understanding. A reversible arrow illustrates the relationship between whole-class discussion and computer-aided instruction, indicating that either approach may be used to achieve the qualitative description of the concept.

Some lessons, such as Mechanics, Heat, Waves and Sound, and

Optics, are well suited for whole-class discussion. Within these areas, topics like Pascal's Law, transfer of heat, resonance column and organ pipe, refraction of light and the laws of refraction, refractive index, and image formation by lenses are taught through whole-class discussion with analogy. In contrast, topics in Electricity and Magnetism and Modern Physics are more effectively addressed through computer-aided instruction. These include electric lines of force, lightning conductors, electric potential of the earth, capacitance, current and electric circuits, electronic logic gates, and X-rays, which in this research are taught using computer-aided instruction with analogy. When necessary, teachers may combine both methods to enhance students' understanding, depending on the available time and the school context, while also maintaining student engagement. This stage focuses on the qualitative description of concepts, with teaching through analogy serving as a means to help students draw informed conclusions.

Five steps of analogy are employed to develop a qualitative understanding of concepts. These steps include:

(i) *Introducing the concept.* This step serves as a brief introduction leading to a full explanation, depending on how the analogy is applied. If the analogy functions as an advance organizer, the concept is introduced at this stage. Alternatively, if the analogy is intended for review, the concept is fully taught before the analogy is applied.

(ii) *Cueing the students' memory.* This step introduces the analogy and gauges students' familiarity with it through questioning or discussion. If students demonstrate limited understanding, the analogy is either adjusted or discontinued. The teacher must ensure that at least one clear similarity between the analogy and the target concept is recognized by the students.

(iii) *Identifying the relevant features.* This step focuses on

explaining the analogy at a level appropriate to students' understanding. The teacher clearly identifies the relevant features of the analogy that will be used as the basis for developing the target concept in the next stage.

(iv) *Mapping the similarities.* In this step, the features of the analogy are explicitly linked to the target concept(s). The conceptual mapping may converge on a single concept or extend to develop two or more related concepts.

(v) *Drawing conclusions about the concept.* After mapping the similarities, a summary of the target concept should be presented to consolidate student learning. To reinforce understanding, the teacher asks guiding questions related to the lesson, provides feedback, and addresses any misconceptions. Each stage of the process overlaps and connects with the others, ensuring coherence in learning. For instance, the qualitative description of concepts in Mechanics, Heat, Waves and Sound, Optics, Electricity and Magnetism, and Modern Physics can all be effectively discussed and presented through this model.

In Part Three, the stage of results and reflection highlights student engagement and demonstrates conceptual understanding. This stage centers on assessment and feedback, with questions and concept tests prepared to verify students' grasp of the lessons. The reversible arrow signifies outcomes derived not only from active participation but also from demonstrated conceptual understanding. When needed, supplementary activities are provided to address misconceptions and support students who encounter conceptual difficulties.

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Flexible Learning Modalities in the Philippines: COVID-19 and Beyond

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The form of education encompasses a plethora of significant changes toward innovation, discovery, and progress, and this form will always need to evolve and adapt to the challenges faced, encountered, and experienced by trailblazers. Flexible learning approaches have grown in popularity in the Philippines in recent years, particularly in response to the COVID-19 pandemic. Flexible learning refers to any educational system that gives pupils more control over their study time, place, direction, or pace (Cassidy et al., 2016; Davies et al., 2020). Students have more say over when, where, and how they learn. Flexible learning is a combination of digital and non-digital technologies (Santiago et al., 2021) that aims to make education accessible and inclusive. Studies have found that flexible learning improves learning outcomes, increases student engagement, and enhances student satisfaction (Alraimi et al., 2015; Bautista & Valtoribio, 2024; Kuo

et al., 2014; Zawacki-Richter et al., 2019).

In 2020, the Philippine Commission on Higher Education (CHED) issued guidelines requiring higher education institutions to employ flexible learning modes in response to the COVID-19 pandemic. Meanwhile, the Department of Education (DepEd) released a Basic Education Learning Continuity Plan that includes various flexible learning modes. The pandemic brought several challenges (Agayon et al., 2022; Caasi & Pentang, 2022; Gocotano et al., 2021) but also created opportunities for implementing flexible learning methodologies in the Philippines, including online (Giray et al., 2022; Lopena et al., 2021), modular (Agayon et al., 2022; Bacomo et al., 2022; Dangle & Sumaoang, 2020; Hamora et al., 2022; Roque, 2022; Tanucan et al., 2023), blended (Alvarez, 2020; Tupas & Linas-Laguda, 2020; Villanueva et al., 2022), and distance (Dimitropoulos et al., 2022; Joaquin et al., 2020; Roque, 2022) learning.

Online Learning

As a result of the COVID-19 pandemic and the need for social distancing, online learning has grown in popularity in the Philippines (Mariano-Dolesh et al., 2022; Tan & Ong, 2021). Online education can take many forms, including synchronous or asynchronous classes, video lectures, discussions, and exams. Despite geographical distance, online learning has enabled students to complete their education and stay connected with their lecturers and peers. However, online learning has its challenges. Many Filipino college students struggle with online learning due to technical and internet connectivity issues, mental health concerns, financial constraints, and difficulties with time and space management, despite the advantages of convenience and eliminating the need for public transit during the COVID-19 pandemic (Giray et al., 2022). Disparities in

access to the internet, computers, and technical skills limit the participation of many stakeholders, including students, in online learning. Lack of internet connection is the most significant obstacle affecting the learner community (Lopena et al., 2021). Additionally, some students may require more social interaction and face-to-face support from teachers and peers.

Synchronous and asynchronous online modes of learning

Synchronous communication occurs in real-time. Lecturers can deliver material directly to students in class. Synchronous online lectures can still be conducted via online class platforms. Students who studied primarily in synchronous settings reported more peer-centered activities, such as feedback, than those who studied mainly in asynchronous settings. Conversely, teachers observed fewer distinctions between synchronous and asynchronous teaching methods, particularly in terms of feedback activities (Fabríz et al., 2021; Palupi, 2022).

Asynchronous communication is not limited by time. In this mode, the lecturer provides material that students can use as a reference. Students can learn from PPT files, PDFs, and videos at their own pace. However, students in mostly asynchronous settings experienced challenges, including technological problems and difficulties engaging some students or teams (Zhang et al., 2022).

Learning Management System

Before the pandemic, the Learning Management System (LMS) was extensively researched in the Philippines and was a crucial instrument for online education. LMS provides a structured platform where students can continue to cooperate, interact, and socialize while studying remotely. It is an ideal strategy for encouraging student engagement with content and

maintaining education (Alturki et al., 2021; Ashrafi et al., 2020; Raza et al., 2020). With frameworks that support online collaborative groups, professional training, discussions, and communication among LMS users, the standard LMS fosters an inclusive learning environment that promotes academic development. Instructors should balance active learning, use of LMS technology tools, and adherence to qualified curricular guidelines (Bradley, 2021).

The Department of Education (DepEd), the Commission on Higher Education (CHED), and the Technical Education and Skills Development Authority (TESDA) in the Philippines have modified their usual teaching methods by implementing a structured and readily accessible online learning system via LMS (Fabito et al., 2020; Pitogo et al., 2022). The exponential growth of LMS utilization has led to empirical studies exploring the variables influencing students' and teachers' adoption and continued use. Navarro et al. (2021) showed that LMSs are valuable tools for facilitating learning in undergraduate engineering programs in the Philippines because of their availability and interactive environment. However, incorporating collaborative learning tools could make LMSs even more effective.

Modular Learning

In this approach, learning resources are arranged into modules that students can complete independently. This strategy is frequently combined with other forms of flexible learning, such as online or blended learning (Dangle & Sumaoang, 2020). Students in modular education receive modules containing educational materials, activities, and assessments that they can work on at their own pace and schedule. The modules are often self-contained, meaning students can study the topics without direct

teaching from an instructor. Despite technical and non-technical challenges, modular remote learning has increased students' understanding of the material (Hamora et al., 2022; Roque, 2022). Implementing modular learning remains challenging in the Philippines (Agayon et al., 2022; Bacomo et al., 2022; Caasi & Pentang, 2022). According to Tanucan et al. (2023), implementing printed modular distance learning (MDL) requires attention to four presences: structural, community, intervention, and quality assurance. Addressing these issues would create a supportive and positive learning environment that promotes student learning and achievement.

Blended Learning

Blended learning combines online and in-person instruction to provide a more flexible learning environment. It is increasingly popular in the Philippines because it enables schools to maintain social distancing while providing students with some face-to-face education (Alvarez, 2020; Tupas & Linas-Laguda, 2020; Villanueva et al., 2022). In a blended learning model, students often engage in online activities outside the classroom, such as watching videos, participating in online discussions, and completing assignments. They also attend in-person sessions for direct instruction.

Distance Learning

Distance learning is similar to online learning but may also include more traditional methods of remote education, such as mailing course materials. It is often used in areas with limited internet access (Caasi & Pentang, 2022; Laswadi et al., 2023). Distance learning involves students receiving instruction from their teachers remotely, generally via digital technologies such as online platforms, video conferencing, and email

(Dimitropoulos et al., 2022; Joaquin et al., 2020; Roque, 2022). Online learning is especially viable for distance learning during quarantines and viral outbreaks since it allows students to access learning materials and communicate with their lecturers remotely.

Hybrid Learning

Universities and colleges are seeking innovative ways to boost student enrollment while offering flexible course options and maintaining sound financial management. E-learning tools and technology have been used to supplement conventional courses at higher education institutions, creating a “hybrid” e-learning model that strives to enhance students’ learning experiences. Hybrid learning combines in-person classroom instruction with offline and online learning or deliberately blends conventional teaching with technological advancements. Despite some challenges, hybrid learning has gained popularity recently, particularly during the coronavirus pandemic (Damo & Padagas, 2020; Dimitropoulos et al., 2022; Faradita et al., 2022; Oji et al., 2022; Tumasis, 2022; Young et al., 2016; Zakaria et al., 2022).

The learning modalities in the Philippines underwent significant transformation at the onset of the global pandemic, which had a severe impact on the economy and the education sector. Universities and basic education institutions designed alternative learning modes that comply with the Inter-Agency Task Force (IATF) regulations on COVID-19. Hybrid learning predates modern instructional technologies, but its evolution will inevitably be linked to current information and communication technologies and a supportive environment for technology adopters, particularly among teaching academics in senior high schools.

The Roadmap Ahead

The COVID-19 pandemic has drastically changed the educational landscape in the Philippines, accelerating the adoption of flexible learning techniques. Nonetheless, the pandemic has highlighted the importance of ongoing support and training for teachers and students to use these new instructional practices effectively. Despite the initial challenges faced during the pandemic, the implementation of flexible learning approaches signals a fundamental shift in the Philippines toward a more modern and adaptive approach to education.

Research should focus on identifying and enhancing best practices for implementing and improving these modalities to support the long-term success and growth of flexible learning techniques. This research should consider the unique challenges faced by students and other stakeholders, including the digital divide, socioeconomic and geographical barriers, as well as cultural and language diversity. Furthermore, education stakeholders should collaborate to provide the tools, resources, and training necessary for the successful adoption of flexible learning techniques in the Philippines. This collaborative approach would ensure that, beyond the pandemic, all students, regardless of background or circumstance, have access to high-quality education and that the country continues to adapt and respond to evolving educational needs.

The finding that flexible learning approaches are still evolving and adapting to the changing needs of students, educators, and the community in the Philippines, with ongoing support and training required for successful adoption, has various implications for future research. First, research may identify best practices for establishing and enhancing various types of flexible learning, including hybrid, online, modular, blended, and remote learning, while considering the individual needs and challenges of students

and educators. This research would ensure that these approaches are applied effectively and can be refined over time.

Second, research is needed to determine the training and resources that teachers and students require to adopt and utilize flexible learning approaches successfully. This would help guarantee that instructors and students are adequately prepared to use these methods and overcome any obstacles or challenges that may arise during the adoption process. Third, research may focus beyond the pandemic on providing equitable access to quality education. Addressing the digital divide and socioeconomic and geographical barriers to flexible learning is essential. This study aims to ensure that all students, regardless of their background, have fair access to education and are not left behind during the transition to flexible learning. Ultimately, the conclusion highlights the significance of collaboration among education stakeholders. Accordingly, research might explore how various stakeholders, such as teachers, students, administrators, parents, and policymakers, can collaborate to support the successful adoption of flexible learning approaches. This would ensure that all parties work toward a common goal and that any issues or challenges arising during implementation can be effectively addressed.

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Chapter 2

Reframing Philippine Education: Learners, Modalities, and Inclusive Pedagogical Practices

Education in the Philippines reflects diversity, complexity, and adaptability. Learners bring distinct preferences, strengths, and challenges, while schools face the evolving demands of pedagogy, equity, and innovation. This chapter synthesizes seven discussions ranging from learning preferences, multiple intelligences, and blended learning, to education in school-less communities, ESL fluency, special needs integration, and multigrade teaching. Collectively, these themes emphasize the need for a learner-centered and context-sensitive approach. By means of bridging theory, practice, and community realities, the chapter urges educators, policymakers, and stakeholders to embrace inclusive and flexible strategies that ensure meaningful, equitable, and resilient education within and beyond the classroom.

Learning Preferences and Determinants of Learners

Anna May Z. Gonzales

Academic achievement is shaped by several interconnected factors within and beyond the school environment. Family background plays a particularly influential role, as parental engagement and educational aspirations strongly affect students' attitudes toward schooling and motivation for success (Simola et al., 2017). Within schools, the quality of instruction, availability of learning resources, and peer relationships also significantly impact student performance. In addition, individual learner characteristics—such as motivation, self-regulation, and cognitive ability—determine how effectively students engage with and internalize instructional content (Amerstorfer & Von Münster-Kistner, 2021).

Learning preferences (LP) represent another critical factor in student learning. They refer to the conditions under which learners perceive, process, store, and retrieve information during the learning process (Ajideh et al., 2018). According to Adnan and Marlina (2017), learning preferences manifest as relatively consistent patterns that shape how learners respond to

various aspects of the learning environment, guiding their cognitive, emotional, social, and physical development.

Despite their importance, learning preferences present ongoing challenges for both teachers and students. Students may struggle to learn effectively or follow instructions when their preferred styles of comprehension do not align with the instructional methods used by teachers (Karen et al., 2012). This misalignment underscores the need for educators to recognize and address the diverse ways students learn. Adapting teaching strategies to accommodate learners' interests and abilities not only enhances student engagement but also reflects teachers' professional competence. As emphasized by Asio et al. (2018) and Francisco and Celon (2020), evaluating and aligning instructional practices with students' learning preferences is essential for improving teaching effectiveness and fostering meaningful learning outcomes.

Determinants of Learning Preferences

Academic performance refers to the measurement of student achievement across a range of subjects, typically assessed by teachers and educational authorities through indicators such as classroom performance, graduation rates, and standardized test results (Duckworth et al., 2012). Learners' academic performance is shaped by a complex interplay of factors, including individual learning skills, family background, peer influence, quality of teaching, and the availability of learning resources and infrastructure. For example, graduation rates are often used by policymakers as a key indicator of secondary education outcomes, reflecting both retention and achievement levels (Escueta et al., 2020).

The role of teachers in influencing academic success is central. Ghaedi and Jam (2014) stress that the effectiveness of any educational program rests largely on the competence of the teacher, as teaching quality determines the implementation, preparation, and supervision of learning activities. When instructional delivery is weak, the entire educational structure is compromised. In contexts such as Nigeria, economic crises have diminished the quality of education, while in the Philippines, ambitious reforms have often been undermined by gaps between pedagogical practices and the intended goals of the curriculum (Rivera, 2017; Barrot, 2018).

Amid the demands of globalization and international competitiveness, the Philippines introduced a major reform: shifting from the traditional 10-year basic education cycle to the K–12 curriculum, thereby extending schooling to 12 years (Di Natale et al., 2020). This reform underscores the need for research that examines how various factors influence student performance in this new learning landscape. At the same time, teachers are increasingly seeking strategies to improve learning outcomes, recognizing that students vary significantly in both pace and style of learning.

Students' learning preferences represent one key dimension of this diversity. Some learners excel when using visual aids, others when listening, some through reading and writing, and others through hands-on activities and practice (Fleming & Baume, 2016). Understanding and responding to these preferences enables teachers to design instruction that aligns more closely with learners' needs, thereby improving engagement and achievement.

Awareness of learning preferences also benefits students themselves. Liang (2012) argues that when learners understand their

preferred styles, they are better able to process and retain knowledge within a given time frame. Effective alignment between teaching methods and learning preferences enhances academic achievement, whereas mismatches can hinder progress. Beyond academic outcomes, learning preferences also shape students' behavior and attitudes toward schooling (Dunn et al., 2019). Consequently, scholars such as Ghaedi and Jam (2014) emphasize the importance of teachers assessing and adapting to students' learning preferences. When teaching methods are aligned with these preferences, learners are more motivated, resilient, and enthusiastic, sustaining their engagement even when faced with academic challenges.

Students' Learning Preferences: A Case Study

This study seeks to identify the factors influencing the learning preferences of elementary learners, focusing on family background, personal attributes, physical and environmental conditions, teacher influence, and prior learning experiences. It specifically investigates how these factors relate to learners' preferences for visual, auditory, and kinesthetic modes of learning. Prior knowledge shapes how learners integrate new information, while motivation determines the effort and level of engagement they invest in the learning process. Similarly, environmental factors, such as classroom organization and the availability of instructional materials, significantly affect the way students perceive and process information. By understanding these interconnected influences, educators can design more effective and individualized learning experiences that address the diverse needs of students and enhance their academic success.

Methodology

A descriptive-correlational research design was employed in this study. The descriptive component focused on observing and documenting phenomena, behaviors, and traits as they naturally occurred, while the correlational component examined the relationships among variables without implying causation. Data analysis utilized statistical tools such as frequency counts, percentages, means, standard deviations, Pearson's r , and multiple regression. All inferential tests were set at a 0.05 level of significance.

Strict adherence to ethical standards was maintained throughout the research process. Participants' identities, responses, and personal data were safeguarded to ensure confidentiality. The objectives and significance of the study were clearly communicated, and parental consent was secured since the respondents were minors. Participation was voluntary, with respondents given the right to withdraw at any stage or decline to answer any question. The researcher upheld respect for participants' vulnerabilities regardless of their social, economic, political, or medical background and implemented measures to minimize any potential risks. Privacy and confidentiality were ensured in compliance with the Data Privacy Act of 2012.

Findings

The study revealed that the overall mean of the determinants of elementary pupils, as perceived by the respondents, was "evident." This finding suggests that learners' success is significantly influenced by family involvement and parental or guardian support. Economic conditions, such as household income and access to resources, affect students' educational opportunities, while cultural values and expectations within the family help shape learners' attitudes toward schooling.

Similarly, the overall mean of pupils' learning preferences was also assessed as "evident." This indicates that elementary learners tend to benefit most from visual learning strategies, such as diagrams, charts, graphs, and videos. They learn effectively when information is presented in written or graphical form, often preferring reading and note-taking to reinforce comprehension. Many also enhance memory retention through the use of colors and visual organization techniques.

The study further revealed a strong positive correlation between determinants and learning preferences. Learners' personal qualities, contextual circumstances, and cognitive processes all emerged as influential factors in shaping their learning styles. The findings suggest that improvements in these determinants are associated with stronger alignment to particular learning preferences. Specifically, increases in learner determinants may reflect higher levels of motivation, which in turn foster greater engagement and deeper recognition of preferred learning styles. Moreover, changes in determinants may also arise from advancements in the learning environment, where a supportive, stimulating, and inclusive atmosphere encourages learners to actively engage and refine their approaches to learning.

In terms of predictive power, the study found that learning determinants significantly predicted visual learning preference, while family determinants significantly predicted kinesthetic learning preference. No determinant was identified as a significant predictor of auditory learning preference. These results highlight the important role of both individual learning-related factors and family support in shaping how pupils engage with and process learning experiences.

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Multiple Intelligences Translated in Students' Interest and Expertise

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The concept of multiple intelligences (MI), proposed by Howard Gardner, has significantly transformed the understanding of human potential and learning diversity. Introduced in 1983, Gardner's theory posits that intelligence is not a single entity but a spectrum of distinct capabilities, each representing unique ways of interacting with the world. These intelligences include linguistic, logical-mathematical, visual-spatial, bodily-kinesthetic, musical, interpersonal, intrapersonal, and naturalistic forms. Recognizing the multifaceted nature of intelligence allows educators to value the diverse strengths that students bring into the learning environment.

Despite this expanded view, many educational systems continue to rely heavily on traditional methods, often sidelining the wide range of abilities that students possess. This imbalance poses challenges for both

educators and learners. Students who excel in non-traditional intelligences may feel marginalized in classrooms that prioritize linguistic and logical skills above all else. Such neglect can lead to disengagement, lowered self-esteem, and reduced motivation among learners who do not thrive under conventional academic paradigms. Addressing this concern is vital, as schools must evolve to embrace a broader and more inclusive definition of intelligence and learning.

Exploring emerging patterns in students' skills and interests within the multiple intelligences framework can reveal how learners perceive and articulate their abilities. Early observations suggest that many students struggle to recognize and express their unique strengths, which may hinder both their engagement and academic performance. Research further indicates that students often underutilize problem-solving and creative abilities when these skills are neither recognized nor encouraged by educators. Understanding how learners identify and describe their capabilities in relation to MI can therefore inform instructional strategies that foster greater engagement and maximize learning outcomes.

It is equally important to consider multiple intelligences across both academic and extracurricular domains. Many students demonstrate their intelligence outside traditional classroom settings through sports, the arts, community service, and other activities. These experiences provide meaningful opportunities for learners to explore and develop their strengths. Examining how students express their intelligence in various contexts not only offers deeper insight into their learning processes and preferences but also helps educators design inclusive and engaging environments that reflect the diverse intelligences present in their classrooms.

Ultimately, recognizing multiple intelligences underscores the need for education systems to adapt to diverse learning styles. By investigating patterns in how students describe their skills and interests, and by acknowledging these intelligences in both academic and extracurricular contexts, schools can develop more effective, responsive, and holistic educational practices.

Multiple Intelligences and Student Learning

Gardner's theory of Multiple Intelligences (MI) identifies eight distinct domains of human capability: linguistic, logical-mathematical, musical, bodily-kinesthetic, spatial-visual, interpersonal, intrapersonal, and naturalistic that provide a broader framework for understanding how students describe their skills and interests (Gardner, 1983). The theory asserts that each individual demonstrates varying degrees of these intelligences, with some emerging more strongly than others. Applied in education, this framework offers pathways for learners to develop their strengths and for teachers to design more inclusive pedagogical practices (Azmir et al., 2020). For example, Gupta and Kumar (2020), as cited in Bhagwan (2021), analyzed how students' self-perceptions align with the MI framework. Their findings indicate that students who enjoy writing stories typically exhibit linguistic intelligence, while those excelling in sports demonstrate bodily-kinesthetic intelligence. Similarly, Zaini and Razak (2013, as cited in Azmir et al., 2020) identified a significant correlation between visual-spatial intelligence and performance in Business Management, particularly in tasks involving reading comprehension and the interpretation of non-linear text formats. Such evidence illustrates how MI manifests across academic domains. Moreover, Asio et al. (2021)

emphasized the interconnection between multiple intelligences and extracurricular involvement, showing how MI shapes students' decisions related to activity participation, course selection, and career orientation. This underscores the potential of MI as a framework for guiding learners toward personal growth and professional development.

The relationship between MI and metacognition has also been a focus of research, highlighting how self-awareness and regulation influence the application of different intelligences. Mirzaei et al. (2013) identified metacognition as a mediating factor between MI and students' perceptions of their learning, suggesting that students with higher metacognitive awareness are more capable of recognizing how their experiences align with their strengths. Similarly, Veenman et al. (2006) demonstrated that metacognition supports self-regulation, shaping how learners mobilize their intelligences in diverse contexts. Complementing these findings, Liu et al. (2013) argued that metacognitive awareness enhances students' ability to select and apply appropriate learning strategies, thereby improving academic performance.

Each of Gardner's eight intelligences encompasses distinctive characteristics. Linguistic intelligence involves the effective use of language in written, spoken, and symbolic forms. Logical-mathematical intelligence refers to the capacity for reasoning, problem-solving, and systematic analysis. Musical intelligence reflects the ability to perceive, perform, and appreciate rhythm and sound. Bodily-kinesthetic intelligence denotes the purposeful and coordinated use of the body. Spatial-visual intelligence captures the ability to perceive and manipulate spatial relationships. Interpersonal intelligence represents the capacity to understand and interact effectively with others, while intrapersonal

intelligence refers to self-awareness and insight into one's emotions. Finally, naturalistic intelligence embodies the ability to recognize, classify, and connect with the natural environment (Gardner, 1999).

The MI framework continues to generate interest within educational research and practice because it emphasizes recognition and development of diverse learner profiles. Although some scholars critique the limited empirical evidence supporting the independence of all eight intelligences (Sternberg et al., 2020), others, such as Yang et al. (2012), have demonstrated positive outcomes when MI principles are integrated into instruction. Collectively, these findings suggest that engaging learners through strategies that align with varied cognitive strengths not only enhances motivation but also promotes more effective and equitable learning outcomes across academic domains.

Patterns of Students' Multiple Intelligences: A Case Study

This study explores emerging patterns in students' articulation of their skills and interests within the framework of multiple intelligences (MI). It examines how these intelligences influence students' engagement in academic and extracurricular activities, with the aim of informing instructional approaches that recognize, celebrate, and leverage diverse learner strengths.

Methodology

This qualitative inquiry investigated the influence of MI on students' academic and extracurricular experiences, focusing on their self-identified skills, interests, and levels of engagement. It sought to capture

authentic perspectives and lived experiences, producing nuanced and context-rich data. The study was conducted in a public high school in Candelaria, Quezon, Philippines, selected for its strong academic and extracurricular culture.

A sample of 24 Grade 11 students was drawn from various academic strands, Humanities and Social Sciences, Accountancy, Business, and Management, Science, Technology, Engineering, and Mathematics, Home Economics, and Information and Communications Technology, using systematic random sampling to ensure diverse representation.

Data were collected through semi-structured interviews designed to explore how different intelligences manifest in students' academic and extracurricular contexts. The interview guide was validated by an experienced educator to ensure clarity and relevance. All interviews were conducted privately on school premises, recorded with informed consent, and transcribed in accordance with established guidelines. Thematic analysis was employed to examine the transcripts. This process involved data familiarization, coding, identifying and refining themes, and naming them to capture overarching concepts. The analysis revealed patterns in how students applied their intelligences in various contexts, illuminating connections between MI, personal interests, and academic performance.

Ethical considerations included informed consent from both students and their guardians, confidentiality maintained through pseudonyms, and secure storage of data. Interviews were carried out in a supportive environment to minimize discomfort and ensure participant well-being.

Findings

Emerging Patterns in Students' Skills and Interests Within the Framework of Multiple Intelligences. The findings revealed distinct qualitative patterns in students' multiple intelligences. Participants who identified with visual-spatial intelligence demonstrated creativity, innovation, and strong visualization skills. Bodily-kinesthetic intelligence was observed in students' engagement with physical activities, while linguistic-verbal intelligence was evident in their capacity to exchange and interpret information effectively. Logical-mathematical intelligence, reported less frequently, was reflected in analytical and critical approaches to problem-solving. In contrast, bodily-kinesthetic learners tended to prefer physically active tasks over cognitively demanding ones.

Students with musical intelligence displayed proficiency in singing and performed more effectively when learning activities incorporated music. Those with interpersonal intelligence enjoyed communicating and collaborating with peers, while individuals with intrapersonal intelligence favored self-reflection and the analysis of theories and ideas. These findings suggest that students' abilities, talents, and cognitive dispositions play a central role in shaping their dominant intelligence types.

Articulation of Multiple Intelligences in Academic and Extracurricular Domains. Analysis further revealed that students' intelligences influenced both their academic performance and extracurricular participation. Each intelligence manifested in specific ways: bodily-kinesthetic intelligence supported physical engagement in academic and extracurricular tasks; visual-spatial intelligence promoted creativity within learning contexts; logical-mathematical intelligence facilitated critical thinking; linguistic-verbal intelligence was reflected in

communication skills; intrapersonal intelligence was expressed in reflective writing; and interpersonal intelligence was evident in leadership roles during extracurricular activities.

Given these variations, instructional strategies effective for one group of learners may be less applicable to another (Yavich & Rotnitsky, 2020). Accordingly, proper integration of multiple intelligences into teaching and learning can enhance academic achievement and contribute to overall student development and life success (Vadivukarasi & Gnanadevan, 2022).

Alignment of Learning Experiences to Dominant and Non-Dominant Intelligences. The study also revealed how students align their learning experiences and interests with their dominant and non-dominant intelligences. For instance, participants excelling in bodily-kinesthetic intelligence often displayed strong interpersonal intelligence, suggesting synergies between certain domains. Creative expression emerged as a common theme, with many students demonstrating passion for artistic pursuits. These findings are consistent with MI theory, which recognizes the importance of diverse intelligences, including spatial, musical, and intrapersonal forms, in shaping learning preferences.

Moreover, external studies reinforce the significance of interests in shaping educational choices. Tabigne and Musni (2022), for example, found that nearly half (47.35%) of students selected their academic courses based primarily on personal interests. Such findings highlight the critical role of aligning instructional practices with students' intrinsic motivations and intelligence profiles.

Recommendation

While this study primarily examined dominant intelligences, further exploration of methods to identify and cultivate non-dominant intelligences could provide a more holistic understanding of student capabilities. Developing targeted activities to nurture underrepresented intelligences may enhance motivation and engagement while mitigating potential negative effects—such as reduced interest or disengagement—associated with neglecting these areas.

Educators are encouraged to integrate MI principles into curriculum design by adopting diverse strategies tailored to different intelligences. For example, incorporating kinesthetic learning opportunities for bodily-kinesthetic learners or integrating music-based activities for students with musical intelligence can enhance participation and improve outcomes. Future research assessing the effectiveness of differentiated instructional approaches grounded in MI theory would provide valuable insights for optimizing teaching practices and creating inclusive, supportive learning environments.

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Blended Learning Modality: Philippine Context

Alyssa Saber Salmorin

Blended learning has emerged as a critical educational approach, particularly in sustaining instruction during disruptions that limit fully face-to-face engagement. It combines traditional classroom interaction with modular or online distance learning components, enabling students to benefit from direct teacher support while engaging in flexible, self-paced study (Sorbie, 2015). This dual modality offers several advantages: it allows learners to manage their study schedules, revisit materials as needed, and cultivate greater autonomy in the learning process.

Despite these strengths, blended learning also presents notable challenges. Students who require immediate, direct assistance from teachers may struggle when continuous in-person guidance is not available, hindering their ability to grasp complex concepts or complete assigned tasks. For teachers, implementation often entails a dual workload: preparing and distributing learning modules, providing timely feedback, and conducting face-to-face lessons concurrently. This additional burden can

lead to exhaustion and delays, particularly for educators managing large classes or lacking sufficient institutional support (Sorbie, 2015). In many instances, the demands of creating and grading modules alongside traditional teaching responsibilities have resulted in delays in material distribution, thereby reducing the overall effectiveness of the blended learning approach.

Research further supports the potential of blended learning as a model for 21st-century education. Jerry and Yunus (2021) describe it as an ideal framework that merges the strengths of face-to-face interaction with technology-mediated instruction. This integration facilitates more engaging and diversified learning environments, accommodating different learner preferences while leveraging digital tools to enhance content delivery. Similarly, Lalima and Dangwal (2017) emphasize that effective blended learning requires structuring instruction in a way that seamlessly integrates classroom-based teaching with the affordances of information and communication technology (ICT).

While blended learning holds considerable promise for modernizing education and promoting student engagement, its success ultimately depends on addressing barriers faced by both learners and educators. Ensuring adequate teacher training, providing access to resources, and strengthening institutional support systems are essential steps toward maximizing the benefits of this modality. When effectively implemented, blended learning can serve as a sustainable and equitable approach, enabling schools to deliver high-quality education that is both resilient to disruption and responsive to diverse student needs.

Challenges and Adaptations in Implementing Blended Learning in the Philippine Basic Education Context

Blended learning is a multifaceted concept that extends beyond simply combining face-to-face and online learning. Hrastinski (2019) defines blended learning as the integration of various instructional methods, pedagogical approaches, or technologies. This understanding acknowledges the evolving nature of education, especially as learners today are increasingly exposed to modern digital technologies (Dzuiban et al., 2001). In the Philippines, the preferred modality has been modular distance learning combined with face-to-face classes, though some teachers have incorporated ICT and online classes into their lessons.

Teachers play a crucial role in accessing and utilizing technological tools to create learning opportunities that were previously unavailable. Recognizing this, the Department of Education (DepEd) has facilitated the influx of devices into K-12 classrooms. However, many teachers find themselves unprepared to effectively use these technologies to enhance learning outcomes. Modular Distance Learning (MDL), designed for learners without access to online devices or reliable internet, remains the most common modality. MDL provides individualized instruction through printed or digital self-learning modules (SLMs) and various learning resources tailored to learners' contexts (Camara, 2021).

Despite the longstanding effectiveness of traditional pedagogical practices, the integration of blended learning remains challenging, especially in remote areas. Schools experienced difficulties implementing blended learning that combines face-to-face and online modalities. Many educators preferred full face-to-face instruction, as balancing traditional teaching strategies with technology requires significant time and effort. The

pedagogical approach that combines these elements aims to engage students in authentic learning experiences emphasizing exploration, creativity, critical thinking, communication, and collaboration (Hensley, 2020). However, the fast pace of technological advancement demands continuous teacher adaptation, increasing workloads as teachers prepare presentations, conduct online classes, design modules, and grade student work (Sorbie, 2015). This added burden caused many teachers to view blended learning as overwhelming rather than beneficial.

Some teachers believed blended learning was simply an extension of their existing student-centered practices that use various resources to individualize instruction. Others found the transition challenging, especially as they had to check answered modules and provide timely feedback remotely (Rao, 2019). The shift from traditional in-person lecturing to remote learning required teachers to adapt their methods to maintain student engagement, often taking on roles as monitors and communicators via texts, calls, and video conferencing (Camara, 2021).

The COVID-19 pandemic significantly impacted the Philippine education sector, forcing agencies like the Commission on Higher Education, Technical Education and Skills Development Authority, and DepEd to seek ways to deliver quality and equitable education amid unprecedented challenges (Jamon & Boholano, 2021). In basic education, DepEd introduced multiple learning delivery modalities based on geographical, socioeconomic, and educational contexts to meet diverse learner needs, with Modular Distance Learning widely adopted nationwide. Under this system, students receive self-learning kits and modules, which they complete with the support and supervision of parents or guardians. Teachers maintain open communication with families to monitor progress

and address issues. While this new normal posed risks such as the physical health concerns of teachers distributing modules, it also fostered innovation and increased technology use among educators (Jamon & Boholano, 2021).

Nonetheless, blended learning presents significant pedagogical challenges. Jokinen and Mikkonen (2013) identify barriers including instructional design, community issues, and technical difficulties. Even higher education faculty, with more exposure to online teaching, struggled to adapt during the pandemic, highlighting the lack of preparedness for such rapid shifts (Hew et al., 2020; Toquero & Talidong, 2020). Monitoring student progress, providing feedback, and assessing learning remain problematic, despite DepEd's clear guidelines, due to communication gaps, technological limitations, and students' socioeconomic conditions.

The burden on both teachers and students has increased, with students often required to complete multiple modules weekly, amounting to hundreds per school year (Aliyyah et al., 2020). Teachers face logistical challenges managing module printing, distribution, grading, and creating home learning plans. Additionally, communication barriers place some students at risk of dropping out or failing due to insufficient monitoring and support (Fontanos et al., 2020). These challenges emphasize the need for ongoing support systems to ensure that all learners remain engaged and receive appropriate interventions.

One key strength of teachers in the new normal educational setting was their technological literacy as 21st-century educators. Today's teachers are expected to be proficient in ICT and technology (Jamon & Boholano, 2021). Computer literacy is among the most common skills demonstrated by teacher applicants, driven by the pervasive influence of technology in daily life (Oliver, 2002, as cited in Nawaz & Kundi, 2010). Teachers play a

crucial role in effectively integrating technology into education and are encouraged to continuously enhance their computer skills to improve teaching and learning (Asan, 2003). Another strength identified was teachers' capacity for collaboration, commitment, and competence, which are essential qualities for adapting to the new educational landscape. Grangeat and Gray (2007) define teacher competencies as the acquired skills and knowledge that enable educators to perform their tasks effectively and efficiently.

Despite these strengths, teachers acknowledged the need for training on new pedagogical approaches suitable for the current situation (Jamon & Boholano, 2021). Many admitted feeling like strangers in the transformed educational system. While they were “pedagogical and content knowledge experts” in face-to-face classrooms, the pandemic forced a rapid shift to online, modular, and blended learning modalities (Hew et al., 2020). This transition required teachers to quickly adapt their skills and teaching methods to meet the demands of the new normal.

Teachers Lived Experiences of Blended Learning Modality: A Case Study

In one private high school in Aklan, Philippines, blended learning represented a new and challenging experience for teachers. Many initially struggled with mastering digital tools, managing time, and balancing online with offline instruction. Despite these difficulties, teachers demonstrated resilience by developing coping strategies and gradually adapting to the modality. Their experiences highlight the critical importance of institutional

support, targeted professional development, and adequate resources in ensuring successful blended learning implementation.

This qualitative study investigated teachers' lived experiences with blended learning and examined the intervention programs employed to address its challenges. The objective was to provide insights into teachers' coping strategies and adaptive practices in implementing blended learning to meet the needs of diverse learners.

Methodology

This study employed a phenomenological qualitative research design to capture the essence of teachers' lived experiences in implementing blended learning. The design was selected for its capacity to generate comprehensive insights into shared challenges and coping mechanisms among educators.

The research was conducted during the 2022–2023 academic year in a private high school in Aklan, Philippines, with an enrollment of 1,357 learners and 32 faculty and staff members. Seven teachers participated in the study: three from Junior High School and four from Senior High School. Participants were purposively selected based on two criteria: (a) they taught subjects requiring hands-on activities and close guidance, and (b) they had at least three years of teaching experience at the school.

Data were collected through an interview guide consisting of open-ended questions. The guide was structured into three sections: teachers' lived experiences with blended learning, challenges encountered, and coping mechanisms employed. Content validity was established by a panel of experts who reviewed the instrument for clarity, format, and relevance.

Prior to data collection, permission was secured from educational authorities, including the senior education program specialist, district superintendent, and school principal. In-person interviews were conducted with participants' consent, recorded, and transcribed. Confidentiality was assured through anonymization.

Data analysis followed a seven-step phenomenological process: (1) familiarization with transcripts, (2) extraction of significant statements, (3) formulation of meanings, (4) clustering of themes, (5) development of a comprehensive description, (6) articulation of the phenomenon's essential structure, and (7) validation of findings with participants to ensure accuracy and credibility.

Findings

Teachers' experiences revealed both negative and positive dimensions. On the negative side, participants reported (a) being mentally and physically unprepared for blended learning, and (b) the heavy additional workload, which caused stress and exhaustion. On the positive side, teachers highlighted (a) adaptability over time, (b) improved flexibility in managing schedules, and (c) enhanced innovation in integrating online and offline resources.

The majority of participants admitted they were initially unprepared, with stress and exhaustion emerging as significant challenges. Limited prior exposure to blended learning made time management particularly difficult. The main challenges identified were: (a) difficulties in creating and distributing modules, (b) student disinterest in blended learning (leading to

dropout risks), and (c) weak internet connectivity in remote barangays, which disrupted participation.

Managing two instructional modes modular and face-to-face was described as complex and time-consuming. Despite efforts, some students remained disengaged, reflecting both systemic and contextual barriers to blended learning. In terms of coping mechanisms, teachers: (a) integrated digital platforms such as Facebook Messenger and Zoom, despite connectivity constraints, (b) significantly modified teaching strategies to suit blended delivery, and (c) conducted home visits for students at risk of disengagement or dropout.

These strategies fostered greater innovation, flexibility, and empathy. Some teachers noted that blended learning unexpectedly improved their teaching skills, while home visits deepened their understanding of students' circumstances.

The school's intervention program was found to be effective in reducing teachers' workload, particularly in module preparation. However, challenges persisted due to annual reassignments of teaching subjects and non-renewal of some faculty contracts, which disrupted continuity. To address this, the school introduced a learning management system (LMS) to store instructional materials and modules securely online, ensuring accessibility, data privacy, and sustainability.

Recommendations

To strengthen the effectiveness of blended learning, several strategic measures are essential. First, capacity building for teachers must be prioritized through seminar-workshops focused on module development

and ICT skills enhancement. As students' digital competencies continue to expand, educators need to be equipped with the technical expertise and pedagogical flexibility required to deliver quality instruction. Such initiatives not only improve teaching effectiveness but also foster a culture of professional growth and adaptability among educators.

Equally important is the well-being and workload management of teachers. School administrators should actively safeguard the mental, emotional, and physical health of faculty members by providing opportunities for mental health breaks and by minimizing redundant tasks. The effective use of a learning management system (LMS) can further streamline instructional delivery by facilitating module organization, feedback mechanisms, and resource sharing. This reduces duplication of effort and ensures that teachers can devote more time to meaningful engagement with students.

Strengthening institutional resource support is also vital. The school library should be regularly updated with current academic references and provide reliable internet access to both teachers and students. Such resources enhance lesson preparation, facilitate research, and reinforce the blended learning environment. By ensuring that both digital and traditional academic supports are available, schools can promote equity and academic rigor.

Moreover, collaborative planning across subject areas can maximize efficiency and enrich learning outcomes. Interdisciplinary coordination allows teachers to design culminating activities that integrate multiple disciplines into a single output. This approach not only reduces students' workload but also optimizes instructional time and resources, fostering deeper engagement with complex, real-world problems.

Finally, healthy student support systems are essential to sustain participation and academic success in blended learning environments. Regular counseling sessions led by the school's guidance clinician, coupled with targeted home visits for at-risk students, can mitigate truancy and prevent dropouts. Continuous monitoring and timely intervention strengthen learner well-being, attendance, and overall academic performance. Collectively, these measures create a more sustainable, equitable, and effective blended learning model that responds to the diverse needs of both educators and students.

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Beyond School Walls: Education in School-less Communities

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Education is commonly defined as the development of an individual's capacities, enabling them to interact with and shape their environment while fulfilling their social responsibilities (Dewey, n.d.). This perspective is echoed by Pestalozzi (2022), who described education as the natural, harmonious, and progressive cultivation of a person's innate abilities. Together, these philosophies underscore the central role of formal schooling in structuring learning experiences that equip students with essential knowledge, skills, and values for meaningful participation in society.

In the Philippines, the 1987 Constitution enshrines education as a fundamental right for every citizen. To uphold this mandate, the government implemented the Education for All (EFA) Plan in 2006, which sought to improve access to quality basic education by 2015. Its primary goal was to ensure that all learners attain the competencies required for functional literacy.

However, one persistent barrier to achieving this vision is the prevalence of “school-less” community areas where no schools exist. The absence of educational institutions in these communities significantly restricts access to learning and delays the academic development of many children.

The magnitude of this challenge is evident in Department of Education Region I data (2022), which reports that out of 3,267 barangays in the region, 989 (30.27%) do not have an elementary school, and only 564 barangays are served by secondary schools. As a result, students from underserved areas often travel considerable distances to attend classes, while some are effectively excluded from education altogether (Villar, 2021). For instance, in the District of Numancia in Region VI, although there are at least 12 elementary schools, Barangay Tabangka remains a school-less community. The nearest option for students is the Numancia Integrated School in the Division of Aklan. According to the Punong Barangay, learners from Tabangka must travel either to Barangay Poblacion in Numancia or Barangay Bugasongan in Lezo to access basic education services.

The School-less Community in the Philippines

The literature highlights the legal foundations and government initiatives underpinning Philippine education, particularly Republic Act No. 9155, which guarantees every Filipino child access to quality basic education. This Act is reinforced by constitutional mandates and by national programs such as the Education for All (EFA) Plan, which aimed to ensure basic competencies and functional literacy for all Filipinos by 2015. At the same time, studies consistently point to the negative consequences of

distance between learners' homes and schools, including tardiness, absenteeism, poor concentration in class, hunger, and sleep deprivation.

Recent empirical research deepens this perspective. A study by the University of Eastern Philippines (2022) identifies transportation challenges such as the unavailability of vehicles and financial constraints as significant barriers to learners' timely attendance and overall academic performance. Complementary findings from the Department of Education Regional Office I reveal persistent gaps in school access, with many barangays lacking elementary schools altogether. These conditions have contributed to higher dropout rates, largely attributed to prohibitive transportation costs and the absence of proximate learning facilities. Similarly, Khalil (2013) documents how urban environments shape children's commuting patterns, while Okongo et al. (2015) emphasize that equitable access to adequate learning resources is vital for advancing inclusive education.

A substantial body of scholarship underscores the detrimental impact of long commuting distances on academic outcomes. Florida (2019) shows that extended commuting times disrupt students' sleep cycles, thereby lowering academic performance. Adepoju et al. (2011) likewise find that prolonged commutes erode examination performance by limiting study time and diminishing focus. Pata (2013) highlights how commuting time constrains both study and recreation, while Mhiliwa (2015) documents that long travel distances exacerbate tardiness, hunger, and dropout rates particularly among girls ultimately reducing academic achievement. Collectively, these studies reinforce the urgency of addressing geographic barriers to ensure equitable and sustained educational participation.

The absence of schools in many barangays underscores a systemic gap in fulfilling the educational needs of Filipino children. In school-less

communities, learners are either compelled to endure long, costly commutes or are entirely denied access to formal schooling. This reality underscores the importance of long-term programs that establish sustainable school infrastructure in underserved areas. For instance, a Department of Education (DepEd) study in the Ilocos Region identified nearly 1,000 barangays without elementary schools, further entrenching educational disparities in rural settings. In parallel, the DepEd Policy, Planning, and Research Division (PRRD) highlights the need for evidence-based, targeted interventions to address structural inequities and to ensure that no child is left behind due to geographic isolation.

In response, regional initiatives have begun exploring alternatives. As reported by the Philippine News Agency, the DepEd Ilocos Regional Office has recommended the adoption of alternative learning delivery modes in school-less villages, aiming to serve the nearly 30.3% of barangays lacking elementary schools. These efforts stress the importance of partnerships with community leaders and stakeholders to ensure inclusive, quality education. Corroborating this, research by DepEd Region I confirms that geographic barriers exert a direct influence on student attendance and achievement, with higher absenteeism and lower grades among learners who travel longer distances. Edwards (2022) further underscores the role of school transportation in mitigating these challenges, while cautioning that interventions should be strategically targeted to chronically absent learners to maximize attendance and learning outcomes.

The Lived Experiences of Elementary Learners in a School-less Community: A Case Study

This study explored the lived experiences, struggles, and coping mechanisms of elementary learners residing in a school-less community as they pursued access to basic education.

Methodology

A phenomenological research design was employed to interpret and describe the essence of participants' lived experiences. The study focused on six purposively selected elementary learners from Barangay Tabangka, Numancia, Aklan. Participants were chosen based on the following criteria: (a) residency in Barangay Tabangka, (b) current enrollment in elementary school, (c) belonging to families experiencing socioeconomic difficulties, (d) willingness to participate, and (e) protection of privacy through the use of pseudonyms. Their demographic profiles included information such as school affiliation, age, and grade level, and participants were identified through records from the nearest school to Barangay Tabangka. Formal permission to conduct the study was secured from the Schools Division Superintendent, District Supervisor, and School Principal. Since the participants were minors, both assent forms and parental consent were obtained.

Data were collected through semi-structured interviews, guided by a researcher-developed instrument. The interview guide was designed to elicit detailed accounts of (1) lived experiences in a school-less community, (2) struggles encountered in accessing basic education, and (3) coping mechanisms employed. The instrument underwent content validation by a panel consisting of a school administrator, a master teacher, and the

researcher's adviser, who reviewed its clarity, grammar, and relevance. Revisions were incorporated prior to finalization.

Each interview lasted between one and two hours. Responses were audio-recorded, transcribed verbatim, and analyzed using thematic analysis. This process involved extracting significant statements, formulating meanings, clustering these into themes, and developing a comprehensive description of the phenomenon. Transcripts were read and re-read to ensure immersion in the data, and findings were returned to participants for validation, thereby strengthening credibility.

Ethical considerations were carefully observed. Participants were briefed on the objectives, significance, and procedures of the study. They were assured of the confidentiality of their responses, informed that no monetary or material compensation would be provided, and reminded of their right to withdraw at any stage. All necessary permissions were obtained, and measures were taken to protect the privacy and welfare of the learners.

Findings

The lived experiences of school-less community learners in Barangay Tabangka, Numancia, Aklan, were shaped by a complex interplay of challenges, contextual factors, and individual coping preferences.

Day-to-day transportation routine. For most school-less community learners, a shared challenge defines their daily routine the necessity of walking to and from school. The absence of motorized transportation transforms the pursuit of education into a rhythmic cadence of footsteps, making the journey itself a significant part of their learning experience. Walking is not merely a physical task but also a mental challenge, testing their endurance and resilience. Yet, within this routine, learners also

discover meaning and connection. One participant, for instance, expressed joy in the companionship of siblings during the daily walk, describing it as an opportunity for camaraderie, laughter, and bonding. In this sense, the journey becomes more than a means to an end; it becomes a shared adventure that fosters warmth amidst the demands of long distances.

Beyond walking, various modes of transportation also come into play. Some learners rely on motorcycles owned by their families, while others make use of rented services such as *habal-habal* (motorbike taxi). These choices extend beyond mere logistics, profoundly shaping learners' comfort, independence, and sense of belonging. Those riding family-owned motorcycles often experience a sense of safety and kinship, intertwining their school journeys with the support of loved ones. Conversely, learners who use rented motorbikes embrace flexibility and accessibility, navigating their paths to education with a growing sense of independence.

Switching from walking to riding a motorbike is more than a practical change; it reflects broader aspects of family dynamics, economic progress, and cultural context. It also signals personal growth, as learners negotiate between dependency and independence in their educational journeys. These daily commutes, whether on foot or by motorbike, carry meanings that extend beyond transportation. They represent resilience, adaptation, and the creation of formative memories that shape learners' perspectives on education.

This finding resonates with Khalil's (2013) observation that increased distances in communities often reduce the likelihood of students walking or biking to school, underscoring how geography, economics, and access to transport shape educational participation.

Proximity to educational resources. Although studying in the town proper offers access to a wider range of resources, participants from the

school-less community expressed a distinct preference for pursuing their education within their own barangay. The central factor behind this choice is proximity. Having a school situated within walking distance of their homes provides not only convenience but also a strong sense of familiarity and belonging. This closeness minimizes the physical and logistical challenges associated with long commutes, making education more integrated into their daily lives.

Even with available transportation options, one participant emphasized the practicality of studying in the barangay rather than in the town proper. Proximity reduces travel time, eases fatigue, and allows learners to maintain stronger ties with their immediate community. While schools in town may present richer educational resources, these advantages are outweighed by the comfort, accessibility, and community connection that local schooling provides. This choice reflects how personal priorities and lifestyle considerations significantly shape learners' educational experiences.

Furthermore, Okongo et al. (2015) argue that the successful implementation of inclusive education depends on the adequate provision of teaching and learning resources. Allocating funds for locally available materials tailored to the needs of learners becomes crucial in ensuring that schools within barangays are not disadvantaged compared to those in urban centers. Thus, proximity not only fosters accessibility but also highlights the importance of resource support in sustaining equitable learning opportunities.

Enjoyable aspects of education. Learners in school-less communities discover happiness in dimensions of education that extend beyond academic study. For instance, in the town school, learning is complemented by the presence of a nearby playground. This space provides

not only physical activity but also a sense of joy that enhances the overall school experience. Such recreational facilities become more than mere leisure outlets; they offer learners a much-needed balance between academic demands and personal well-being.

Similarly, learners who attend schools in their barangay find enjoyment not only within the classroom but also in the surrounding community. The proximity of local stores, for example, adds both practicality and enjoyment to their daily routine, reinforcing the sense that education is integrated into everyday life rather than confined to formal instruction. These seemingly simple features playgrounds, stores, and other accessible amenities contribute meaningfully to a holistic and enriching learning environment. They help ensure that the educational journey is not only informative but also fulfilling and enjoyable.

Learners also derive joy from opportunities outside of direct academic content. A playground, for instance, may serve as a waiting area for children whose parents arrive later, thereby transforming idle time into moments of recreation. This illustrates how physical and social environments influence learners' perceptions of education. For teachers and school leaders, this highlights the importance of recognizing that education extends beyond classroom instruction. Non-academic elements play a pivotal role in shaping learners' overall experience. Learners are most engaged when environments are not only informative but also interesting, inspiring, relevant, and enjoyable. Peer learning further enhances this experience, providing an additional dimension of fulfillment and motivation (Jumuad et al., 2023).

Despite these sources of enjoyment, learners in Barangay Tabangka, Numancia, Aklan, confront multifaceted challenges that shape their educational journey. These include the hardships of daily commuting,

financial constraints, safety concerns, and limited access to learning resources. Such struggles underscore the resilience and determination required of these students to pursue education under demanding conditions. While their accounts reveal significant barriers, they also demonstrate a steadfast commitment to achieving their aspirations, reflecting both the vulnerability and strength inherent in their lived experiences.

Time management and late arrivals. Learners in school-less communities face considerable challenges in managing their daily travel to school. These include the need for early wake-ups, long walks across difficult terrain, and the constant disruption posed by adverse weather conditions. Such difficulties are further compounded by the absence of reliable transportation and the constraints of limited household budgets, which restrict the ability to afford regular fares. In the absence of dependable transport services, many learners are compelled to rely solely on their own physical effort to reach school. The financial strain of securing daily transportation adds another layer of difficulty, often resulting in late arrivals and increased fatigue. This interplay of time, distance, and resource limitations highlights not only the barriers to equitable access but also the resilience and determination of learners who persist despite these adversities. Their experiences underscore the need for policy interventions that address both logistical and financial challenges in order to create more inclusive and supportive educational environments.

Financial considerations. Financial constraints exert a profound influence on learners' educational decisions, often compelling them to study in schools closer to home as a means of reducing transportation expenses. This choice reflects a pragmatic response to limited economic resources and underscores the complex interplay between financial realities and access to education. Such constraints extend beyond transport costs, affecting the

ability of learners to afford daily allowances, gasoline for motorized vehicles, and other incidental school-related expenses. To cope, many learners adopt cost-saving strategies such as studying nearby and bringing packed home-cooked meals. While these measures demonstrate resilience and adaptability, they also highlight the persistent burden of financial challenges. Importantly, financial stress does not remain confined to logistical issues but also impacts learners' well-being and academic performance. Economic difficulties can trigger a cascade of consequences, including health complications and reduced academic achievement, making financial barriers a critical dimension of educational equity that demands urgent attention from both policymakers and school administrators.

Safety concerns during commute. Safety risks further compound the challenges of learners' daily journeys to school. Participants shared experiences of being chased by stray dogs and walking long distances in adverse weather conditions. One learner recalled being pursued by a dog along the road, highlighting the unpredictability and physical dangers they sometimes encounter. Others recounted trudging through heavy rain, arriving at school with soaked clothes and shoes—an ordeal that not only disrupts comfort but also poses health risks. Despite these hazards, learners remain steadfast in their determination to attend school. Their willingness to endure unsafe conditions and physical discomfort illustrates the depth of their commitment to education and the sacrifices they willingly undertake to pursue learning opportunities, regardless of the circumstances.

Difficulties in carrying books. The physical burden of carrying heavy books poses a persistent challenge for many learners. The weight of these materials often influences decisions about whether to bring them to and from school, with some opting to leave their books in the classroom to avoid physical strain. While practical, this choice limits opportunities for

independent study or the completion of assignments at home. Such constraints highlight how seemingly minor physical challenges can significantly shape learners' academic engagement and preparedness.

Limited access to educational resources. In addition to physical burdens, limited access to educational resources particularly reliable internet connectivity emerges as a critical barrier. Many learners lack stable home internet and instead rely on prepaid Piso-WiFi services, which are often slow, unreliable, or inconsistent. This situation underscores the digital divide that disproportionately affects school-less community learners, curtailing their capacity to complete assignments, conduct research, and fully participate in digital learning opportunities. The persistence of such inequities emphasizes the urgency of targeted interventions to strengthen internet infrastructure, expand affordable access, and promote digital inclusion as essential conditions for equitable and high-quality education.

The coping mechanisms of school-less community learners in Barangay Tabangka, Numancia, Aklan, reflect resilience, collaboration, and resourcefulness. Confronted with multiple financial and logistical barriers, these learners demonstrate a capacity to adapt by cultivating a positive mindset and prioritizing the intrinsic value of education. Their strategies often include collective efforts within families and peer groups, as well as the use of practical, low-cost solutions to sustain daily participation in school. Such behaviors highlight not only their determination to persist but also the broader social and cultural practices that enable them to transform constraints into opportunities for learning continuity.

Family and community support. Family members, particularly uncles and fathers, play a pivotal role in sustaining the educational aspirations of learners. Their support extends beyond moral encouragement to practical contributions, most notably through the provision of motorbike

rides. Several participants reported a recent increase in such assistance, highlighting a growing trend of active familial involvement in mitigating commuting challenges. This form of support not only eases the physical burden of travel but also symbolizes a collective commitment to education, reinforcing the idea that learning is a shared responsibility within the household and community. As Edwards (2022) notes, access to reliable school transportation positively influences student attendance, reducing the risk of chronic absenteeism. In this context, the provision of motorbike rides by family members operates as both a cost-effective transportation solution and a manifestation of solidarity, reflecting the collaborative effort required to safeguard learners' academic continuity.

Positive attitude and adaptation. Despite facing substantial challenges, learners demonstrate remarkable commitment to schooling by maintaining a strong focus on attendance and continuous learning. Their adaptability is evident in the creative ways they navigate daily obstacles, refusing to succumb to difficult circumstances. Instead, they approach each challenge as an opportunity for growth, cultivating resilience and optimism. This perseverance not only underscores their dedication to education but also inspires others in the community, illustrating how a positive mindset can function as a powerful coping mechanism.

The decision of some learners to continue attending school even without an allowance further reflects their intrinsic motivation and belief in the transformative value of education. Such persistence highlights the depth of their appreciation for learning and their determination to complete their studies despite material hardships. In this way, learners embody resilience as both a personal strength and a social signal, demonstrating that intrinsic motivation and a growth-oriented perspective are critical drivers of academic success under conditions of adversity.

Financial assistance and collaboration. Learners actively work with their families to address financial difficulties, often sharing responsibilities to ensure that schooling remains possible. Children assist their single mothers, while families pool limited resources such as transportation costs to ease the burden. This teamwork reflects a culture of unity and mutual support, where each family member contributes according to their capacity. From an early age, these learners gain an understanding of the challenges of earning a living and willingly strive to contribute, reinforcing the strength of family bonds in sustaining educational pursuits.

Beyond the family, community members also play a role in providing support, whether through transportation, monetary aid, or other forms of assistance. Such collaborative efforts help learners sustain their studies, despite limited means. However, financial constraints remain a significant barrier: some learners continue to struggle with school-related expenses, while others lack access to essential learning equipment. Parents with limited earning capacity particularly those affected by disabilities face greater difficulties in sustaining their children's education. As Moore et al. (2021) note, the inability to provide financial support reduces educational quality, with many families finding it a daunting task to secure even the most basic needs, such as food, school supplies, and other necessities.

Practical solutions for daily commute. Learners adopt creative strategies to cope with everyday transportation challenges, demonstrating both adaptability and determination to continue their education. When gasoline for motorbikes commonly used in their communities becomes unavailable, they turn to cost-effective alternatives such as walking. This choice reflects a proactive mindset, ensuring that transportation difficulties do not disrupt school attendance.

In acknowledging the recurring issue of fuel shortages, learners illustrate a willingness to embrace walking as a practical and sustainable solution. Their readiness to adjust highlights not only resourcefulness but also a deep commitment to education. By treating challenges as opportunities to adapt, these learners model resilience and cost-conscious decision-making, showing that even limited resources need not become insurmountable barriers to schooling.

Resourcefulness in income generation. Learners demonstrate resilience by engaging in various income-generating activities that provide financial support for their education while fostering independence and empowerment. Their initiatives include planting vegetables, collecting items for sale (such as white hairs), cleaning motorcycles for payment, and participating in small community-based jobs like Saturday cleaning. These efforts not only supplement household income but also help cover essential school-related expenses.

Through these activities, learners showcase creativity and determination in utilizing available resources to meet financial needs. Their willingness to contribute reflects a sense of responsibility and agency, proving that even at a young age, they actively seek solutions to sustain their education. By sharing the burden of economic challenges with their families, they highlight a culture of collective effort and commitment, ensuring that the goal of completing schooling remains attainable despite limited means.

The Roadmap Ahead

The lived experiences of school-less community learners in Barangay Tabangka, Numancia, Aklan, reveal a dynamic interplay of challenges, coping mechanisms, and personal motivations. Daily

commuting difficulties, limited access to educational resources, and the joys they still find in learning collectively shape their educational journey. These narratives highlight not only the resilience and adaptability of learners but also the urgency of providing systemic support tailored to their realities.

Understanding these multifaceted experiences is crucial in designing responsive and targeted interventions. By recognizing both the barriers and the strengths within this community, stakeholders can create sustainable solutions that bridge gaps in access, enhance learning continuity, and empower learners to achieve their aspirations despite adversity.

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Fluency Foundations: Rethinking ESL Education

Jenny R. Tayco

English is widely recognized as the language of international communication, spoken by nearly two billion individuals worldwide. Proficiency in English provides access to diverse opportunities, particularly within the global labor market (Mulsadmin, 2021). In the Philippines, however, recent years have seen a gradual decline in English proficiency. The 2022 English Proficiency Index ranked the country 22nd among Southeast Asian nations, reflecting a downward trend from earlier positions: 14th in 2018, 20th in 2019, 27th in 2020, and 18th in 2021 (Banzuelo, 2021). This performance is notably distant from its 13th-place ranking in 2016. Such decline underscores the need for comprehensive government action to strengthen the educational system while safeguarding the welfare of teachers, who remain the frontliners of learning delivery (Equipado & Gilbas, 2021). Teachers are not only viewed as conveyors of knowledge but also as role models who shape values and aspirations, a responsibility that entails considerable professional and personal challenges.

Within the Philippine ESL context, teachers occupy a central role in bridging linguistic gaps, fostering communicative competence, and responding to shifting educational demands. The professional role of

English teachers has evolved significantly with the introduction of innovative pedagogical approaches and the integration of digital and smart learning tools. To remain effective, teachers must adapt to rapid developments in education, science, and technology, while tailoring instruction to increasingly diverse learner needs. Despite this pivotal role, many Filipino teachers experience workload intensification, frequently performing tasks beyond classroom instruction (Domingo, 2020). They often invest personal time and resources to sustain the quality of learning, making significant sacrifices in the process. As Corner (2020) argues, teachers must continually reflect on their pedagogical practices and recalibrate their roles in alignment with the principles of teaching English as a global or international language. Such adaptation, however, does not entail discarding traditional practices altogether but rather balancing them with emerging approaches.

Teacher welfare, in turn, is shaped by broader institutional and contextual conditions. Ece and Kazazoğlu (2021) emphasize that job satisfaction is influenced by multiple factors, including classroom interactions, institutional support, course design, the availability of resources, and demographic conditions. For English teachers in the Philippines, these factors directly affect their capacity to deliver effective ESL instruction. This reality highlights the pressing need for systemic support structures that complement pedagogical innovation, ensuring that educators are adequately equipped and motivated to sustain excellence in English language teaching.

Challenges Faced by Teachers in Teaching English as an ESL

Teachers in the Philippines encounter persistent challenges in teaching English, arising from student-related factors, systemic barriers,

and resource constraints. Domingo (2020) identified low student motivation, inadequate teaching materials, uncondusive classroom environments, and insufficient administrative support for teacher training and professional development as major obstacles. Similarly, Cahyati and Madya (2018) distinguished between internal factors, such as pedagogy, learner motivation, and national identity, and external factors, including inadequate textbooks, limited learning resources, low teacher proficiency, and large class sizes.

The linguistic environment adds further complexity to English instruction. Teacher Cel (2016) observed that reliance on vernacular speech patterns, coupled with the absence of native-speaking models, has resulted in vernacularized pronunciation, sentence structure, intonation, and vocabulary. Aziz et al. (2019) likewise emphasized that inadequate exposure to English, compounded by poor physical infrastructure and limited instructional materials, constrains effective language learning. Günes (2017) further noted the persistence of structural issues such as insufficient class hours, overcrowded classrooms, and the lack of in-service training opportunities.

Learner-related difficulties also remain significant. Nanda and Azmy (2020) linked poor reading comprehension in EFL contexts to low motivation, limited prior knowledge, and insufficient vocabulary factors that hinder academic achievement, problem-solving skills, and long-term educational outcomes. Abrar et al. (2018) found that younger learners often display shyness, reluctance to speak in English, and inadequate time allocation for language practice. Madalińska-Michalak and Bavli (2018) similarly reported low learner motivation and limited time spent studying English, while Songbatumis (2017) highlighted additional barriers, including poor vocabulary mastery, lack of concentration, boredom, and

difficulties in oral communication.

Compounding these issues are teacher-related constraints. Studies indicate limited training, low proficiency, unfamiliarity with information technology, and inadequate institutional support as recurring challenges. Facility-related constraints, particularly resource shortages and time limitations, also reduce instructional effectiveness. Cheung et al. (2020) argued that addressing diverse learner needs requires the development of technological pedagogical knowledge, which can be strengthened through closer university–school partnerships. This underscores the broader imperative of adapting instructional strategies to contemporary learning environments.

Despite these systemic and learner-related challenges, teachers continue to demonstrate adaptability and innovation in their practice. Castro (2023) reported that teachers employ diverse instructional strategies including films, video clips, chants, songs, rap, role-playing, dramatization, games, and pronunciation drills to enhance language fluency and sustain learner engagement. Domingo (2020) highlighted teachers' resourcefulness in creating instructional materials, designing alternative activities, and striking a balance between technology-based and traditional resources.

Fostering a supportive and motivating classroom climate is also considered essential. Oktavia et al. (2022) emphasized that teacher commitment, intrinsic motivation, and the creation of a positive learning environment can enhance both academic performance and socio-emotional development. Similarly, adopting a positive mindset enables teachers to reframe challenges constructively and maintain professional resilience.

Finally, professional development remains a critical mechanism for strengthening teacher capacity. Ayalew (2022) underscored that targeted training programs not only enhance teachers' understanding of pedagogical

and contextual challenges but also equip them to manage stress, improve psychological well-being, and adopt healthier work practices. Such interventions contribute to sustained teacher effectiveness, improved student outcomes, and greater readiness to navigate the evolving demands of English as a Second Language instruction.

Strategies in Teaching English as an ESL: A Case Study

In many rural areas of the Philippines, the teaching of English continues to pose persistent challenges for educators. Despite advancing through grade levels, a significant number of learners remain unable to read fluently, construct basic sentences, comprehend written texts, or express themselves effectively in English. These enduring difficulties highlight systemic gaps in English as a Second Language (ESL) instruction and underscore the pressing need for targeted interventions.

The study examined the challenges encountered by elementary teachers in teaching English as an ESL subject. By gathering first-hand accounts from practitioners, the study generated context-specific insights into the barriers faced in classroom instruction. Such empirical evidence is essential for developing appropriate, practical solutions that can enhance teaching effectiveness and address the broader systemic issues that continue to affect English instruction in rural Philippine schools.

Methodology

This study employed a qualitative research design utilizing a phenomenological approach. This design enabled the researcher to work closely with participants in order to describe and understand their lived experiences, challenges, and coping mechanisms in teaching English. The phenomenological lens allowed the study to capture these experiences as

accurately as possible, grounded in the participants' own narratives.

The study was conducted in the District of Hamtic, under the Schools Division of Antique. The town is linguistically diverse, with three spoken dialects: Hamtikanon (a distinct local dialect), Karay-a (the lingua franca of Antique), and Hiligaynon (the regional dialect). The participants were eight teachers assigned to English classes for Grades III to VI within the district. To maintain confidentiality, each participant was assigned a pseudonym reflective of their characteristics and personal background.

Participants were selected according to the following criteria: (a) graduate of either Bachelor of Elementary Education (BEEd) or Bachelor of Secondary Education (BSEd), (b) licensed professional teacher, (c) currently teaching English in elementary grades within the Hamtic District, (d) with at least three years of teaching experience in Grades III to VI, (e) either English major or non-major, (f) attended mass training on the K to 12 curriculum, and (g) willingness to share teaching experiences. Additional factors such as age, gender, position, years of teaching, and grade level handled were also considered to ensure diversity of perspectives.

Data were gathered using a researcher-developed interview guide based on the study's statement of the problem. Open-ended questions were employed to elicit rich and detailed responses. The instrument was divided into three sections: (a) Background Information – including name, age, gender, position, years in service, grade level handled, and educational attainment; (b) Preliminaries, focusing on personal details related to the teaching profession; and (c) Core Questions, consisting of twelve open-ended items addressing the three main statements of the problem, specifically lived experiences, challenges, and coping strategies in teaching English.

Prior to data collection, permission was secured from the Schools

Division Superintendent, the Principal-in-Charge of the District, and the respective School Heads. Informed consent was obtained from participants through a signed form outlining the study's purpose, procedures, and the extent of their involvement. Face-to-face interviews were conducted at schedules convenient to the participants. Each session lasted between 10 to 20 minutes, depending on the depth of responses. Interviews were audio-recorded to ensure accuracy in documentation, and transcripts were subsequently prepared for analysis.

Thematic analysis was employed to interpret the data. The researcher carefully reviewed the transcripts to identify recurring patterns and salient issues. These were then clustered and categorized into themes that encapsulated the participants' shared experiences. The process allowed the study to generate nuanced insights into the lived realities of elementary teachers as they navigated the complexities of teaching English in the District of Hamtic.

Findings

This section presents the positive experiences of elementary teachers in teaching English, emphasizing the dimensions of professional fulfillment, personal growth, and emotional reward derived from their instructional role. These themes underscore not only the intrinsic satisfaction teachers experience but also the deeper professional insights gained through practice, reflecting the value of teaching English as both a pedagogical endeavor and a source of personal meaning.

Theme 1: Comfort and enjoyment in teaching

Teachers reported a sense of comfort and enjoyment in teaching English to elementary learners. Observing their students acquire new ideas

and develop essential language skills provided a deep sense of professional fulfillment. Although some participants acknowledged that they were not initially passionate about the teaching profession, their engagement with English instruction enriched their own vocabulary and broadened their perspectives through continuous classroom interactions.

Theme 2: Realization of roles

Participants emphasized their critical role in developing learners' foundational skills in reading, writing, listening, and speaking. They acknowledged that these competencies serve as the cornerstone for students' future academic achievement, positioning their work as essential to long-term educational success.

Theme 3: Developing a sense of fulfillment

Findings revealed that teaching English provided teachers with a strong sense of fulfillment. They reported positive emotions when learners were able to grasp lessons, even when English was not their primary field of expertise. Many emphasized that they, too, learned alongside their students, continuously expanding their own knowledge and skills. Witnessing learners' progress, increased confidence, and character development offered teachers a profound sense of professional and personal reward.

This section presents the major challenges encountered by teachers in teaching English. The themes highlight difficulties related to classroom dynamics, learner characteristics, and limited resources, all of which influence teaching effectiveness and overall instructional outcomes.

Theme 1: Learners' behavior

Teachers identified disruptive classroom behavior as a significant barrier to effective English instruction. Instances where students were inattentive, disengaged, or unprepared to listen created considerable challenges in delivering lessons and maintaining instructional flow.

Theme 2: Diversity of learners

Managing a class with diverse learning abilities emerged as a demanding responsibility for teachers. Varying levels of comprehension among students required differentiated instruction and additional effort to ensure that all learners could engage meaningfully with the lesson objectives.

Theme 3: Presence of non-readers

The presence of non-readers posed a significant challenge, as it slowed the pace of lesson delivery. Teachers were often required to conduct remedial reading sessions and repeat lessons to secure learners' understanding before moving on to new content.

Theme 4: Attachment to mother tongue

Many learners preferred to communicate in their local language during class, which limited their ability to express ideas in English. This language preference often led to reluctance, shyness, and minimal participation, with students resorting to short or one-word responses.

Theme 5: Lack of learning resources and references

A shortage of textbooks and reference materials further constrained the teaching of English. The lack of readily available instructional resources

compelled teachers to devote additional time to sourcing materials, thereby reducing opportunities for learners to engage in independent reading and deeper exploration of the subject matter.

Theme 6: Learners' poor comprehension skills

Limited reading comprehension skills among students significantly hindered lesson understanding. Factors contributing to this challenge included low self-confidence, fear of making mistakes, hesitation in participation, and a restricted vocabulary. In the absence of adequate comprehension, teachers faced difficulties in achieving the intended learning outcomes and ensuring meaningful engagement with the lesson content.

This section explores the coping strategies employed by teachers to navigate challenges in teaching English. The identified themes emphasize personal, interpersonal, and professional approaches, illustrating how educators adapt, collaborate, and innovate to overcome obstacles and maintain instructional effectiveness.

Theme 1: Maintaining calmness and a positive mindset

Teachers highlighted the importance of maintaining optimism as a means to address classroom challenges constructively. Cultivating a positive mindset allowed them to plan more effectively, respond adaptively to difficulties, and foster a supportive and engaging learning environment for their students.

Theme 2: Developing motivation and inspiration

Participants' motivation was sustained by a strong desire to inspire students to succeed academically and in life. This sense of purpose

reinforced their commitment to teaching, enabling them to persist in their roles despite the challenges they encountered.

Theme 3: Practicing flexibility and resourcefulness

Flexibility enabled teachers to adapt to unexpected situations in the classroom, while resourcefulness allowed them to identify alternative methods to convey concepts effectively. Many participants incorporated engaging activities to reduce stress and foster a positive classroom atmosphere, enhancing both teaching effectiveness and student learning.

Theme 4: Seeking advice from colleagues

Collaboration with colleagues emerged as an effective strategy for stress relief and problem-solving. By sharing experiences and insights, teachers cultivated a supportive workplace culture that facilitated the management of professional challenges.

Theme 5: Engaging in professional development

Teachers actively participated in training sessions and seminars to enhance their instructional methods and better address the needs of diverse learners. Engagement in professional development enabled them to stay informed of emerging teaching trends, acquire new pedagogical skills, and strengthen their capacity to deliver high-quality English education.

The findings indicate that teaching English in elementary schools provides teachers with a profound sense of fulfillment and professional satisfaction, particularly when witnessing learners develop language skills and confidence. Simultaneously, teachers encounter numerous challenges that impede the effective delivery of quality English instruction. Addressing these difficulties requires that educators engage in targeted professional

training and cultivate a diverse repertoire of teaching strategies, techniques, and methods tailored to the varied needs of their learners.

Recommendation

This study recommends that teachers implement remedial or enrichment reading programs to support non-readers in improving their English reading and comprehension skills. Participation in these programs can enhance learners' reading proficiency while fostering a positive attitude toward learning English. Additionally, students are encouraged to engage in independent reading during their free time to further expand vocabulary and strengthen comprehension.

At the institutional level, the Department of Education may conduct systematic English assessments to provide a data-driven foundation for technical assistance and targeted support to schools. Furthermore, the Department could organize training sessions or seminars focused on effective classroom strategies for teaching English, delivered through District or Division Offices, to equip teachers with practical skills and pedagogical innovations.

Parental engagement is also crucial. Parents are encouraged to actively monitor their children's learning progress at home, participate in quarterly classroom meetings with advisers to discuss academic performance, and engage in school activities that promote the holistic development of their children. Such collaborative efforts among teachers, administrators, and parents can create a supportive educational ecosystem that enhances English learning outcomes and fosters sustained student achievement.

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The Complexities of Non-SPED Teaching Pupils with Special Needs

Josefa F. Naigar

Republic Act 11650, known as the Inclusive Education Act of 2022, mandates that no learner shall be denied admission on the basis of special needs. The legislation underscores the principle of inclusive education, ensuring that all pupils, irrespective of their challenges, are placed in age-appropriate general education classes within their local schools to receive high-quality instruction, targeted interventions, and comprehensive support (Haug, 2017; Francis et al., 2020). Central to this movement is the integration of learners with special needs alongside their peers without special needs, with general education serving as the primary placement option for all learners (Alquraini & Gut, 2012, as cited in Sahani & Patel, 2023).

Both special education (SPED) and general education teachers are pivotal to the success of inclusive education, collaboratively designing engaging learning experiences and adapting instructional strategies to meet diverse student needs (Byrd & Alexander, 2020). A persistent challenge, however, is the shortage of SPED teachers. In 2019, only 3,679 SPED

teachers were available to serve 360,879 learners with special needs, yielding an alarming teacher-pupil ratio of 1:98 (Bernardo, 2021).

Budgetary constraints and limited facilities for learners with special needs further exacerbate the challenges faced by schools. Consequently, general education teachers are often required to address the educational needs of these pupils despite lacking specialized training (Luna, 2022). While their preparation typically focuses on teaching regular pupils, these teachers are indispensable to the implementation of inclusive education, frequently acting as the linchpins in integrating learners with special needs into mainstream classrooms (Dalonos, 2013).

In light of these challenges, examining the coping mechanisms employed by general education teachers is crucial for managing occupational stress and effectively meeting the needs of all students. Coping strategies, particularly problem-focused and emotion-focused approaches, are central to navigating the demands of inclusive education (Lazarus & Folkman, 1984, as cited in Biggs et al., 2017). Problem-focused coping involves actively addressing and modifying the sources of stress, whereas emotion-focused coping emphasizes managing the emotional responses elicited by these stressors.

Acknowledging the difficulties encountered by non-SPED teachers is especially important as they continue to fulfill mentally and physically demanding roles following the resumption of face-to-face instruction. Understanding their strategies not only informs support systems but also strengthens the overall implementation of inclusive practices in schools.

Navigating Inclusive Education: Roles, Challenges, and Coping Mechanisms

Inclusive education is founded on the principle that learners with special needs have competencies comparable to those of their peers without special needs. This principle affirms that every learner can actively participate both in the classroom and in the broader school community. Central to this philosophy is the legislative mandate that education be provided in the least restrictive environment, meaning that learners with special needs should be integrated as fully as possible with typically developing peers, with general education serving as the primary placement (Alquraini & Gut, 2012). Effective inclusive education recognizes, understands, and addresses differences across physical, cognitive, academic, social, and emotional domains. While some learners may occasionally require specialized services, such as speech or occupational therapy, the goal remains to ensure that all students feel welcomed, supported, and appropriately challenged.

Inclusive education benefits all students. Research spanning three decades shows that learners with special needs make measurable gains in reading, writing, mathematics, and social studies, as reflected in grades and standardized assessments. They also develop stronger communication and social skills, form more friendships, and demonstrate lower rates of absenteeism and behavioral referrals. These learners often report higher self-esteem, greater motivation, stronger teacher relationships, and increased school engagement. Importantly, students without special needs also benefit, gaining acceptance, tolerance, and awareness when educated alongside peers with special needs, particularly when the curriculum promotes inclusivity (Alquraini & Gut, 2012; Kim et al., 2016; Szumski et

al., 2022).

To be successful, inclusive education requires learning environments and instructional models that actively engage all learners. Strong administrative support and collaborative relationships between general and special education teachers are essential. Special education teachers bring expertise in adapting pedagogy for diverse learners, but many general education teachers lack comprehensive knowledge of strategies for supporting students with special needs (Byrd & Alexander, 2020). Collaboration is critical for developing accessible curricula and instructional materials. Special education teachers often create supplementary resources, such as visual aids, manipulatives, or technology tools, and provide one-on-one instruction when necessary.

Early literacy instruction that combines meaningful reading experiences with foundational skill development is more effective than focusing on either in isolation (Mathes et al., 2005 in Denton, 2012; Salminen et al., 2021; Zhang, 2021). Many inclusive classrooms use co-teaching models, in which both teachers share responsibility throughout the day, while others employ a “push-in” approach, with special education teachers providing targeted instruction during specific periods. Regardless of the model, continuous collaboration is essential to monitor student progress and adapt instruction to individual needs.

Despite these strategies, the Philippines faces a critical shortage of special education teachers, placing a heavy burden on general education teachers. In 2019, only 3,679 SPED teachers served 360,879 learners with special needs, resulting in a staggering ratio of 1:98 (Bernardo, 2021).

Enrollment declined during the pandemic but is expected to rise with the resumption of face-to-face classes in 2022. Although the Department of Education offers SPED training to general educators, participation has been

limited and insufficient to meet demand. Budget constraints further threaten the operation of Inclusive Learning Resource Centers (ILRCs), which are vital for providing learners with special needs better access to general education and community support.

In many cases, general education teachers are left to teach pupils with special needs despite lacking specialized training (Luna, 2022). They play a crucial role in inclusive education, integrating learners with special needs into mainstream classrooms. However, effective inclusion requires awareness, positive attitudes, and informed instructional practices (Dalonos, 2013). Byrd and Alexander (2020) recommend that general educators base decisions on accurate assessment data, cultivate empathy and understanding, and communicate openly with all stakeholders. Yet, general education teachers continue to face significant challenges in delivering optimal learning experiences.

Coping with these challenges involves intentional cognitive and behavioral strategies to manage stress. Common mechanisms include self-distraction, stress management, avoidance, seeking emotional or informational support, and behavioral adjustments. Coping can be classified as 'approach,' which directly addresses the stressor (e.g., planning or seeking support), or 'avoidant,' which seeks to evade the stressor (e.g., denial or withdrawal). Similarly, strategies are 'problem-focused,' targeting changes to the stressful situation, or 'emotion-focused,' aimed at managing emotional distress.

Lazarus and Folkman (1984, as cited in Biggs et al., 2017) describe coping as a dynamic effort to manage external and internal demands perceived as taxing. They identify two fundamental styles: problem-focused and emotion-focused coping. Problem-focused coping is employed when individuals believe they can act to modify the stressor, such as solving a

problem or managing deadlines. Those who view challenges as opportunities and trust their abilities are more likely to adopt this approach. In the context of inclusive education, non-special education teachers may apply problem-focused coping by independently developing strategies to address the needs of learners with special needs.

Non-Sped Teachers Handling Pupils with Special Needs: A Case Study

In the province of Antique, only one SPED center provides specialized education services. Limited access to such services necessitates that many learners with special needs attend regular elementary schools. For instance, in the Sibalom South District of Sibalom, Antique, the scarcity of licensed SPED teachers places the primary responsibility for educating learners with special needs on general education teachers. These teachers are tasked with developing instructional materials and fostering inclusive classroom environments, often without specialized SPED qualifications. Consequently, the primary objective of this study was to investigate the challenges encountered by non-SPED teachers in addressing the needs of learners with special needs within this renewed classroom context.

Methodology

This study employed a phenomenological qualitative research design to capture and explore the research questions in depth. The investigation was conducted in the Municipality of Sibalom, Province of Antique, a second-class municipality and one of the three interior towns in the province. Eight teachers from various schools in Sibalom South were purposively selected based on specific inclusion criteria: permanent

employment in Sibalom South, aged 25 to 45 years, not a Special Education (SPED) major, and currently teaching at least one learner with special needs. To protect participants' identities, pseudonyms were assigned.

Data were collected using a researcher-designed interview guide informed by the study's problem statement. The guide comprised four sections: the first explored teachers' lived experiences, the second examined challenges encountered, the third investigated coping mechanisms employed, and the fourth sought proposed interventions to address these challenges. All interviews were recorded, transcribed, interpreted, and thematically categorized. Data analysis followed Colaizzi's method, and the findings were synthesized into a phenomenological description capturing the core structure of the phenomenon. To ensure validity, results were shared with participants to confirm alignment with their experiences.

Prior to data collection, permissions were obtained from the Schools Division Superintendent of Antique and the District Supervisor of Sibalom South. Participants received informed consent letters detailing the study's purpose and their role. Interviews were scheduled at participants' convenience and conducted virtually between December 2022 and January 2023. Throughout the research process, the researcher ensured adherence to ethical standards, including coordination with relevant authorities. Participants' anonymity was preserved through pseudonyms, and confidentiality was rigorously maintained in accordance with the Data Privacy Act of 2012. Informed consent was obtained to ensure participants were fully aware of the study and their involvement.

Findings

Participants in this study were invited to share their reflections and daily experiences in teaching learners with special needs. They described

and compared the various learning and teaching situations they encounter while supporting these learners in their classrooms.

Teachers face a wide variety of special needs among their students.

The participants, as non-SPED teachers, reported working with learners who require varying levels and types of support. Judy and Sally observed that some learners are highly capable and benefit from additional challenges, whereas others with cognitive limitations require substantial assistance. Similarly, Len highlighted the diversity within the classroom, noting the presence of both high-achieving learners who thrive with enrichment and learners with unique educational needs who necessitate tailored support.

Supporting learners with special needs is not a one-size-fits-all endeavor, as they may exhibit both remarkable abilities and significant limitations. Some learners excel cognitively despite their challenges, while others face physical or cognitive constraints. Labrague (2018) identified common special education needs in Catbalogan City, including speech-hearing impairments, Down syndrome, autism, learning disabilities, ADHD, intellectual disability, cerebral palsy, and visual impairment. Moreover, Gyasi et al. (2020) reported that teachers often possess limited knowledge of learners' special educational needs, placing non-SPED teachers at a disadvantage in addressing this diverse range of requirements.

Children with special needs also have distinct learning styles.

Participants emphasized that learners with special needs acquire knowledge differently from their typically developing peers, requiring individualized support and understanding. Beyond physical or behavioral differences, these learners exhibit unique approaches to learning due to diverse physical, cognitive, or developmental challenges. A common issue among them is a

limited attention span, particularly when topics fail to engage their interest. Consequently, it is essential for teachers to identify how each learner naturally absorbs knowledge and skills to optimize learning outcomes. Every learner, regardless of special needs, requires instructional strategies tailored to their individual strengths and challenges to foster academic success (Smith & Renzulli, 2020). Teachers must therefore develop the capacity to assess and recognize each learner's preferred learning style, enabling more effective acquisition of knowledge and skills.

As a result, teachers need to adjust their instructional approaches. Due to variations in learning styles and educational needs, non-SPED teachers must adapt their methods, even when they possess limited formal training in special education. Despite these challenges, learners can remain motivated and achieve academic success through strategies that enhance engagement and performance, supported by teachers' self-efficacy the belief in their ability to succeed despite constrained resources (Sarfraz et al., 2022). Nonetheless, targeted professional training for non-SPED teachers would further enhance their effectiveness in supporting learners with special needs.

Passion plays a crucial role in successfully handling pupils with special needs. Teaching learners with special needs is demanding, requiring patience, adaptability, and specialized instructional approaches. Participants acknowledged these challenges but emphasized that their continued commitment to teaching, despite obstacles, stems from a deep passion for the profession and genuine care for their learners. Although such challenges can be demotivating, finding purpose and meaning in their work enables teachers to persevere and excel. Passionate educators inspire learners and create engaging, enjoyable learning experiences. Serin (2017)

identified teacher passion as a key contributor to student achievement, highlighting that passionate teachers invest effort to design lessons that are interactive, hands-on, and stimulating.

When asked about the difficulties they face, participants shared a range of challenges in guiding learners with special needs.

Additional workload for individualized instructional materials. Non-SPED teachers reported experiencing exhaustion from creating supplementary materials tailored to the diverse learning styles of learners with special needs. Effective inclusive education requires that no child is left behind, with classrooms accommodating the distinct characteristics of all learners. However, developing specialized instructional materials poses a significant challenge for non-SPED teachers, who typically receive only basic training, unlike SPED teachers trained in these methodologies. Learners with special needs often require additional support to keep pace with their peers, including visual, verbal, auditory, or kinesthetic inputs to enhance comprehension and motivation. Ozkubat et al. (2022) emphasize that structured and enriched learning experiences are critical for improving information processing and sustaining motivation among children.

Difficulty in classroom management. Beyond the additional workload, teachers face challenges in managing the behaviors of learners with special needs, which can disrupt the learning environment for the entire class. These learners may exhibit inappropriate behaviors due to attention difficulties or limited behavior regulation at home, making classroom management particularly demanding. Such behaviors can lead to loss of control and hinder the smooth delivery of instruction. Karabiyik and Avcioglu (2021) emphasize the importance of equipping teachers with strategies to prevent and manage inappropriate behaviors effectively. The

inclusion of learners with special needs in general classrooms further highlights the limited experience and training that non-SPED teachers often have in implementing effective classroom management techniques.

Lack of proper education to teach SPED. The primary challenge faced by non-SPED teachers is insufficient training in special education pedagogies. Many participants reported feeling inadequately prepared to address the needs of learners with special needs. This lack of specialized knowledge constrains their ability to implement effective instructional strategies, a concern similarly highlighted by Allam and Martin (2022). Despite these limitations, teachers expressed a strong willingness to participate in professional training to enhance their capacity and demonstrated consistent efforts to perform effectively in inclusive classrooms.

To navigate these challenges, teachers employ various coping mechanisms that support their resilience and effectiveness in inclusive learning environments.

De-stressing through fun activities. When feeling overwhelmed, teachers engage in relaxing and enjoyable activities to clear their minds and alleviate stress. By recognizing stressors and seeking social or emotional support such as listening to music or socializing they adopt positive coping strategies. Clipa (2018) notes that such approaches enhance teacher performance, in contrast to negative strategies, such as avoidance. Developing self-awareness of stressors is essential for effective coping, as neglecting or evading challenges often exacerbates anxiety

Motivation through reinforcements. Teachers often apply behavioral theories learned during their education to motivate learners.

They recognize that reinforcements and consequences can influence behavior and learning motivation. However, managing challenging behaviors effectively requires more advanced knowledge to avoid inadvertently reinforcing negative actions. McKenna et al. (2016) recommend providing non-SPED teachers with training on function-based replacement behaviors to more effectively address student tantrums. While reducing or replacing negative behaviors can be challenging and sometimes ineffective, introducing and reinforcing appropriate alternative behaviors represents a more optimal strategy.

Thorough learning assessment to improve strategies. To compensate for gaps in their special education knowledge, teachers regularly assess learners' performance to identify areas requiring additional support. Frequent assessments enable teachers to evaluate the effectiveness of their instructional strategies, adjust learning goals, and tailor lessons to individual needs. Holmes (2018) found that frequent assessment enhances student engagement, retention, and overall learning outcomes. Moreover, these assessments highlight areas where teachers face challenges, informing targeted professional development and support. By addressing both learner needs and instructional difficulties, this approach reduces teacher anxiety and strengthens overall teaching performance.

Conclusion

The teachers' reflections highlight the complex and multifaceted realities of inclusive education. Successfully addressing the diverse needs of learners, continuously adapting instructional strategies to accommodate varying learning styles, and managing classroom disruptions effectively require not only professional expertise but also a profound commitment to

the teaching profession and genuine care for learners. These challenges are further compounded by limited resources, inconsistent levels of support, and the ongoing need to cultivate an environment in which every learner feels valued and included. Recognizing both the difficulties and the meaningful rewards experienced by teachers provides a comprehensive understanding of their lived realities, emphasizing not only the professional challenges they encounter but also the resilience, dedication, and perseverance that define educators committed to inclusive education.

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Multigrade Teaching in the Philippines

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Multigrade teaching arises within a graded education system when a single classroom includes learners from two or more grade levels, in contrast to the conventional model in which each class consists of students from only one grade level. While age and grade are typically aligned, variations occur in contexts where grade repetition or acceleration is common. Berry (2017) identifies three primary reasons for the adoption of multigrade teaching across both developed and developing countries. First, it is a necessity in small, often remote schools with limited staff, where one to three teachers deliver the full primary cycle across up to eight grade levels. These “multigrade schools” extend educational access to marginalized populations and increase participation particularly among girls by bringing schooling closer to communities. Second, in larger urban or suburban schools, multigrade teaching is used to address uneven enrollment, combining grade levels to balance class sizes or to compensate for absent teachers when substitutes are unavailable, as reported in parts of Africa and the Caribbean (World Bank, 2017). Third, it may serve as a deliberate pedagogical choice. In some developed countries, multiage classrooms are promoted to foster social development, while in developing

contexts, multigrade teaching is often valued for its cost-effectiveness in expanding access to education (Berry, 2017).

Beyond widening access, multigrade instruction has the potential to equal and in some cases surpass—the quality of monograde classes (Barbetta et al., 2023), contributing not only to academic achievement but also to learners’ social development. Realizing this potential requires curricula aligned with learners’ diverse abilities, effective classroom management strategies such as flexible grouping, and sustained investments in teacher training (Bacani, 2020). As an alternative education modality, multigrade teaching entails instructional methods that diverge significantly from conventional approaches (Naparan & Alinsug, 2021). Accordingly, teachers’ professional competencies must be continuously strengthened through targeted training and capacity-building initiatives (Anzano et al., 2021).

Scheduling practices also shape the quality of multigrade instruction. Many schools adopt uniform timetables in which all grade levels in a combined class study the same subject at the same time (e.g., Science and Health from 9:00–9:40 a.m., followed by Mathematics after recess). Others adopt integrated scheduling, enabling simultaneous delivery of multiple subjects across grades. Classroom management styles likewise vary: approximately 80 percent of multigrade schools in the Philippines rely on traditional management practices such as structured rules and routines, while a smaller proportion employ innovative, learner-centered approaches (DepEd, 2018). Although methods such as cooperative learning, peer teaching, and interactive activities (e.g., singing, games) are increasingly used, conventional lectures and teacher-led discussions remain the most prevalent strategies (Hyry-Beihammer & Hascher, 2015).

Multigrade education is neither a recent innovation nor an

experimental model. As Bacani (2020) underscores, it has existed for over a century, shaped largely by geographic isolation and economic necessity. In the Philippines, multigrade teaching has proven to be a cost-effective strategy for reaching underserved, remote areas with low student populations per grade. At present, nearly one-third of the country's public elementary schools implement multigrade instruction, enhancing both access and learning outcomes. Ultimately, multigrade teaching entails the simultaneous instruction of learners across different grade levels, and often across diverse ages and abilities, within a single classroom. Such a context requires not only specialized pedagogical strategies and methodologies but also adaptive classroom management skills, reflecting the complex realities and opportunities inherent in multigrade education.

Multigrade Teaching in Various Contexts

Multigrade teaching in the Philippines presents a complex set of experiences shaped by geographical isolation, socio-economic conditions, and the simultaneous instruction of multiple grade levels. Teachers deployed to remote communities face unique demands, yet many display resilience and dedication in fulfilling their responsibilities. For instance, Castigador (2019) examined the lived experiences of three seasoned multigrade teachers in Lemery, Iloilo, highlighting their personal journeys into the profession, family support, time management, and flexibility. The study identified recurring themes anchor or lifeline, uncertainty, and submissiveness which reflected acceptance, acknowledgment, and continuous learning. Similarly, Lariosa et al. (2022) reported that multigrade teachers in remote Sarangani barangays derived meaning and satisfaction from their work, valuing community hospitality and developing strong professional commitment despite persistent hardships.

In contrast, other studies emphasize the severe material and logistical constraints of multigrade settings. Quejada and Orale (2018), for example, documented pervasive poverty in a Samar multigrade school, where teachers frequently used personal funds to provide learning materials and food for students. Access to the school required arduous travel, and pupils faced similarly challenging commutes. Although participants still found teaching fulfilling, most expressed a preference for assignments in more accessible locations.

From a broader perspective, Montalbo et al. (2021) synthesized 18 multigrade studies conducted across various contexts, concluding that teacher success depends largely on wholehearted commitment, a sense of accomplishment, and recognition of the broader value of multigrade education. The review emphasized that resilience, resourcefulness, and innovation enable teachers to overcome barriers, while recommending immersive internships, mentoring programs, and certification pathways specifically tailored to multigrade instruction. In a similar vein, Naparan and Alinsug (2021) found that multigrade classrooms can achieve outcomes comparable to larger schools when teachers employ learner-centered strategies such as differentiated instruction, collaborative learning, and real-life applications.

The literature consistently highlights interconnected challenges that affect teachers' motivation, instructional quality, and overall well-being. These include difficulties in lesson planning, time and classroom management, curriculum adaptation, resource provision, training deficits, and excessive workloads. Kalender and Erdem (2021) grouped these into three thematic areas: teachers' negative perceptions of multigrade work arising from exhaustion and demotivation, the complexity of catering to multiple grade levels in lesson planning, and the strain of excessive

paperwork. Similarly, Mulaudzi (2016) underscored the lack of both pre-service and in-service training, the mismatch of subject assignments, and the neglect of proven multigrade strategies such as peer tutoring and cooperative learning.

Other studies have detailed operational and structural constraints. Erden (2020) identified problems in management, instructional strategies, and assessment, attributing these to weak institutional support. Lapuz (2015) cited poor accessibility, inadequate facilities, financial burdens, and reduced family time for teachers assigned to far-flung schools. Okamoto and Potane (2020) observed that classrooms originally designed for single-grade use hindered effective multigrade management, while the preparation of instructional materials remained costly and time-consuming. Daga (2021) distilled six recurring challenges: lesson planning, resource utilization, assessment, process management, performance monitoring, and reporting. These issues were compounded by inadequate contextualized lesson plans, limited parental support, and poor internet connectivity. Likewise, Montalbo et al. (2021) emphasized geographic isolation, insufficient preparation, and the strain of balancing multiple roles, all of which contributed to burnout. During the COVID-19 pandemic, Akdaş and Kalman (2021) observed that persistent problems such as parental indifference, unsuitable materials, and poor infrastructure were further exacerbated by distancing protocols and restrictions. Collectively, these findings underscore the need for systemic reforms in teacher training, resource allocation, infrastructure development, and administrative support.

Coping strategies in multigrade classrooms often blend personal resilience with practical adaptations to address structural and contextual barriers. Montalbo et al. (2021) identified resourcefulness, innovativeness, and resiliency as core coping traits, supplemented by a sense of

accomplishment and recognition of the value of multigrade teaching. Larson (2021) similarly found that acceptance, active coping, and planning were the most common approaches. Other strategies highlight professional growth and collaboration. Makabenta (2021) emphasized time management, openness to change, and peer mentoring, while Naparan and Alinsug (2021) documented coping practices such as prayer, use of online resources, self-conditioning, and continuous planning. UNESCO (2015) further encouraged viewing diversity as an asset, promoting collaborative learning, multitasking skills, and partnerships with local communities to reduce teacher isolation and enhance resource access.

Ultimately, coping in multigrade classrooms is multifaceted. Teachers rely on adaptability, creativity, and collaboration not only to survive challenging conditions but also to enhance student learning. These mechanisms demonstrate that, even in resource-constrained environments, multigrade education can succeed when grounded in strong personal commitment and supported by community engagement.

Transition Experiences of Multigrade School Teachers: A Case Study

Teaching in a multigrade classroom requires educators to adopt approaches specifically tailored to the distinctive demands of this learning environment. Such assignments inevitably pose challenges that test teachers' capacity to maintain instructional effectiveness and achieve desired learning outcomes. This study seeks to deepen understanding of the complexities inherent in multigrade teaching. It examines how teachers transition from conventional single-grade classrooms to managing learners of diverse ages and abilities, the challenges encountered during this shift,

and the strategies employed to address them.

Methodology

This study employed a qualitative research design, specifically utilizing the phenomenological method. Phenomenology seeks to capture the essence of lived experiences by providing both textural and structural descriptions of participants' perspectives. The research was conducted in the Municipality of San Remigio, Philippines, where 13 multigrade schools are located. From these, seven teachers representing seven different schools were purposively selected. The group consisted of five female and two male teachers, chosen according to the following criteria: they had to be permanent, regular teachers; possess at least three years of experience in multigrade teaching; have participated in the implementation of modular distance learning; and have been involved in preparations for the transition to in-person classes. The list of potential participants was secured through the Office of the Schools District Supervisor, and initial contact was established through school visits.

Data were gathered through a semi-structured interview guide composed of three main questions, each supplemented by two to four follow-up prompts. Prior to data collection, formal permission was secured from the Schools Division Superintendent, the Schools District Supervisor, and the school heads of the participating institutions. Participants were fully oriented regarding the study's objectives, procedures, and their roles. They were informed of their rights, potential benefits, and possible risks, and assured of anonymity and confidentiality. They were also reminded of their right to withdraw from the study at any stage without penalty.

Interviews were conducted in June 2023 and completed within the same month. The researcher visited each school, provided the interview

guide, and conducted the interview upon approval. With participants' consent, interviews were video-recorded; if a participant declined, audio recording was used as an alternative. To ensure reliability, a focus group discussion (FGD) was conducted after the individual interviews to verify the consistency of responses.

All responses were coded using pseudonyms to safeguard participant confidentiality. The study adhered to the key stages of phenomenological analysis, with data collection and analysis conducted in part simultaneously. Interviews conducted in Filipino or in the local mother tongue, such as Kinaray-a, were transcribed and translated into English. Observation notes were likewise examined. Thematic analysis was applied to systematically organize and interpret the data according to the research questions.

Findings

Through careful scrutiny, comparison, and analysis of the information gathered from the interviews and focus group discussion, it was revealed that the lived experiences of multigrade teachers centered on their emotions, adaptation processes, and approaches to addressing learners' concerns within the multigrade classroom. The major challenges they encountered were closely tied to the realities of managing a learning environment with diverse learners, as well as the various factors influencing the teaching–learning process.

To further explore whether participants initiated specific strategies in response to these challenges, the researcher also examined their coping mechanisms. From this analysis, four overarching themes emerged, capturing the core of the respondents' lived experiences as multigrade school teachers.

Learners' diversity as a source of empowerment. Multigrade teaching commonly entails instructing children from two or even three grade levels within the same classroom, particularly in schools characterized by low enrollment, limited teaching staff, and only a few classrooms. Such contexts are prevalent in last-mile schools, with at least six schools in the District of San Remigio fitting this profile. As a result, classrooms are marked by diversity not only in age and sex but, most significantly, in learners' abilities. Rather than perceiving this diversity solely as a challenge, participants emphasized that it has encouraged them to exercise greater creativity and has empowered them to explore more flexible and innovative teaching strategies.

Community immersion is enlightening. Multigrade schools are often situated in close-knit communities where relationships extend beyond the classroom. Teachers not only become familiar with residents but, in many cases, share in their homes, resources, and daily way of life. In remote areas, teachers may reside within the school premises or with local families, leading to full immersion in the community. Such experiences foster a deeper understanding of local attitudes, values, and aspirations, enabling teachers to build stronger connections with parents and to engage with learners in ways that reflect and respect their lived realities.

Education as a lifeline. Even in single-grade schools, education is widely regarded as a vital pathway to social and economic advancement, particularly by parents. Multigrade teachers observed that parents in their communities consistently demonstrate a strong aspiration to improve their families' lives through their children's schooling. Learners themselves also recognize education as a crucial avenue for better opportunities. Within these schools, both parents and children view education not merely as a formal requirement but as a lifeline toward a more secure and promising

future.

Learning is a continuous process. Assignment to a multigrade school often reinforces the notion that learning is a continuous process. Even after completing formal education and gaining field experience, teachers in these settings recognize the need for ongoing growth. They develop not only in their instructional skills but also in leadership, adaptability, and social relationship-building. For many, multigrade teaching proves to be professionally fulfilling, as it nurtures both personal growth and stronger human and community relations.

Teaching and learning are inherently complex processes, particularly within the multigrade school context. Although research on teachers' lived experiences in these settings remains limited, existing studies provide valuable insights. Castigador (2019) observed that multigrade teachers demonstrate an understanding of their practice characterized by knowing, acknowledging, and continuous learning. In a similar vein, Lariosa et al. (2022) underscored the passion and commitment that sustain multigrade teachers in their roles. Conversely, Quejada and Orale (2018) reported that, while teachers often find the work rewarding, many also express a preference for assignments in schools with easier access and more favorable learning environments.

The discourse on multigrade education frequently emphasizes its disadvantages. Teachers are often deployed to remote areas with limited accessibility, where communities face economic hardship and living conditions differ substantially from those in rural or urban centers. Schools in these contexts frequently lack even the most basic facilities, compelling learners to depend on outdated or insufficient learning materials. At the forefront of these challenges are the teachers themselves, who must navigate and manage these conditions while striving to deliver quality

education.

From the analysis of the interview and FGD responses, this study identified four major themes that encapsulate the lived experiences of multigrade teachers

Limited learning resources and facilities. The shortage of learning resources presents a significant challenge in multigrade classrooms. The physical condition of school buildings itself reflects the scarcity of support available to teachers, learners, and stakeholders, who often operate within rundown or makeshift facilities. To bridge these gaps, teachers frequently design and produce their own supplementary materials, particularly those requiring contextualization and localization. Financial constraints further compound these difficulties, as multigrade schools typically receive only limited allocations for their Monthly Operating and Other Expenses (MOOE), which are often inadequate to fund projects aimed at improving the school environment. In the absence of teacher ingenuity and resourcefulness, these limitations risk undermining the quality of learners' basic education.

Heavy workload. One of the most pressing drawbacks of multigrade teaching is the heavy workload borne by teachers. They are tasked with managing multiple learning areas across two or more grade levels, a responsibility that demands significant time and preparation. Beyond instructional duties, teachers must also comply with a wide array of reporting requirements and administrative deliverables on daily, weekly, monthly, and quarterly bases. The burden is further intensified by ancillary assignments and, in many cases, by serving as school-in-charge. Collectively, these responsibilities create a workload that is both demanding and unsustainable, placing considerable strain on teachers' professional and personal well-being.

Difficulty in classroom management. Classroom management challenges are present in both single-grade and multigrade settings; however, they take on added complexity in the latter. In multigrade schools, these challenges stem less from learner behavior and more from the structural demands of the learning environment. Teachers must carefully design and organize classroom spaces, including the arrangement of furniture and learning materials, to accommodate multiple grade levels within a single room. The central task is to ensure that all learners, despite differences in age, grade level, and ability, are provided with equitable opportunities for engagement and learning.

Limited opportunities for technology-supported teaching and learning. Modern educational technology is often absent in multigrade schools, primarily due to the lack of internet connectivity or, in many cases, even electricity infrastructure. Electricity, once considered non-essential, has now become fundamental for the use of basic instructional equipment such as televisions, audio systems, and projectors. Without electricity and internet access, teachers are deprived of updated teaching resources and emerging educational trends, which limits their capacity to design engaging and interactive lessons. Consequently, the absence of technology not only diminishes instructional effectiveness but also reduces learners' motivation and enjoyment.

These findings are consistent with previous research highlighting the multifaceted challenges of multigrade teaching. Kalender and Erdem (2021) observed that multigrade teachers view their work as exhausting and demanding, often compounded by low learner participation. Similarly, Mulaudzi (2016) noted teacher disillusionment with multigrade school assignments. Other scholars (Lapuz, 2015; Erden, 2020; Okamoto & Potane, 2020; Daga, 2021; Montalbo et al., 2021) have documented parallel

difficulties, including geographical isolation, curriculum and assessment challenges, insufficient learning materials, lack of specialized training, and minimal parental involvement.

In many communities, teachers are not only responsible for instruction but are also regarded as problem-solvers for broader school and community concerns. While they play a pivotal role in sustaining education under difficult circumstances, teachers themselves face physical, mental, and emotional strain. Despite these challenges, it is noteworthy that many have developed adaptive strategies and coping mechanisms that enable them to persevere in their work. Such resilience is particularly crucial for educators assigned to multigrade schools, where professional demands are amplified by resource and contextual constraints.

Being resourceful, innovative, and resilient. Resourcefulness is a critical attribute for teaching success, particularly when supporting learners with clear goals and aspirations. Innovative teaching strategies extend beyond the simple transmission of lessons; they foster curiosity, inspire a passion for learning, and equip students with the skills necessary to achieve meaningful outcomes. Equally important is resilience, which enables teachers to adapt to the demands of their profession and address challenges that disrupt the teaching–learning process. Resilient educators concentrate on factors within their control and influence, rather than dwelling on circumstances beyond their power. For multigrade teachers, the interplay of resourcefulness, innovation, and resilience is indispensable, as these qualities sustain their effectiveness despite limited resources and heightened professional demands.

Ability to collaborate and learn from each other. Collaboration, defined as working together toward a shared goal, is fundamental in education, where the ultimate objective is the improvement of learner

outcomes. Teacher collaboration entails collective discussion, planning, and problem-solving, enabling educators to share insights and strategies that strengthen instructional practices. Often referred to as cooperative teaching, this approach is particularly valuable in multigrade schools, where teachers face heightened challenges. Through collaboration, educators can pool resources, integrate their diverse strengths and expertise, and generate synergy that extends beyond individual classrooms to address school-wide concerns.

Presence of active parental and community support. Research consistently demonstrates that learners with engaged parents exhibit better attendance, improved behavior, higher academic performance, stronger social skills, and greater adaptability to the learning environment. Parental involvement nurtures a lifelong love of learning, which is critical for sustained success. Parents play an essential role by setting realistic expectations, establishing consistent homework routines, monitoring progress, and reinforcing the value of effort. Beyond the household, active community participation in school programs and projects significantly strengthens multigrade schools. Given the persistent limitations in resources, fostering robust school–community partnerships is imperative. Equally important is the community’s commitment to supporting schools, ensuring that educational initiatives are both sustainable and impactful.

Believing in the power of prayer. Prayer is widely acknowledged as a powerful coping mechanism across various professions, and teaching is no exception. When other strategies prove insufficient, many educators turn to prayer as a sustaining force that provides strength and hope. For multigrade teachers, prayer often functions as both a personal source of resilience and a professional anchor amidst daily challenges. For learners, the integration of prayer into classroom life reinforces the role of faith as an

essential aspect of their holistic development and daily experience.

The literature offers valuable insights into how multigrade teachers manage the demands of their profession. Montalbo et al. (2021) identified resourcefulness, innovativeness, and resilience as key coping strategies, while Larson (2021) emphasized the importance of acceptance and systematic planning. Similarly, UNESCO (2015) noted that recognizing and leveraging learner diversity can itself serve as a coping mechanism, transforming challenges into opportunities for inclusive and adaptive teaching.

Recommendation

The study recommends targeted policy interventions to strengthen the multigrade education system. Specifically, increased funding allocations are essential to address resource gaps and support the professional needs of teachers. Streamlining the multigrade curriculum is likewise necessary to ensure coherence, manageability, and alignment with national learning standards. Furthermore, policies should promote inclusivity, diversity, and collaboration as guiding principles of practice. Collectively, these measures are expected to enhance teacher effectiveness, improve learner outcomes, and ensure that multigrade education remains both equitable and sustainable.

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Chapter 3

Contextualized Teaching and Learning: Strategies from Kindergarten to High School Classrooms

Effective teaching requires strategies that respond to learners' developmental needs, subject demands, and cultural contexts. This chapter synthesizes six studies that highlight diverse pedagogical approaches across educational levels and disciplines. Teaching Strategies on Corrective Feedback examines responsive methods for guiding student improvement, while The ES Claveria Approach in Kindergarten Teaching and Strategies for Kindergarten Teaching emphasize innovative foundations for early childhood learning. At the secondary level, Peer Discussion in Teaching High School Physics and Realistic Mathematics Education Approach showcase active, applied learning. Finally, The Use of Myths and Legends in Teaching Ecological Preservation demonstrates contextualized pedagogy that integrates culture and sustainability.

Teaching strategies on corrective feedback

Mhay B. Aguila & Cherry Ivy C. Alvis

Corrective feedback occupies a central role in the learning process, particularly in the assessment of essay writing, as it enables students to identify weaknesses and take steps toward improvement. It functions not only as a mechanism for error correction but also as a catalyst for the development of writing proficiency, critical thinking, and reflective learning. Nevertheless, while its instructional value is well recognized, many students report feelings of worry and anxiety when receiving critical comments on their essays.

A major source of this apprehension is the fear of failure. Learners often perceive corrective feedback as a judgment of overall competence rather than as constructive guidance for specific skills. When feedback is interpreted in this way, students may disengage from the process, limiting opportunities for growth. The sense of vulnerability is heightened when feedback is experienced as overly harsh, personal, or judgmental, further discouraging students from engaging meaningfully with the revisions expected of them.

This challenge is amplified in classroom environments where feedback is delivered without sensitivity or encouragement. In such

settings, students may perceive the learning space as unsafe, resulting in reduced motivation and weakened trust in the teacher–student relationship. The absence of rapport and psychological safety restricts students’ willingness to accept feedback and apply it productively, thereby undermining the very purpose of assessment and guidance.

Written corrective feedback is particularly critical because students often struggle to recognize and correct their own errors without external support. Explicit guidance provides clear indicators of mistakes and pathways for improvement, enhancing students’ ability to self-monitor and apply conventions of effective writing. By drawing attention to the different dimensions of writing grammar, coherence, organization, and argumentation feedback helps learners understand the complexity of their challenges and target specific areas for development. This highlights the importance of feedback that is both detailed and purposeful.

At the same time, research indicates that students’ expectations regarding corrective feedback vary. Shinta et al. (2023) emphasize that while some learners prefer direct corrections for clarity and efficiency, others benefit more from indirect strategies that promote independent problem-solving. Such variation underscores the need for adaptive feedback practices aligned with students’ preferences, learning styles, and emotional readiness. In doing so, teachers not only support technical skill development but also nurture learner confidence, resilience, and motivation in writing.

Perceptions and Practices of Corrective Feedback: Aligning Teacher Strategies with Student Preferences in Writing Assessment

Corrective feedback can be defined as a pedagogical method that identifies and capitalizes on embedded learning opportunities (Han, 2019).

It serves as a form of communication intended to influence learners' thinking and behavior by guiding them toward improvement. When students make mistakes, corrective feedback provides structured support: it identifies the error, clarifies the reasoning behind it, and suggests or elicits alternative strategies. In doing so, it prompts students to reflect on what could have been done differently and reinforces more effective approaches to learning.

A growing body of literature confirms the effectiveness of corrective feedback, even though teachers may not always be conscious of providing it during instruction (Ha et al., 2021; Patra et al., 2022; Zhang et al., 2025). Learning frequently arises from mistakes, and feedback allows educators to address these productively. For instance, when students introduce misinformation in class discussions, timely corrective input enables teachers to replace inaccuracies with updated knowledge, particularly in language-related subjects where precision is essential.

Research further emphasizes the importance of how feedback is delivered. Melkersson and Annertz (2020) argue that students should view written corrective feedback as a constructive tool for growth rather than as a punitive measure. Harsh or overly critical approaches such as excessive red markings can demotivate learners by evoking anxiety or discouragement. Their study highlights that feedback should be introduced progressively, giving students the time and space to adapt, internalize, and apply it to their work. Importantly, the visual presentation of feedback such as ink color, density of markings, or annotation style also shapes students' perceptions. Overuse of red ink, for example, may create cognitive overload or confusion, thereby undermining its intended purpose.

The present study aligns with this perspective by examining not only the substance of feedback but also its form, considering how visual cues and

delivery styles influence students' motivation and receptiveness. Recognizing these factors underscores the dual responsibility of educators: to provide feedback that is both pedagogically sound and psychologically supportive.

In terms of feedback type, many students consider direct feedback which explicitly addresses grammar, organization, content, and mechanics the most beneficial. Ganapathy et al. (2020) reported that students often prefer teachers to mark every error, believing that comprehensive correction enhances comprehension, clarifies their mistakes, and supports long-term retention. By contrast, Canals et al. (2020) observed that some teachers adopt a more selective approach, choosing to correct only those errors that significantly impede understanding. This method is intended to prevent students from feeling overwhelmed by excessive markings, thereby reducing demotivation and maintaining engagement.

Sukha and Listyani (2022) identified three primary corrective feedback techniques commonly used in classroom practice:

- Indirect feedback – drawing attention to errors without explicitly providing the correction, for instance, through underlining, circling, or highlighting problematic areas in the text.
- Metalinguistic feedback – providing learners with error codes or symbols that indicate the nature of the mistake (e.g., grammar, word choice), encouraging students to self-correct.
- Direct feedback – supplying the correct form directly within the student's text, ensuring immediate clarity but potentially limiting opportunities for independent problem-solving.

These techniques illustrate the spectrum of corrective feedback strategies, ranging from highly supportive to more autonomous learning-oriented approaches. The choice of method often depends on instructional

goals, learners' proficiency levels, and the balance teachers wish to strike between scaffolding and fostering self-reliance.

Maawa and Dela Cruz (2019) observed that teachers frequently prefer direct feedback, which involves explicit error correction accompanied by detailed explanations. This method not only identifies the error but also provides guidance on how to correct it, thereby reducing confusion and supporting immediate improvement. Similarly, Madini and Qutob (2020) emphasized the effectiveness of direct feedback in enhancing students' writing performance, as it delivers clear instructional guidance, even if not every error is explicitly marked. By contrast, indirect feedback, while beneficial in encouraging learners to engage in independent problem-solving, may at times be perceived as unclear or ambiguous. Since it highlights the presence of an error without elaborating on its nature or providing a correction, students may struggle to identify the exact issue. A third form, metalinguistic feedback, provides learners with coded symbols or written explanations that specify the type of error. Nawaz et al. (2022) found that teachers often employ this method to address grammatical issues, vocabulary use, capitalization, spelling, and punctuation, while also guiding students on broader concerns such as coherence and cohesion. This approach not only informs learners about the category of their mistakes but also fosters reflection and deeper understanding of language use.

Teachers' Practices and Typologies and Students' Preferences and Uptake of Corrective Feedback for Reflective Essays: A Case Study

This study aims to investigate the practices and typologies of teachers, as well as the preferences and uptake of students, in relation to corrective feedback on reflective essays in the senior high school context.

Specifically, it seeks to: (1) describe teachers' practices and typologies of corrective feedback employed in evaluating reflective essays, (2) identify students' preferences regarding the types and delivery of corrective feedback, and (3) assess the extent to which students incorporate and apply the feedback they receive.

Methodology

This study employed a descriptive research design. Content analysis was utilized to examine teachers' practices and typologies of corrective feedback, while a checklist questionnaire was administered to assess students' preferences and uptake. The questionnaire covered various dimensions of corrective feedback, including level of detail, focus, paper-marking techniques, and feedback type. It also explored students' responses when reading their teachers' comments and their attitudes toward the feedback provided.

The study was conducted in a private college in Quezon Province, Philippines. The participants were 115 purposively selected Grade 12 HUMSS students enrolled in Creative Non-Fiction who had prior experience receiving corrective feedback from their teachers. The total Grade 12 HUMSS population was 300, from which a specific block was chosen through cluster sampling based on the presence of the required study characteristics and willingness to participate.

For the analysis of teachers' practices and typologies, content analysis was employed, whereas students' preferences and uptake were determined through the survey instrument. To ensure clarity, reliability, and organization, the questionnaire was reviewed by the research adviser and validated by three experts. Recommendations from the validators were incorporated, leading to revisions and refinements of the instrument. Upon

approval, the survey was administered in person during the first week of April 2025, with assistance from the Grade 12 English teachers. Respondents were briefed on the purpose of the study and reminded of the importance of providing honest and accurate responses. All completed questionnaires were collected on the same day.

A confidentiality clause was included in the instrument to assure participants that all information would be used solely for research purposes and treated with the highest level of confidentiality.

Findings

The analysis of teachers' corrective feedback practices in reflective essays revealed several notable patterns. In terms of the details of errors, an overwhelming majority of teachers (98.73%) preferred to correct most of the errors in students' reflective essays, while only 1.27% indicated a preference for selecting some repetitive errors. Regarding the color of the correcting pen, the highest percentage of teachers (39.24%) preferred using light-colored pens, whereas the lowest percentage (25.32%) reported using a red pen. With respect to the focus of feedback, the most emphasized aspect was organization and paragraph construction (32.01%), while the least emphasized was content (5.93%). In terms of paper-marking techniques, more than half of the teachers (51.66%) reported using the statement method, in contrast to only 0.91% who employed crossing out errors as a corrective approach. Finally, for the types of feedback, nearly half of the teachers (49.65%) favored indirect feedback as their primary method, whereas negative feedback was the least preferred, reported by only 0.70% of respondents.

Table 1*Details of corrective feedback*

Area	F	%
Amount of Error		
Correct most of the error	78	98.73
Select some repetitive error	1	1.27
Color of Correcting Pen		
Light Color Pens	31	39.24
Dark Color Pens	28	35.44
Red Pen	20	25.32
Focus of Feedback		
Organization and Paragraph Construction	81	32.01
Mechanics	68	26.89
Grammar	61	24.11
Vocabulary Choice	28	11.07
Content	15	5.93
Paper Marking Techniques		
Statement	171	51.66
Proofreading symbols	74	22.36
Underline errors	65	19.64
Exclamations and Questions	9	2.72
Writing Questions	9	2.72
Crossing out errors	3	0.91
Types of Feedback		
Indirect Feedback	284	49.65
Positive Feedback	165	28.85
Direct Feedback	76	13.29
Metalinguistic Feedback	43	7.52
Negative Feedback	4	0.7

Overall, the findings indicate that teachers generally prioritize correcting the majority of errors in students' reflective essays, employing light-colored pens and focusing feedback on organization and paragraph construction. Their preferred marking technique is the use of statements, complemented by a tendency toward indirect forms of feedback. Collectively, these practices reflect a deliberate orientation toward constructive and structured correction methods designed to guide student learning while avoiding approaches that may appear overly critical or discouraging.

Table 2*Students' preferences in receiving corrective feedback*

Areas	Mean	Interpretation
Amount of Error		
Correct most of the errors	3.72	Strongly Agree
Obvious errors	3.09	Agree
Some repetitive/common errors	2.99	Agree
Does not correct my errors	1.41	Strongly Disagree
Color of Correcting Pen		
Light Color Pens	3.19	Agree
Red Pen	2.84	Disagree
Dark Color Pens	2.46	Disagree
Highlighter	2.24	Disagree
Pencil	1.89	Disagree
Focus of Feedback		
Grammar	3.59	Strongly Agree
Vocabulary Choice	3.55	Strongly Agree
Mechanics	3.5	Strongly Agree
Organization and Paragraph Construction	3.44	Strongly Agree
Content	3.27	Strongly Agree
Paper Marking Techniques		
Statement	3.74	Strongly Agree
Underline errors	3.38	Strongly Agree
Crossing out errors	3.02	Agree
Writing questions	2.99	Agree
Using proofreading symbols	2.69	Agree
Using exclamations and question mark symbols	2.33	Disagree
Types of Feedback		
Strike out the mistakes and correct them	3.61	Strongly Agree
Provide feedback on all the error	3.49	Strongly Agree
Feedback on structure	3.46	Strongly Agree
Give clues or directions	3.19	Agree
Implicit feedback	3.08	Agree
Underline mistakes	2.9	Agree
Making comments about errors	2.67	Agree
Indirect suggestion	2.47	Agree
Point out where the error occur	2.25	Disagree

Legend: 3.26-4.00= Strongly Agree 2.51-3.25= Agree 1.7-2.50= Disagree 1.00-1.75= Strongly Agree

The analysis of students' preferences for corrective feedback yielded several key findings. With regard to the extent of error correction, the highest mean score was 3.72 (Strongly Agree), indicating that students preferred teachers to correct most of the errors in punctuation, organization,

spelling, content, and grammar. In contrast, the lowest mean score was 1.41 (Strongly Disagree), reflecting the least preference for having errors left uncorrected in these areas.

In terms of the color of the correcting pen, students expressed a stronger preference for light-colored pens, as shown by a mean score of 3.19 (Agree). Conversely, the use of pencils was less favored, with the lowest mean of 1.89 (Disagree). For the focus of feedback, the highest-rated aspect was grammar including vocabulary, word arrangement, meaning, and tenses with a mean score of 3.59 (Strongly Agree). Vocabulary choice, while still positively received, obtained the lowest rating within this category, with a mean of 3.27 (Strongly Agree).

Regarding paper-marking techniques, the most preferred approach was the use of motivational statements to encourage students in improving their essay writing, with a mean score of 3.74 (Strongly Agree). The least preferred method was the use of exclamation or question mark symbols, with a mean of 2.33 (Disagree). For types of feedback, students showed the strongest preference (mean = 3.61, Strongly Agree) for teachers to strike out mistakes and directly correct them. The least preferred option was error identification without correction, which registered a mean score of 2.55 (Disagree).

Taken together, these findings suggest that students favor comprehensive and explicit correction of errors, with particular emphasis on grammar, motivational written comments, and direct teacher-led correction. Preferences also extend to the use of light-colored pens, which are perceived as less intimidating. Overall, the results highlight students' inclination toward feedback that is clear, supportive, and actionable—helping them strengthen their writing competence more effectively.

Table 3*Students' uptake when they read their teachers' comments and correction*

Indicators	Mean	Interpretation
Action towards the feedback		
Read every mark/comment	3.62	Strongly Agree
Concern about the guide	3.41	Strongly Agree
Use internet	3.15	Agree
Ask classmates	3.04	Agree
Make own correction	2.99	Agree
Ask some other teachers	2.79	Agree
Go to library for references	2.3	Disagree
Do not read the composition	1.83	Disagree
Ignore them	1.8	Disagree
Feelings towards the feedback		
Help to know what to avoid/improve	3.79	Strongly Agree
Help to know the mistakes	3.67	Strongly Agree
Make me want to try harder	3.54	Strongly Agree
Mean to encourage.	3.49	Strongly Agree
For improvement	3.39	Strongly Agree
Like the way composition is marked	3.29	Strongly Agree
Comments are specific	3.28	Strongly Agree
Make good feeling about himself	3.28	Strongly Agree
Enjoy the comments	3.15	Agree

The analysis of students' uptake of corrective feedback revealed several noteworthy trends. In terms of reading teachers' comments and corrections, the highest mean score was 3.62 (Strongly Agree), indicating that most students "like to read every mark or comment their teacher wrote on their work carefully." In contrast, the lowest mean score was 1.80 (Disagree), corresponding to the statement, "I ignore them because I do not know how to make the correction." This highlights that while the majority of students engage closely with teacher feedback, a small subset faces challenges in applying it effectively.

Regarding students' feelings about teachers' comments, the most favorable response was recorded for the statement, "My teacher's comments and corrections help me to know what to avoid or improve next

time,” with a mean of 3.79 (Strongly Agree). The lowest mean, 3.15 (Agree), was associated with the statement, “I enjoy the teacher’s comments on my composition.” This suggests that while students strongly value the formative function of comments, they may not always view feedback as an enjoyable aspect of the writing process.

When examining the strategies students employ after receiving feedback, the highest mean was 3.63 (Strongly Agree), reflecting the perception that “The teacher’s written feedback is always helpful.” The lowest mean, 2.68 (Agree), was linked to the statement, “I do not have any problems in rewriting my paper after getting feedback.” This finding implies that while students generally perceive feedback as beneficial, some still encounter difficulties in the revision process, underscoring the need for feedback that is both explicit and supportive.

Overall, the results indicate that students place high value on corrective feedback and actively engage with it when it is clear, actionable, and improvement-oriented. They particularly appreciate comments that guide them in avoiding errors in future tasks. However, the data also reveal that certain students may struggle to operationalize feedback when it is not sufficiently comprehensible, pointing to the importance of clarity, accessibility, and scaffolding in the design of corrective feedback practices.

Recommendation

Based on the study’s findings, the researchers developed a learning module aimed at guiding and enhancing Grade 12 HUMSS students’ understanding of corrective feedback, as well as highlighting their teachers’ preferences in assessing reflective essays. The module is organized into four key sections: teachers’ practices, teachers’ typologies, students’ preferences, and students’ uptake of feedback when reviewing their reflective essays.

addressing critical aspects that can support the development of students' writing proficiency. It is recommended that teachers employ this module as a practical guideline for corrective feedback to:

Evaluate the extent of corrections provided. Carefully consider the potential effects of excessive corrections and strive to identify an optimal balance that promotes learning while avoiding student discouragement.

Align feedback with students' focus areas. Focus on the aspects that students value most such as grammar, organization, and paragraph structure ensuring that feedback remains both relevant and impactful.

Adopt effective paper-marking techniques. Employ feedback methods that students perceive as helpful, including motivational statements and clear corrections, rather than relying on symbols or markings that might cause confusion.

Choose feedback types that foster improvement. Provide feedback that not only identifies errors but also guides students toward correct usage, thereby fostering the development of stronger sentence structures and enhancing overall writing skills.

By implementing these recommendations, teachers can deliver constructive and targeted feedback that promotes student engagement, strengthens comprehension, and ultimately enhances writing proficiency.

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The ES Claveria Approach in Kindergarten Teaching

Jennifer M. Aniceto

Phonological awareness refers to the ability to recognize and manipulate the spoken components of sentences and words. It encompasses noticing, analyzing, and working with the individual sounds of spoken language. This skill develops along a continuum and is widely recognized as foundational for both reading and spelling proficiency, as it underpins decoding and word construction in print. Evidence suggests that phonological awareness is particularly critical during the initial stages of reading development (Skubic et al., 2021; Milankov et al., 2021; Nkurunziza, 2024).

In the Philippine Basic Education system, kindergarten serves as the entry point of formal education where essential literacy skills, including early reading, are cultivated. Reading constitutes a cornerstone of learning, especially in the early years. However, in the context of the “new normal,” persistent challenges have emerged. Observations from grade school teachers reveal that, despite completing full weeks of in-person instruction, many learners exhibit weak reading fluency, limited comprehension, and a general hesitancy in oral reading. These challenges underscore the need for structured, evidence-based phonological awareness programs, such as the

ES Claveria Approach, which has been introduced as a targeted intervention.

International large-scale assessments reinforce these concerns. Results from PISA 2022 continue to highlight low reading performance among Filipino learners, situating the Philippines among countries facing significant literacy gaps. In response, the Department of Education has initiated the National Learning Recovery Program to address learning losses attributed to pandemic-related disruptions. While kindergarten learners were not directly affected by school closures during this period, it remains imperative to ground early education in systematic and effective strategies that ensure the mastery of foundational literacy skills. Consistent with the goals of the K–12 curriculum, the development of robust reading foundations must be prioritized from the earliest grade levels.

The ES Claveria Approach has been examined in prior research and has demonstrated promising results in strengthening phonological awareness (Amada, 2019; Bautista, 2019). The approach is built on a structured four-part lesson sequence. The initial lesson emphasizes recognition of the features and uses of pictures. The second lesson introduces learners to picture naming, focusing on the first syllable of each word, referred to as the pananda (cue). The third lesson enables learners, through repeated practice, to combine first syllables from different words to create new words, with the picture pananda serving as a visual aid when recall is uncertain. The final lesson transitions toward word formation in Filipino, reinforced by hand gestures: one finger signals learners to articulate only the first syllable, while two fingers indicate reading the complete word. This multisensory and scaffolded design facilitates phonological awareness, enhances memory recall, and fosters confidence, accuracy, and fluency in early reading.

Visual and Phonological Strategies to Enhance Reading in Early Learners

A growing body of research affirms the critical role of visual imagery in learning. Laskay-Horváth et al. (2025), for example, demonstrated that students who formed visual associations such as imagining a dog riding a bicycle down a street significantly outperformed peers who relied solely on rote repetition in recalling word groups. Visual supports, including posters, charts, and educational graphics, enhance comprehension by providing learners with clear, engaging references. Similarly, the ES Claveria Reading Technique, a visual and multisensory approach, has been shown to stimulate engagement and improve reading outcomes. Quiambao and Maguyon (2021) found that the method encourages learner motivation through the use of pictures, structured exercises, and parental involvement. Amada (2019) further reported that the technique's systematic use of pananda cues, syllables, words, phrases, and sentences supports literacy in the Mother Tongue. Complementary findings by Bautista (2022) revealed that struggling learners exhibited significant improvement in reading levels after a three-month intervention, further confirming the method's effectiveness.

Beyond instructional techniques, student engagement itself emerges as a central factor influencing reading achievement. Learners with weak reading skills often disengage when they perceive disparities in ability among peers (Wiseman, 2012). To counteract this, Jones and Brown (2013) emphasized the importance of offering a wide range of reading materials, including both print and digital texts, to enhance motivation and satisfaction. Multi-sensory and individualized interventions such as explicit instruction in phonological awareness, decoding, and segmentation skills

have proven particularly beneficial for learners requiring additional support. Guided reading allows educators to provide targeted assistance to individuals or small groups, focusing on specific strategies such as rereading, chunking, or phoneme segmentation. Research underscores the predictive value of phonological awareness for early word-reading (Park & Lombardino, 2013), while Kilpatrick (2016) highlighted the use of visual tokens to scaffold phonics and reinforce awareness of syllables and phonemes, thereby strengthening both recognition and comprehension.

Structured interventions further complement classroom strategies. Levelled Literacy Intervention (LLI), for example, has been shown to improve outcomes for kindergarten to Grade 2 students, with teachers affirming its benefits for struggling readers (Glass, 2018). Similarly, Reading Recovery delivered as daily, one-on-one instruction supplemented by home reading for 10 to 20 weeks has consistently accelerated literacy development (Clay, 2013; Jesson & Limbrick, 2014). Both approaches underscore the necessity of continuous teacher monitoring and active home-school communication to sustain post-intervention progress.

At the systems level, large-scale analyses provide critical insights into contextual challenges. Tomas et al. (2021), drawing on over 8,000 Filipino reading profiles, found that most learners remained at the frustration level due to weak mastery of reading elements, a prevalence of learners-at-risk, and an underdeveloped reading culture. Suggested interventions include targeted literacy programs, individual recovery sessions, and enrichment strategies, all of which may inform more responsive curricula. International evidence aligns with these findings. Wood (2019) observed that children entering kindergarten with literacy gaps made substantial gains through structured interventions, although some disparities persisted. Broader initiatives, such as USAID's Basa

Pilipinas (2013–2018), demonstrate the potential of sustained, evidence-based reforms. Reaching over 1.8 million K–3 students, Basa enhanced reading performance by promoting government partnership, school-level implementation, and equitable access illustrating the value of contextualized, scalable, and inclusive interventions.

Finally, the role of reading as a foundation for language acquisition is especially salient for second-language learners. Chandran and Shah (2019) reported that Malaysian students, particularly reluctant readers, consistently displayed weak comprehension skills, underscoring the importance of continuous, structured reading interventions. Collectively, the evidence affirms that effective literacy development requires a combination of visual, phonological, multisensory, and systematic approaches, reinforced by strong teacher engagement and supportive learning environments. Together, these elements form the basis for sustainable improvements in reading outcomes, both within the Philippines and in comparable educational contexts.

The Effectiveness of ES Claveria Approach in Kindergarten Learners: A Case Study

This study examined the effectiveness of the ES Claveria Approach as an instructional tool for beginning reading among kindergarten learners in an elementary school in the District of Nabas, Aklan, Philippines, during School Year 2023–2024. Specifically, it aimed to (a) assess the learners' reading performance prior to and following the implementation of the ES Claveria Approach and (b) determine whether a significant difference existed in their reading performance as a result of the intervention.

Methodology

This study employed a quasi-experimental design, wherein a single group of kindergarten learners was assessed before and after receiving instruction through the ES Claveria Approach to determine its effectiveness in improving early reading skills. A pre-test was administered to establish the learners' baseline reading abilities, followed by a post-test after the intervention to measure performance gains.

The research was conducted at a public elementary school in Aklan, Philippines. Participants were selected based on their demonstrated skills, abilities, and responsiveness to instruction. Of the 27 kindergarten pupils enrolled, 20 were identified as eligible for inclusion through teacher observations.

A researcher-developed assessment tool was utilized to measure learners' phonetic awareness, focusing on reading exercises with the 28 Filipino alphabets. The instrument employed a Likert-type scale adapted from the Comprehensive Rapid Literacy Assessment (CRLA), with performance categorized as Grade Ready (26–28), Light Refresher (19–25), Moderate Refresher (11–18), and Full Refresher (0–10). To ensure validity, the tool underwent content review by a three-member expert panel, whose feedback was incorporated into the final version.

The intervention spanned one academic quarter, from November to January 2024. Daily one-hour sessions engaged learners in a structured sequence of activities. Instruction began with picture recognition, using images as pananda (cues) for associating words with visuals. Learners were then introduced to hand signals one finger for reading the first syllable and two fingers for reading the entire word to scaffold decoding skills. Once mastery was demonstrated, instruction progressed to word recognition without visual aids, relying solely on hand gestures. Learners were also

provided with hard copies of reading exercises for continued practice at home, with new activities introduced daily. A post-test was subsequently administered to evaluate the impact of the intervention.

Pre-test and post-test data were analyzed to determine learners' levels of phonetic awareness and to assess improvements attributable to the intervention. Ethical standards were strictly observed. Informed consent was obtained from parents and the school principal, and participant confidentiality was safeguarded throughout the study. The design and implementation adhered to the study objectives while prioritizing the welfare and privacy of all learners.

Findings

Tables 1 presents the descriptive statistics of the learners' performance before and after the ES Claveria Approach.

Table 1

Pretest and Posttest results

	Identifying Letters		Identifying Sounds	
	F	%	F	%
Pretest				
Grade Ready	19	95	7	35
Light Refresher	1	5	2	10
Moderate Refresher	0	0	6	30
Full Refresher	0	0	5	25
Posttest				
Grade Ready	20	100	8	40
Light Refresher	0	0	9	45
Moderate Refresher	0	0	3	15
Full Refresher	0	0	0	0

In terms of letter identification, results revealed that the majority of learners (95%) demonstrated excellent ability to recognize letters prior to the intervention. Only one learner scored below the Grade Ready level. The

standard deviation of 4.13 indicates relatively homogeneous performance, suggesting minimal variation in learners' letter recognition skills. This high level of proficiency may be attributed to parental involvement, as many families introduce children to the basics of reading at home to enable them to write their names before entering school.

By contrast, performance in sound recognition reflected a markedly different pattern. Only 35% of learners reached the Grade Ready level, while 25% were classified as Full Refresher, indicating significant gaps in phonemic awareness. The standard deviation of 10.65 points to wide variation in learners' sound recognition abilities, with some able to identify letters but unable to match them with corresponding sounds. This discrepancy may be linked to the common practice of introducing English letter sounds first, despite the language of instruction often being the learners' mother tongue, which shares stronger phonological similarities with Filipino, the national and official language. Nevertheless, learners remained highly engaged, as evidenced by their strong letter recognition performance, supporting the assertion that student engagement is essential to successful reading instruction (Wiseman, 2012).

Post-intervention results following the introduction of the ES Claveria Approach demonstrated notable improvements. With respect to letter recognition, all learners successfully identified every letter taught, indicating consistent mastery of the alphabet and reinforcing the effectiveness of the Claveria Approach at the beginning reading stage. Gains were also observed in sound recognition. No learners remained at the Full Refresher level after the intervention. The percentage of learners classified as Grade Ready increased from 35% to 40%, while those in the Light Refresher category rose markedly from 10% to 45%. The Moderate Refresher group remained constant at 15%. The post-test standard deviation

of 8.38, lower than that of the pre-test, suggests reduced variability in performance and more consistent gains among learners.

Overall, these results highlight the positive influence of high student engagement in enhancing reading outcomes (Wiseman, 2012) and align with the findings of McIntyre et al. (2006), which emphasize the significant role of classroom instruction in improving learners’ reading abilities.

Table 2 presents the results of the Wilcoxon Signed-Ranks Test, which compared learners’ pre-test and post-test performance in both letter and sound recognition.

Table 2

Test of significant difference

Control Group Result	Mean Score	z-value	p-value	Decision
Identifying Letters				
Pretest	25.60 (Grade Ready)	-2.988	0.003 ^s	Reject H_o
Posttest	28.00 (Grade Ready)			
Identifying Sounds				
Pretest	12.55 (Light Refresher)	-3.632	0.000 ^s	Reject H_o
Posttest	17.00 (Grade Ready)			

Note: highly significant at .01 level of significance

With respect to letter identification, the obtained p-value of 0.003 indicates a highly significant difference between pre-test and post-test scores, thereby warranting the rejection of the null hypothesis. This result demonstrates that learners’ performance in letter recognition improved substantially following the introduction of the ES Claveria Approach. Similarly, in sound recognition, the obtained p-value of 0.000 reflects an equally significant difference between pre-test and post-test results, providing strong evidence that learners’ phonemic awareness improved markedly over the course of the intervention. Taken together, these findings

confirm that the Claveria Approach effectively enhanced learners' early literacy skills, particularly in phonological awareness.

The results are consistent with prior studies. Bautista (2019) and Quiambao and Maguyon (2021) likewise reported that the Claveria Approach significantly strengthened learners' reading abilities through structured and multisensory strategies. Furthermore, the findings align with the recommendations of Park et al. (2023), who emphasized three critical practices for promoting early literacy and preventing future learning gaps: (a) delivering high-quality literacy instruction before kindergarten to build strong foundational skills, (b) continuously monitoring the development of all essential reading competencies including phonological awareness through kindergarten and first grade, and (c) providing targeted, evidence-based interventions at the earliest possible stage.

Collectively, these results underscore the importance of structured, multisensory, and evidence-driven instructional approaches in fostering foundational literacy. The demonstrated effectiveness of the ES Claveria Approach reinforces its potential as a viable tool for beginning reading instruction, with implications for both classroom practice and broader literacy initiatives.

Recommendations

It is recommended that learner profiling be conducted at the beginning of each school year to enable teachers to identify pupils with lower reading competencies and design appropriate assessment tools and interventions to support their literacy development. Teachers are likewise encouraged to continuously update their instructional practices by adopting evidence-based strategies and integrating innovative tools that enhance reading instruction.

Parents, as children’s first educators, should actively support their child’s mental, physical, and emotional readiness for school by fostering a home environment that nurtures early literacy skills. At the policy level, the Department of Education is urged to prioritize the provision of sustained professional development and adequate resources for primary teachers, particularly those in kindergarten, recognizing that this level lays the foundation for a child’s educational trajectory. Strengthening early literacy instruction at the kindergarten stage is therefore critical not only for improving immediate reading outcomes but also for achieving long-term educational progress in the Philippines.

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Peer Discussion in Teaching High School Physics

Nway Pyae Pyae & Padauk Win

In today's "Age of Science," physics plays a vital role not only in advanced fields such as engineering, medicine, technology, and space sciences but also in everyday life. Beyond its professional applications, physics enhances analytical thinking and provides a strong foundation for other sciences, including biology and chemistry (Kumar, 1995). At its core, physics seeks to explain the natural world by examining the fundamental constituents of the universe, their interactions, and the systems that emerge from them. It does so through logical reasoning, theoretical modeling, observation, and experimentation the central processes of the scientific method (Dayal, 2007).

As one of the oldest natural sciences, physics investigates universal laws and the behavior of diverse phenomena, enabling learners to acquire both conceptual and procedural knowledge relevant to daily experiences. Understanding the contributions, challenges, and issues linked to innovations in physics also fosters a broader appreciation of the interconnections among science, technology, and society (Kumar, 1995). Despite its significance, however, physics instruction often presents challenges for both teachers and learners, which underscores the need for

appropriate and effective teaching strategies.

One promising approach to overcoming these difficulties is the peer discussion method. By fostering learner interaction, peer discussion encourages students to confront and refine their understanding of scientific concepts. As Säljö (2012) emphasizes, such engagement allows learners to deepen their awareness of knowledge and skills through social exchange. Communication, whether through speaking, writing, or structured dialogue, becomes essential to learning, as it enables individuals to construct and transfer knowledge collectively (Olsson & Mattiasson, 2013).

Whereas traditional measures of student achievement often emphasized rote memorization, the demands of the information age place a premium on conceptual understanding (Huitt, 2007, as cited in Knight, 2015). Conceptual mastery is not only central to academic success but also critical for applying scientific knowledge to real-world contexts (Knight & Wood, 2005, as cited in Knight, 2015). To facilitate this, teachers must provide structured opportunities for peer discussion that allow students to exchange ideas, confront misconceptions, and refine their reasoning. These conversations also offer teachers valuable diagnostic feedback on learners' understanding (Crouch & Mazur, 2001, as cited in Knight, 2015).

Peer discussion thus serves multiple functions: it strengthens factual knowledge, promotes deeper conceptual understanding, and enhances students' ability to relate science to current events and everyday experiences (Singh, 2005). Moreover, collaborative learning environments extend students' capabilities beyond what they could achieve independently, benefiting learners of all ability levels and across different age groups. In this way, peer discussion emerges as a powerful pedagogical tool for enriching the teaching and learning of physics.

Application of Peer Discussion

Peer discussion can be implemented in diverse formats, with its effectiveness often depending on the specific variation employed. One widely recognized approach is peer instruction, described by Crouch and Mazur (2001, as cited in Flosason, 2011), in which students first respond to clicker questions individually and subsequently answer the same questions after reviewing their peers' initial responses and engaging in small-group discussions. The distinction between the studies of Crouch and Mazur and those of Smith et al. (2009, as cited in Flosason, 2011) lies in the structure of the questioning process. In the former, participants responded twice to each item under different conditions, whereas in the latter, students were immediately challenged to generalize their understanding by answering a related but novel question. Flosason (2011) further observed that students may derive particular benefits from discussions involving extended behavioral chains, as these promote deeper cognitive engagement.

Beyond its structural variations, peer discussion strengthens learning by broadening students' conceptual grasp of course content. Functionally, it provides opportunities for learners to reinforce and shape one another's responses, thereby facilitating generalized and even derived responding. This collaborative process reflects the principles of social constructivism, which views knowledge as actively constructed through interaction and negotiation (Duit & Treagust, 1998, as cited in Flosason, 2011). Moreover, peer discussion fosters higher levels of classroom participation. Even students who seldom contribute orally tend to engage by listening closely, reflecting on peers' reasoning, and posing questions, thereby enriching both individual and collective learning experiences.

Effectiveness of Peer Discussion in Teaching High School Physics: A Case Study

This research paper aims to examine the effectiveness of peer discussion as a teaching strategy in high school physics, with particular attention to its influence on student learning and performance. Specifically, it seeks to compare the academic outcomes of students who participate in peer discussions with those who do not, thereby identifying potential differences in their conceptual understanding and knowledge retention. By positioning peer discussion as a central component of the instructional process, the study endeavors to demonstrate its role in promoting active learning, enhancing critical thinking, and cultivating collaborative problem-solving skills among learners.

Methodology

A quantitative research method was employed to compare the physics achievement of students between two groups: control and experimental. In each selected school, one group was taught using the peer discussion method (experimental group), while the other was taught using conventional teaching methods (control group).

The study was conducted in Myitkyina Township, Kachin State, during the 2017–2018 academic year. Two sample schools BEHS (1) and BEHS (7), Myitkyina were randomly selected. From BEHS (1), 112 out of 121 Grade Nine students were included, while 77 out of 80 Grade Nine students from BEHS (7) participated.

A nonequivalent control group design was utilized. Both groups were randomly assigned and administered a pretest at the start of the study to measure baseline knowledge on the topic “Reflection of Light” from the

Grade Nine physics textbook. The test items were validated by experienced physics teachers, and necessary revisions were made based on their feedback.

Following the pretest, the experimental groups were taught using peer discussion, while the control groups received instruction through conventional methods. The treatment lasted for four weeks, with both groups receiving 45 minutes of instruction per day, four days a week, amounting to 3 hours and 45 minutes of instruction weekly. Lesson plans for both peer discussion and conventional methods were prepared in advance, along with supporting materials such as charts, handouts, and real objects.

At the end of the treatment period, a posttest was administered on 27 November 2017. The test lasted 1 hour and 30 minutes, carried a total of 50 marks, and included completion items, true/false questions, short-answer items, and long-answer questions, all based on the same content area as the pretest.

Pretest scores revealed no significant difference between the groups, confirming equivalence in their basic physics knowledge before the intervention. Posttest scores were analyzed using an independent samples t-test to determine the difference in achievement between the two groups.

The procedures of the treatment for the experimental groups are as follows, as suggested by Harvey (2013):

Step 1: Grouping

Step 2: Giving a brief lecture

Step 3: Posing a conceptual question

Step 4: Discussion between peers

Step 5: Presenting the answer

Step 6: Evaluating

Step 7: Providing feedback

The timetable for the treatment period is presented in Table 1.

Table 1

Time table for treatment period

Period Day	1	2	3	4	5	6	7
Monday		HS2 CG	HS2 EG		HS1 EG	HS1 CG	
Tuesday		HS2 EG		HS2 CG		HS1 EG	HS1 CG
Wednesday		HS2 CG	HS2 EG		HS1 EG		HS1 CG
Thursday		HS2 CG		HS2 EG	HS1 EG	HS1 CG	
Friday		HS2 CG	HS2 EG		HS1 EG	HS1 CG	

Note: HS1 = BEHS (1), Myitkyina
HS2 = BEHS (7), Myitkyina

EG = Experimental group
CG = Control group

Findings

Table 2

Results of the pretest and posttest

School	Group	N	M	SD	MD	t	df	Sig. (2-tailed)
Pretest								
HS 1	Experimental	60	27.35	3.55	0.16	0.24	110	0.811
	Control	52	27.19	3.40				
HS 2	Experimental	40	26.45	3.54	0.18	0.21	75	0.832
	Control	37	26.27	3.86				
Posttest								
HS 1	Experimental	60	44.83	3.96	23.06	19.24	110	.000*
	Control	52	21.77	7.82				
HS 2	Experimental	40	30.28	8.99	17.71	9.26	75	.000*
	Control	37	12.57	7.67				
Total	Experimental	100	39.01	9.62	21.07	15.52	187	.000*
	Control	89	17.94	8.96				

Note: * $p < .001$

Table 2 presents the pretest scores of students from both the experimental and control groups. The analysis revealed no significant difference in achievement between the groups prior to the treatment, indicating that both sets of students began with the same initial level of ability. However, results from the posttest demonstrated a clear difference in performance. In HS1, the experimental group obtained a mean score of 44.83, compared to 21.77 for the control group. Similarly, in HS2, the experimental group achieved a mean score of 30.28, while the control group scored only 12.57.

These findings show that the experimental groups consistently outperformed the control groups in overall physics achievement. The results therefore indicate a statistically significant difference in favor of students who received instruction through peer discussion. This suggests that integrating peer discussion into physics instruction can enhance understanding, promote retention of concepts, and improve academic performance compared to conventional teaching methods.

Table 3 shows the results based on the level of questions. For remembering-level questions, the mean scores of the experimental and control groups were 14.12 and 7.40 in HS1, and 10.75 and 5.95 in HS2, respectively. In both schools, the experimental groups scored significantly higher than the control groups, indicating that peer discussion facilitated stronger recall of factual knowledge. For understanding-level questions, the mean scores of the experimental and control groups were 6.43 and 4.88 in HS1, and 5.28 and 3.41 in HS2. Once again, the experimental groups outperformed the control groups in both schools, suggesting that peer discussion enhanced not only factual recall but also conceptual understanding. These findings reinforce the conclusion that peer discussion is effective in improving students' performance at both the remembering

and understanding levels of cognition.

Table 3

Distribution of the results based on level of questions

School	Group	N	M	SD	MD	t	df	Sig. (2-tailed)
Remembering								
HS 1	Experimental	60	14.12	1.04	6.71	16.18	110	.000*
	Control	52	7.40	2.83				
HS 2	Experimental	40	10.75	2.69	4.80	6.92	75	.000*
	Control	37	5.95	3.39				
Total	Experimental	100	12.77	2.50	5.97	14.35	187	.000*
	Control	89	6.80	3.14				
Understanding								
HS 1	Experimental	60	6.43	1.06	1.55	5.29	110	.000*
	Control	52	4.88	1.87				
HS 2	Experimental	40	5.28	1.89	1.87	4.24	75	.000*
	Control	37	3.41	1.98				
Total	Experimental	100	5.97	1.55	1.70	6.39	187	.000*
	Control	89	4.27	2.04				
Applying								
HS1	Experimental	60	20.43	3.15	14.22	18.64	110	.000*
	Control	52	6.21	4.65				
HS2	Experimental	40	10.40	5.73	8.70	8.54	75	.000*
	Control	37	1.70	2.84				
Total	Experimental	100	16.42	6.58	12.08	14.80	187	.000*
	Control	89	4.34	4.57				
Analyzing								
HS1	Experimental	60	3.85	0.36	0.58	3.09	110	.003*
	Control	52	3.27	1.32				
HS2	Experimental	40	3.78	0.42	2.26	7.69	75	.000**
	Control	37	1.51	1.74				
Total	Experimental	100	3.82	0.39	1.28	6.83	187	.000**
	Control	89	2.54	1.73				

Note: **p<.001, *p<.01

For applying-level questions, the mean scores were 20.43 and 6.21 in HS1, and 10.40 and 1.70 in HS2, with the experimental groups demonstrating a clear advantage. Similarly, for analyzing-level questions, the mean scores were 3.85 and 3.27 in HS1, and 3.78 and 1.51 in HS2. In both schools, the experimental groups consistently outperformed the control groups.

These results confirm a significant difference in the achievement of students who engaged in peer discussion compared with those who did not. Grade Nine students taught through peer discussion exhibited markedly higher achievement than those instructed through conventional methods, an outcome attributed to increased student participation and engagement. Consistent with the findings of Harvey (2013), students who participated in peer discussions in physical science classes acquired deeper conceptual understanding than their counterparts who were taught traditionally.

At the remembering level, students in peer discussion groups demonstrated stronger retention of information and achieved higher scores than those taught conventionally. For understanding-level questions, students who engaged in peer discussions also outperformed those who did not. This aligns with Alexopoulou and Driver (1996), who reported that discussion significantly enhanced students' physics reasoning, and with Smith et al. (2009, as cited in Flosason, 2011), who showed that group discussion enabled learners to independently construct conceptual understanding and provide correct responses.

At the applying level, peer discussion groups again showed superior performance. Crouch et al. (2004) found that peer discussion enhanced both conceptual reasoning and qualitative problem-solving skills. In this study, high school students engaged in peer discussion exhibited improved ability to transfer learning to new contexts, solve problems, and demonstrate critical and creative thinking. These outcomes were also associated with gains in self-esteem and self-efficacy. For the analyzing level, peer discussion groups displayed a stronger grasp of physics concepts and principles compared with control groups. This finding is consistent with Johnson and Johnson (1987, as cited in Curtis, 2013), who emphasized that collaborative learning promotes analytical reasoning and problem-solving

skills.

Overall, the findings corroborate the conclusions of Muise (2015), affirming that peer discussion not only yields higher academic achievement compared to conventional methods but also fosters essential 21st-century competencies such as communication, creativity, and higher-order thinking skills in physics learning.

Recommendation

Teachers are encouraged to adopt innovative teaching methods to create engaging and enjoyable learning environments where students can develop creativity and critical thinking. To ensure an effective teaching–learning process, teachers play a crucial role in selecting and applying appropriate instructional strategies, with peer discussion emerging as a viable alternative to traditional methods. For successful implementation, however, class sizes should be kept manageable, as overcrowded classrooms can limit meaningful interaction and diminish the effectiveness of peer discussion. Reducing the number of students per class fosters deeper participation and more productive exchanges among learners.

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Realistic Mathematics Education Approach

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Mathematics is widely recognized as a cornerstone of quality education, particularly in fostering problem-solving skills and preparing learners to compete in a global context. The World Economic Forum (2020) identified problem-solving as one of the most in-demand competencies for the coming decade. In alignment with this, the Philippine Department of Education designed a curriculum that underscores the twin goals of mathematics: the development of problem-solving abilities and critical thinking skills. This initiative reflects the broader objective of equipping Filipino students with the competencies necessary to navigate the demands of the twenty-first century.

However, despite these curricular innovations, mathematics remains one of the most challenging subjects for students, particularly in the area of problem-solving (Nurjamaludin et al., 2021). The Philippines' performance in the Program for International Student Assessment (PISA) 2018 illustrates this concern, with the country ranking last among 79 participating nations in mathematics (OECD, 2019). The Philippines recorded a mean score of 353, far below the OECD average of 489. Similarly, Roman (2019)

emphasized that results from national assessments and local research conducted over the past 15 years consistently point to poor mathematical performance, evident across all levels of education. This is further supported by Imam (2016), who observed that the adoption of the K–12 curriculum has yet to yield significant improvements in mathematics outcomes.

A range of factors contribute to this persistent challenge, among which ineffective teaching practices and limited learning strategies are particularly influential (Laurens et al., 2018). To address such gaps, innovative pedagogical approaches have been explored internationally. Notably, in the 1970s, the Freudenthal Institute in the Netherlands introduced the Realistic Mathematics Education (RME) approach. Grounded in contextual and experiential learning, RME has been shown to enhance students' cognitive development and mathematical achievement in multiple international studies (Laurens et al., 2018; Zakaria & Syamaun, 2017). Despite its demonstrated effectiveness, this approach remains underutilized in the Philippines, where traditional lecture-based instruction continues to dominate mathematics classrooms. A review of related literature reveals a lack of empirical research in the Philippine context investigating the potential of RME as a strategy for strengthening mathematical competencies.

The Realistic Mathematics Education Approach

The Realistic Mathematics Education (RME) approach, introduced in the 1970s by the Freudenthal Institute in the Netherlands, is grounded in Hans Freudenthal's principle that mathematics should be meaningfully connected to real-life situations (Dickinson & Hough, 2012; Freudenthal,

1991). As a constructivist-oriented pedagogy, RME encourages learners to actively explore, collaborate, and apply mathematical concepts to authentic contexts. Learning begins with students' everyday experiences, which serve as a foundation for developing deeper conceptual understanding and practical application of mathematics (Kosim & Tirta, 2020). Central to RME are three heuristic principles identified by Gravemeijer (1994) and Freudenthal (1991): guided reinvention, where students rediscover mathematical ideas through structured problem-solving; didactical phenomenology, which highlights the importance of linking instruction to meaningful phenomena; and emergent modeling, wherein learners construct models that progressively evolve into formal mathematical representations.

Guided reinvention emphasizes structuring learning experiences in ways that parallel the historical development of mathematical concepts, enabling students to “reinvent” these ideas through their own reasoning and problem-solving (Anwar et al., 2012). In this process, learners' outputs and responses become the focal point of classroom interaction, while teachers assume the role of facilitators who guide, probe, and scaffold understanding rather than directly transmitting knowledge.

Didactical phenomenology highlights introducing mathematical concepts through contexts that are authentic, meaningful, and accessible to learners. This process adapts to classroom realities, considering students' backgrounds, prior knowledge, and levels of thinking, thereby underscoring the importance of contextualization and indigenization in mathematics education (Dickinson & Hough, 2012; Stephan et al., 2014). When learning activities are personally relevant and situated in students' lived experiences, they are more likely to engage actively in discussions and develop deeper conceptual understanding.

Emergent modeling facilitates the transition from informal strategies

to more formal mathematical reasoning. In this process, educators introduce or refine models often building on representations generated by students themselves to scaffold understanding and structure abstract ideas (Stephan et al., 2014; Anwar et al., 2012). By embedding modeling activities into instruction, learners gradually shift from concrete, context-based problem solving to more generalized and formalized mathematical thinking. Research further affirms that incorporating modeling into mathematics learning significantly strengthens students' analytical and problem-solving skills (Erbaş et al., 2014).

Developing problem-solving skills is a key goal of 21st-century education, as these skills prepare learners to meet the demands of modern life (Khoiriyah & Husamah, 2018). However, challenges in problem-solving remain. According to Krawec et al. (2013), understanding the problem is one of the most difficult aspects of mathematics, requiring not only calculation but also the interpretation and integration of information, mental visualization, and strategic planning. Polya's problem-solving framework, as discussed by Ersoy and Güner (2014), emphasizes four stages:

Understand the problem. involves comprehending the given information, forming a mental representation, and identifying what needs to be solved (Krawec et al., 2013).

Devise a plan. requires selecting appropriate strategies, such as drawing diagrams or exploring special cases, to transfer mathematical reasoning and enhance critical thinking skills (Hoon et al., 2013; Ersoy & Güner, 2014).

Carry out the plan. entails implementing the chosen strategies, which may include creative approaches like acting out scenarios or working backward, to find and verify solutions (Hoon et al., 2013).

Look back. looking back emphasizes reflection on the solution process, which strengthens long-term memory and builds meaningful connections for future problem-solving (Liljedahl et al., 2016).

Dewey underscored that ideas and processes are best learned when rooted in personally meaningful experiences, a perspective that aligns with the RME approach's focus on real-life contexts. Guided by these principles, the present study explored the potential of adapting RME to enhance learners' problem-solving skills in the Philippine educational setting.

Effectiveness of Realistic Mathematics Education Approach on the Problem-Solving Skills of the Students: A Case Study

This study aimed to assess students' problem-solving skills in mathematics through the application of the RME approach. Specifically, it sought to determine the pre-test performance of students in problem-solving skills in terms of understanding the problem, devising a plan, carrying out the plan, and looking back; to evaluate their post-test performance after the use of the RME approach in the same areas; and to examine whether there is a significant difference between their pre-test and post-test performance in problem-solving skills.

Methodology

The study employed a pre-experimental research design, specifically a one-group pre-test and post-test design. The RME approach served as the intervention, with students' problem-solving skills understanding, strategizing, applying, and reflecting carefully assessed. The study population comprised junior high school students enrolled in a school in Batangas, Philippines, during the academic year 2021–2022. A clustered

sampling technique was applied, and from the two Grade 9 sections, random sampling was conducted to select the respondents, yielding a total of 35 Grade 9 students.

Descriptive and inferential statistics were utilized to analyze the data collected. Frequency counts and percentages were used to describe students' pre-test and post-test performance in problem-solving skills, while paired t-tests were conducted to determine the effectiveness of the RME approach in enhancing students' mathematical problem-solving skills.

Findings

Table 1 presents the respondents' pre-test scores in mathematical problem-solving skills prior to exposure to the RME approach. In the area of understanding the problem, the majority of students (15 respondents) were classified at the developing level. While they were able to comprehend the terminology and phrases used in the problems, their responses often contained missing or incorrect values, typically involving more than two errors. This suggests that many of the respondents lacked sufficient familiarity with the topic, which hindered their ability to identify and apply key concepts in solving the problems. This result is consistent with the findings of Vula and Kurshumlia (2015), who emphasized that students with prior knowledge of the terms used in word problems are better equipped to grasp mathematical concepts and improve their understanding.

With regard to devising a plan, more than half of the students (51.43%) were classified at the developing level. This indicates that many of them struggled to formulate effective strategies, such as representing possible scenarios and selecting appropriate methods to arrive at the correct solution. This finding is consistent with Phonapichat et al. (2014), who noted that students often demonstrate disorganization in their problem-

solving processes, particularly in writing formulas and following sequential steps.

Table 1

Pre-test performance of the students in problem-solving skill

Score	Understand the problem		Devise a plan		Carry out the plan		Look back		Interpretation
	f	%	f	%	f	%	f	%	
25-32	7	20.00	-	-	-	-	-	-	Exemplary
17-24	13	37.14	1	2.86	-	-	-	-	Proficient
9-16	15	42.86	18	51.43	10	28.57	1	2.86	Developing
0-8	-	-	16	45.71	25	71.43	34	97.14	Emerging
							4		
Total	35	100	35	100	35	100	35	100	

Legend: 25-32: Exemplary; 17-24: Proficient; 9-16: Developing; 0-8: Emerging

In terms of carrying out the plan, the majority of respondents (25 students, or 71.43%) were at the emerging level. This suggests that most students encountered difficulties in applying the strategies necessary to solve the problems. Their responses often lacked elaboration of processes and outcomes, and their reasoning was generally weak in executing their plans. Dhlamini et al. (2016) similarly observed that students with limited proficiency in trigonometry frequently left items unanswered or applied incorrect procedures, leading to mathematically inaccurate solutions.

Finally, in the area of looking back, nearly all respondents (97.14%) were classified at the emerging level. This reveals that students either made minimal attempts or entirely failed to check and reflect on their answers, highlighting difficulties in evaluating the accuracy of their solutions. Such weaknesses also suggest shortcomings in the earlier stages of the problem-solving process. Annizar et al. (2020) likewise reported that many learners

made errors during planning and execution but rarely engaged in the process of reflection, indicating that looking back remains an underdeveloped practice among students.

Table 2

Post-test performance of the students in problem-solving skills

Score	Understand the problem		Devise a plan		Carry out the plan		Look back		Interpretation
	f	%	f	%	f	%	f	%	
25-32	32	91.43	24	68.57	7	20.0	10	28.57	Exemplary
17-24	3	8.57	9	25.71	15	42.86	10	28.57	Proficient
9-16	-	-	2	5.72	9	25.71	6	17.15	Developing
0-8	-	-	-	-	4	11.43	9	25.71	Emerging
Total	35	100	35	100	35	100	35	100	

Legend: 25-32: Exemplary; 17-24: Proficient; 9-16: Developing; 0-8: Emerging

In the first phase of mathematical problem-solving, understanding the problem, 32 out of 35 respondents (91.43%) demonstrated exemplary performance. This indicates that most students developed a clear and thorough understanding of the problems, carefully analyzing each question and accurately identifying all given values and variables.

In devising a plan, 24 students (68.57%) achieved an exemplary level of skill. This suggests that the RME approach enhanced students' capacity to generate concrete strategies for solving problems. High-performing students effectively constructed diagrams, identified appropriate methods, and selected suitable techniques to arrive at the correct solutions. Many were also able to apply comprehensive mathematical concepts, approach problems from multiple perspectives, and connect their illustrations to relevant formulas. This aligns with In'am (2014), who emphasized that effective problem-solving strategies often emerge from

students' prior experiences, allowing them to make analogies with similar problems encountered in the past.

With regard to carrying out the plan, the largest proportion of students (15 respondents, or 42.86%) performed at the proficient level. This demonstrates that students were generally adept at executing the strategies they had developed in the previous step. Proficient students recognized multiple ways of implementing their plans and applied sound reasoning skills. While some solutions contained simplified or omitted steps, most still led to accurate answers. For example, in trigonometry problems, students not only recalled the six trigonometric ratios but also applied them correctly to determine missing values.

Finally, in the looking back phase, student performance reflected a balance between exemplary (10 students, 28.57%) and proficient (10 students, 28.57%) levels. This indicates that many students were able to review, interpret, and evaluate their final answers in a logical, systematic manner. Reflective practice enabled them to detect and correct errors from earlier steps, which improved the accuracy of their final solutions. This finding corroborates the work of Thomson et al. (2021), who observed that students actively compare formulas and diagrams in solving word problems involving right triangles, often generating alternative strategies through the use of trigonometric ratios.

Table 3 presents the significant differences between the respondents' mean pre-test and post-test performance. The results reveal that students' mathematical problem-solving skills improved significantly across all four phases, with a computed p-value of 0.000 for each phase. This demonstrates that after exposure to the RME approach, students exhibited enhanced academic performance in problem-solving. This result supports the findings of Taufina et al. (2019), who reported that students

taught using conventional methods performed significantly lower in problem-solving compared with those exposed to RME.

Table 3

Test of difference between the mean pre-test and post-test performance

Mathematical Problem-solving Skills	Pre-test		Post-test		t	df	Sig. (2- tailed)
	Mean	SD	Mean	SD			
Understanding the problem	20.89	6.09	30.23	3.19	8.350	34	.000
Devising a plan	8.74	4.01	26.31	5.52	16.433	34	.000
Carrying out the plan	5.40	5.00	18.66	7.89	9.186	34	.000
Looking back	2.03	2.91	17.57	8.93	10.402	34	.000

Legend: p-value (Sig.) < 0.05 – significant, p-value (Sig.) >0.05 – Not significant.

In understanding the problem, there was a highly significant difference (p-value = 0.000) between pre-test and post-test performance. The mean score increased from 20.89 (developing level) to 30.23 (exemplary level). Initially, many students struggled with the terminology in the problems, which hindered their ability to identify key concepts. Through the RME approach, lessons became more collaborative and interactive, fostering greater self-confidence and active participation. This engagement enabled students to master trigonometric concepts such as trigonometric ratios, special right triangles, angles of elevation and depression, and oblique triangles. These findings are consistent with Nurjamaludin et al. (2021), who argued that RME enhances students' confidence and, consequently, their problem-solving performance.

Additionally, students' reading comprehension improved through self-exploration facilitated by RME. Investigating unfamiliar mathematical

terms and concepts before class discussions enabled students to construct their own understanding, underscoring the effectiveness of RME in the initial step of problem-solving. This is aligned with Afthina and Pramudya (2017), who highlighted that RME fosters engagement and deeper understanding in geometry instruction.

In devising a plan, the mean pre-test score of 8.74 (emerging level) rose to 26.31 (exemplary level) in the post-test, with a p-value of 0.000, indicating a highly significant improvement. This demonstrates that RME strengthened students' ability to strategize. Students drew from prior experiences and made analogies with similar problems, which facilitated effective planning, as emphasized by In'am (2014). Contextualized problems encouraged active engagement, making it easier for students to develop appropriate strategies.

The RME approach further promoted creativity and critical thinking by encouraging students to explore problems from multiple perspectives, design alternative plans, and connect illustrations with appropriate formulas (Szabo et al., 2020). Teachers functioned as facilitators, while student ideas drove the discussion. The principle of emergent modeling also required students to visualize problem situations and identify suitable formulas, enhancing their strategizing skills through repeated practice (Julie et al., 2013).

In carrying out the plan, students demonstrated another highly significant improvement (p-value = 0.000), with mean scores increasing from 5.40 (emerging level) to 18.66 (exemplary level). The principle of guided reinvention fostered student-centered discussions, allowing students to articulate their reasoning, critique peer solutions, and collaborate in solving problems. This process enhanced both computational proficiency and communication skills, confirming Palinussa et al.'s (2021) finding that

RME strengthens mathematical reasoning and communication.

Didactical phenomenology also contributed to progress in this phase. Experience-based activities encouraged students to rely on prior knowledge, fostering deeper involvement and improving their ability to implement problem-solving strategies (Liljedahl et al., 2016; Stephan et al., 2014). Likewise, emergent modeling bridged informal and formal reasoning, further supporting accurate and effective solution processes (Vroom, 2020; Anwar et al., 2012).

In looking back, students initially scored the lowest in the pre-test (mean = 2.03, below emerging level) but showed dramatic improvement in the post-test (mean = 17.57, proficient to exemplary), with a p-value of 0.000. Many students initially neglected this step due to unfamiliarity with reviewing solutions (Thomson et al., 2021; Simpol et al., 2017; In'am, 2014). After exposure to RME, however, reflection became a routine practice. Students applied critical thinking to verify their solutions and evaluate alternative strategies. This outcome supports Wulandari (2020), who found that RME strengthens reflective thinking and problem-solving ability.

The process of looking back also reinforced reflective thinking, enabling students to assess the accuracy, completeness, and applicability of their solutions. The self-emergent modeling principle further bridged informal and formal knowledge, leading to improved performance in this phase (Junaedi & Wahyudin, 2020). Mastery of the first three steps also contributed significantly to success in reflection, consistent with Nurkaeti (2018), who emphasized that difficulties in reviewing solutions diminish when earlier steps are properly executed.

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The Use of Myths and Legends in Teaching Ecological Preservation

Romeo B. Telesforo

The world abounds with famous legends, and today, people can visit the modern-day locations where these stories originated to explore their rich historical and cultural significance. Unlike purely fictional myths, legends are often rooted in a seed of truth, emerging from historical events, notable individuals, or real-life experiences that became part of collective cultural memory (Banda et al., 2024). As Valentine (2023) explained, these stories evolve through generations, often acquiring embellishments or distortions that make them more memorable, relatable, and entertaining.

In the Philippines, myths and legends remain integral to cultural expression, often shared as a means of instilling moral values in children. For example, the well-known tale explaining why pineapples have multiple “eyes” reflects ancestral practices and daily life, while also imparting lessons relevant to Filipino values. Storytellers emphasize that such legends carry meaningful insights into the lives of Filipinos. By learning these narratives, individuals gain a deeper understanding of the mindsets and perspectives of their forebears, thereby enriching cultural identity and self-

awareness (Sevilla-Pavón & Alcantud-Díaz, 2021; Pastera, 2024).

Legends also hold particular significance for the people of Antique. One of the most enduring stories recalls the arrival of the ten Bornean Datus and Datu Sumakwel's landing in Malandog, now part of Hamtic, Antique. Many legends from the province also explain the origins of local place names. Jocano (1965), for instance, documented twenty-six place-name legends from Antique to examine their functions within local communities, underscoring the cultural relevance of storytelling traditions.

In Culasi, origin stories tied to place names such as the legends of Mararison and Batbatan continue to be shared by local elders, with multiple versions reflecting the richness of oral tradition. Despite growing academic attention to Antique, the cultural role of storytelling in shaping Culasi's identity, particularly through the narratives surrounding Mt. Madja-as, remains underexplored. While Culasi is increasingly recognized as a premier destination in Antique, limited scholarly focus has been placed on the origins and cultural meanings of its places, especially in relation to events such as the Madja-as Festival.

The legend of Madja-as continues to thrive in the collective consciousness of Culasinos through narratives passed down across generations. Younger members of the community still value the stories shared by elders, sustaining awareness of Madja-as's historical and cultural importance. Today, the legend is further celebrated through the municipality's annual foundation observance, during which Mt. Madja-as is honored as a symbol of heritage and identity.

Myth and Legend: Philippine Context

Defining the terms myth and legend is essential in literary studies,

as the two are often used interchangeably, creating the misconception that they are identical. A legend is generally understood as a traditional or historical story about people, places, or events of ancient times, while a myth is a traditional narrative that explains the origins of customs, natural phenomena, or societal practices. To contextualize these concepts, previous scholarship has examined how myths and legends function within their respective societies. Marín-Dale (2016), for instance, observed that many Peruvian myths, legends, and short stories portray characters without personal names referred to simply as “the boy,” “the girl,” or “the skunk.” This narrative technique emphasizes collective identity over individuality, reflecting the communal orientation of native Peruvian cultures in contrast to the more individualistic traditions of Western Europe (Marín-Dale, 2016, as cited in Walsh, 2020). Similarly, Nichols and Rine (2012) argue that folk narratives articulate a community’s shared worldview, shaping expected behaviors and reinforcing collective identity. Agonos (2018) further suggests that these stories influence how individuals think and feel, motivating attitudes and responses within the community.

In the Philippine context, legends remain significant cultural and moral instruments. Ogdock-Gascon’s (2015) study of Cebuano legends classified them into three categories: living human beings, mythical creatures (subdivided into human-looking, animal-looking, and mysterious beings), and dead souls. A striking finding was that among characters with identified gender, 71.43% were female an imbalance that may reveal gender biases, perpetuating stereotypes such as women-as-witches or women-as-victims. Similar issues arise in studies of the Yawa phenomenon, where ambiguities in character identity and the scarcity of pre-Hispanic sources complicate interpretations of gender roles in legends (Talaguit, 2021).

Legends also function as explanatory narratives for local histories

and geographical origins. Cordero (2019) and Jocano (1965) both documented Philippine legends that recount how towns, barrios, or provinces acquired their names, as well as stories about the origins of plants, animals, and natural landmarks. This observation aligns with Mangarin and Bungabong (2024), who highlight that Philippine folkloric narratives share structural and thematic elements with established literary texts, including complete literary components.

The function of myths, meanwhile, extends beyond cultural or historical explanation. Garcia (2015) emphasizes that myths are not intended to rival science but instead offer moral and philosophical guidance. Much like films that evoke affective responses through a suspension of disbelief, myths shape perception and guide action, fostering a collective worldview rather than describing empirical reality.

Finally, indigenous myths and legends often encode local cosmologies and environmental beliefs. In Peru, for example, geographical diversity from coast to mountains to jungle, shapes narratives wherein mountains and rainforests are regarded as living, protective, and at times dangerous entities. While specific characters vary, recurring themes include animism, fauna, and mythological creatures, with narratives explaining both human origins and the formation of natural landmarks (Walsh, 2020).

Taken together, these studies demonstrate that myths and legends are not merely sources of entertainment. They function as vehicles of cultural transmission, moral instruction, and collective identity, linking individuals to both their social communities and their natural environments.

Integrating Myths and Legends of Mt. Madja-As in Teaching Ecological Preservation in Araling Panlipunan: A Case Study

This study examines the community significance of Mt. Madja-as by uncovering local myths and legends, fostering students' connection to their cultural heritage, and highlighting the mountain's role in the traditions of the Culasinos, thereby enriching the cultural understanding of Culasi.

Methodology

This study focused on collecting and analyzing myths and legends associated with Mt. Madja-as in Culasi, Antique. A qualitative narrative research design was employed to understand and interpret individuals' experiences, beliefs, and perspectives through the collection and analysis of stories. This design was particularly suitable for exploring the richness and complexity of personal accounts, as it allowed the researcher to uncover the meanings participants attribute to the myths and legends of Mt. Madja-as.

The study involved fourteen participants for in-depth interviews and ten additional participants for survey responses. The inclusion criteria required participants to be residents of the area, possess knowledge of local myths and legends, and express willingness to participate in interviews. Among the interviewees, ten were teachers (four males), aged 32 to 50 years, and three were tour guides to Mt. Madja-as, aged 42 to 63 years. The remaining Culasino participants included four teachers, three government employees, one day care worker, one housewife, and one mat weaver. Of this group, eight were female and two were male, aged 38 to 73 years.

Prior to data collection, interview questions and study protocols

underwent validation. Letters of consent were secured from all participants, including translated versions for those less comfortable with English, to ensure comprehension and voluntary participation. Participants were briefed about confidentiality measures, and pseudonyms were used to protect identities. A short orientation included securing permission to record interviews for accurate transcription and data management. Survey questions were administered, supplemented by informal interviews for clarification and elaboration, which lasted 15 to 20 minutes per participant. Formal interviews ranged from 40 to 50 minutes. All research records including written notes, audio recordings, and video files were securely stored in a locked cabinet accessible only to the researcher and the adviser.

The interview guide consisted of two sections: the first gathered demographic information (age, occupation, sex), while the second explored participants' knowledge and experiences of the myths and legends. After data collection, responses were coded narratively according to similar life events, then examined for patterns of similarity and difference across these coded blocks. Story structure codes were applied to segment and organize the narratives while preserving the overarching storyline. Finally, narrative blocks were collated and analyzed to identify patterns, divergences, and thematic consistencies.

Results

The legend of Mt. Madja-as unfolds in a serene yet tragic setting, centering on Madja-as, Kanlaon, and their three children Mararison, Batbatan, and Maningning. The story narrates how Baloy's envy disrupts the family's harmony. When the family embarks on a sea journey to search for Kanlaon, misfortune strikes, leading to their separation and the

drowning of the children. The islands of Mararison, Batbatan, and Maniguin are said to have emerged at the very spots where the children perished. Kanlaon, unaware of their fate, later passes away, giving rise to Mt. Kanlaon in Negros. In grief, Madja-as transforms into Mt. Madja-as, her sorrow immortalized in its perpetually flowing waterfalls, which symbolize her endless tears. Baloy's role, steeped in jealousy and malice, also introduces supernatural elements, including the intervention of Bulalakaw.

In Culasi, the legend highlights themes of family disharmony, envy, and the painful dispersal of loved ones. The waterfalls of Mt. Madja-as serve as symbols of separation between mother and children, while the volcanic fury of Kanlaon reflects Bathala's wrath. Through these enduring geographical features mountains and islands the tale conveys powerful lessons on family, envy, loss, and supernatural consequence.

Most participants viewed Mt. Madja-as and the three islands as cultural symbols that embody the myths and legends of Culasi. They emphasized that the majestic Mt. Madja-as and its surrounding islands symbolize strength, perseverance, and resilience, serving as sources of inspiration for the Culasiños in facing life's challenges. These cultural representations, they noted, extend beyond landmarks to influence the language, beliefs, traditions, and folkways of the community.

Although the narratives do not explicitly address ecological dimensions, they indirectly point to a connection between mythology and environmental preservation. Participants expressed deep admiration for the pristine beaches, crystal-clear waters, and lush greenery surrounding Mt. Madja-as and its islands, reinforcing the perception of these landscapes as treasures to be safeguarded. A more deliberate exploration of ecological considerations could further illuminate the intersection of myths, cultural identity, and environmental stewardship.

Local tour guides also play a pivotal role in linking cultural heritage with ecological advocacy. Karl highlights the dangers of destructive practices, promotes responsible tourism, and spearheads tree-planting initiatives. Luis adapts ancestral storytelling to modern platforms while preserving its wisdom, making the legends accessible to younger generations. Mar emphasizes the cultural role of storytelling, particularly during Holy Week, in sustaining heritage and identity. Together, these guides exemplify the balance between conserving the environment of Mt. Madja-as and keeping its myths and legends alive, ensuring both cultural continuity and ecological protection.

Conclusion

The legends of Mt. Madja-as and the three surrounding islands hold deep symbolic meaning, embodying both the resiliency of the people of Culasi and the enduring beauty of the natural environment. These landmarks serve as powerful cultural icons, inspiring the community with values of strength, perseverance, and pride, while simultaneously functioning as attractions that draw visitors to the town. The connection between the legends and the preservation of Mt. Madja-as's natural beauty reinforces a sense of value and significance, underscoring the synergy between cultural heritage and environmental stewardship.

Tour guides Karl, Luis, and Mar exemplify this balance through their active promotion of responsible tourism and conservation practices. Karl raises awareness of destructive practices and leads tree-planting initiatives; Luis adapts traditional storytelling using modern technology while preserving ancestral wisdom; and Mar highlights the role of storytelling in maintaining cultural heritage, particularly during Holy Week. Collectively, their efforts reflect a holistic approach to sustaining both the

cultural and ecological integrity of Mt. Madja-as.

To further strengthen the preservation and understanding of these legends, several recommendations are proposed. First, students should be introduced to the legends in schools, with technology serving as a tool to extend these traditions beyond oral storytelling. Second, Araling Panlipunan teachers should be well-versed in the legends, enabling them to address students' questions and provide accurate historical context. Developing educational programs or modules that integrate the legends into the local history curriculum would foster deeper cultural awareness among learners. Third, local and barangay officials should be oriented about the legends to ensure the consistent and accurate dissemination of information, thereby safeguarding the integrity of the community's cultural insights. Fourth, the municipal archive should be updated to include comprehensive documentation of the legends, incorporating both physical and digital resources to support reenactments, role-playing, and other educational activities. Finally, future researchers are encouraged to examine the multiple versions of the legends, tracing their origins and exploring their physical, emotional, and spiritual dimensions to provide a richer and more nuanced understanding of their significance.

Overall, this study underscores the enduring role of the legends of Mt. Madja-as in cultivating cultural identity, promoting environmental stewardship, and inspiring the Culasi community. At the same time, it highlights practical pathways for education, cultural preservation, and further scholarly inquiry.

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Strategies for Kindergarten Teaching

Vicky B. Jungco

Kindergarten education has historically occupied a marginal position within Philippine basic education. Learners at this stage are often perceived primarily as “future elementary pupils,” rather than as young individuals with distinct developmental needs. Consequently, they are frequently taught using instructional structures and methods that mirror those of higher grade levels approaches that are often misaligned with the developmental characteristics of preschool-aged children. A strong and consistent research findings underscores that early learners progress in unique ways that differ significantly from their elementary-aged counterparts (Wang, 2024; Ansari, 2018; Bjorklund, 2022; Frogner et al., 2021).

Although learning begins in the home, it assumes a more formal structure when parents enroll their children in kindergarten. This stage represents a pivotal milestone in a child’s educational journey (López & Benner, 2025), bridging the transition from the informal learning environment of the household to the structured expectations of formal schooling. The quality of this transition exerts lasting influence on a child’s motivation, engagement, and attitudes toward future learning.

Teaching in kindergarten is therefore less a matter of rigid academic instruction than of cultivating a nurturing, supportive, and stimulating learning environment (Licardo et al., 2023). Central to this pedagogy is fostering curiosity, creativity, and confidence through developmentally appropriate, play-based approaches. Activities such as storytelling, art, music, and imaginative play not only sustain engagement but also serve as vehicles for cognitive growth, motor development, language acquisition, and socio-emotional competence.

The effectiveness of kindergarten teaching lies in striking a careful balance between enjoyment and educational value (Alotaibi, 2024; Parker et al., 2022). It is both a privilege and a challenge: a privilege because it enables teachers to establish the foundation for a lifelong love of learning, and a challenge because it requires patience, adaptability, and deep knowledge of early childhood development. Rather than functioning as a mere preparatory stage, kindergarten constitutes a critical phase in shaping resilient, capable, and well-rounded learners.

Kindergarten Teaching and Learning

Kindergarten teachers, like other educators, face a wide spectrum of professional challenges. Hegwood (2023) identifies recurring issues that include: (a) addressing diverse learning styles, (b) maintaining effective communication, (c) keeping pace with technological advances in education, (d) building constructive partnerships with parents, (e) responding to administrative pressures, (f) designing engaging yet curriculum-aligned lesson plans, (g) managing classroom behavior and development, (h) completing time-intensive administrative tasks, (i) coping with insufficient funding, and (j) preventing professional burnout. Taken together, these

challenges underscore the multifaceted nature of kindergarten teaching, which requires educators to balance pedagogical expertise with administrative efficiency, emotional resilience, and interpersonal skill.

Within this context, teaching kindergarten emerges less as a process of competitive instruction and more as an art of nurturing, support, and developmental responsiveness. Research consistently highlights that children at this stage thrive when engaged in play-based and experiential learning activities, including art, music, storytelling, and imaginative play. Such practices transform everyday play into opportunities to strengthen cognitive skills, fine and gross motor abilities, language development, and socio-emotional competence. A well-designed kindergarten program must therefore integrate varied instructional strategies to accommodate diverse learning styles and individual developmental trajectories.

The role of kindergarten teachers is thus pivotal in shaping early learning outcomes. Beyond delivering lessons, they are entrusted with fostering creativity, self-expression, and social interaction—capacities that serve as cornerstones for lifelong learning. Success in this endeavor depends on striking an appropriate balance between enjoyment and structured learning, thereby ensuring that young children not only acquire foundational academic competencies but also develop a sustained love for school. In this way, kindergarten education functions as both a developmental bridge and a catalyst for building resilient, confident, and capable learners.

Best Practices and Challenges of Kindergarten Teachers: A Case Study

This study sought to examine the best practices, challenges, and

coping mechanisms of kindergarten teachers, as well as the factors that contribute to their effectiveness in the teaching profession within the District of San Remigio, Schools Division of Antique. A pressing issue identified is that some kindergarten classes are conducted by teachers without adequate training in early childhood education, a circumstance that continues to challenge instructional quality in the district. Compounding this problem is the persistent perception of kindergarten learners as “future elementary pupils,” rather than as young children with distinct developmental needs. As a result, instruction is often delivered through formal structures more appropriate for older students, underscoring the need for kindergarten teachers to be specifically educated and trained in developmentally appropriate pedagogies.

Methodology

This study employed a mixed-methods research design, specifically the explanatory sequential approach. The design involved two phases: first, the collection and analysis of quantitative data, followed by a qualitative phase intended to elaborate on and clarify the quantitative findings. This sequential integration allowed for a deeper understanding of the challenges, coping mechanisms, and best practices of kindergarten teachers.

The research was conducted in the District of San Remigio, Antique, Philippines, which comprises one primary school, twenty-four elementary schools, one secondary school, and three integrated schools. The respondents in the quantitative phase were all twenty-five kindergarten teachers from these institutions. For the qualitative phase, seven teacher-participants were purposively selected using the following criteria: (1) educational specialization, (2) gender, (3) years of experience in kindergarten teaching, and (4) number of relevant trainings attended. To

ensure confidentiality, participants were assigned pseudonyms and identified numerically from 1 to 7.

Two research instruments were utilized. The first was a structured questionnaire-checklist composed of two sections: (a) demographic characteristics of respondents and (b) items on educational specialization, gender, kindergarten teaching experience, trainings attended, teaching strategies, and instructional materials used. The second instrument was a semi-structured interview guide aligned with the research questions, which consisted of four parts: (a) demographic characteristics of respondents, (b) challenges encountered in kindergarten teaching, (c) coping mechanisms employed, and (d) best practices observed in classroom instruction.

Prior to data collection, the researcher sought formal approval from the Office of the Schools Division Superintendent, the District Supervisor of San Remigio, and the respective school heads of participating teachers. Each participant received a letter of invitation outlining the purpose of the study and the scope of their participation. Informed consent was obtained through signed agreement forms.

For the qualitative phase, data were analyzed using Colaizzi's method, which involved extracting significant statements, formulating meanings, and clustering these into themes and categories. To enhance validity, member checking was conducted whereby participants reviewed the researcher's interpretations to confirm that the findings accurately represented their experiences.

Findings

With regard to strategies used in teaching kindergarten classes, respondents were asked to indicate their use of play, games, and songs. All twenty-five teachers reported employing all three approaches. This finding

aligns with the consensus in early childhood education literature that play, games, and songs constitute the most widely adopted and effective strategies for young learners. Play, often referred to as “children’s work”, is not merely a source of enjoyment but a vital pedagogical tool that supports social, emotional, cognitive, literacy, and numeracy development (UNESCO, 2020).

Table 1

Teaching strategies and materials used by kindergarten teachers

	f	%
Strategies		
Play	25	100
Games	25	100
Songs	25	100
Materials		
ICT Tools	7	28
Traditional Instructional Materials	10	40
ICT Tools and Traditional Instructional Materials	8	32

In terms of instructional materials, the data reveal diverse preferences among teachers. Seven respondents (28%) favored ICT-based tools, ten respondents (40%) preferred traditional materials, while eight respondents (32%) reported integrating both. These results suggest generational and experiential differences: younger teachers tend to be more comfortable and effective in incorporating digital tools, whereas those with longer service often rely on conventional materials. Increasingly, however, teachers combine both approaches to enrich learning experiences. This practice resonates with research highlighting the potential of technology to foster problem-solving, critical thinking, creativity, and communication skills. Nonetheless, Hendricks (2016) cautions that technological interactivity does not automatically translate into improved learning

outcomes, as young children may in some cases perform more effectively under traditional, structured conditions.

Findings from face-to-face interviews and focus group discussions (FGDs) further underscored the complexities of kindergarten teaching. Teachers reported encountering a range of professional challenges that extend beyond instructional practices, pointing to the need for holistic support systems that address pedagogical, administrative, and emotional demands.

Managing young learners is a priority in the kindergarten classroom. Research in early childhood development consistently notes that young learners, particularly at the preschool and kindergarten levels, often display forms of misbehavior that can be challenging to manage, especially during the initial weeks of schooling. For many children, the school setting represents an unfamiliar environment, leading to feelings of discomfort and adjustment difficulties. Given their strong attachment to familiar routines and relationships, young learners may initially perceive teachers and peers as strangers, which can heighten anxiety or resistance. Compounding these challenges is the naturally short attention span of children at this stage, which necessitates the use of developmentally appropriate strategies to sustain engagement and support positive behavior.

Each child is unique in characteristics and learning ability. Developmental psychologists emphasize that no two children are alike, as their skills and struggles, preferences and dislikes, and hobbies and activities collectively shape their individuality. In the classroom, these differences manifest in how children learn, express themselves, and demonstrate their distinct talents, strengths, and areas for growth. While such individuality enriches the learning environment and fosters diversity, it also presents significant challenges for kindergarten teachers, who must

adapt instruction to meet a wide range of developmental needs.

The need for varied and diverse instructional materials. Such materials serve as vital supports for lesson delivery, enabling children to grasp new concepts while also providing opportunities for practice and reinforcement. Incorporating a range of resources particularly those that integrate educational technology can reduce monotony, stimulate curiosity, sustain engagement, and make learning experiences more interactive. Nonetheless, the development and adoption of instructional materials that are both developmentally appropriate and pedagogically effective for young learners continue to pose significant challenges for kindergarten teachers.

Patience as a virtue in kindergarten teaching. Young learners are highly sensitive to the emotional states of adults; when teachers display agitation or frustration, children may experience stress, which can negatively affect their engagement and performance. Effective kindergarten instruction therefore requires teachers to maintain composure and exhibit calmness even in challenging situations. Like all adults, teachers may encounter minor irritations such as loud scraping of chairs, frequent bathroom requests, disruptive behavior, or unreasonable demands that test their patience. Managing these situations with equanimity is an ongoing professional challenge, yet it is essential for fostering a supportive and emotionally safe learning environment.

Acquiring and maintaining new technology requires investment. The integration of technology has the potential to make kindergarten classrooms more engaging and productive. Nevertheless, in many public schools, the acquisition and use of educational technology remain low priorities. Modern devices are often sensitive, costly, and challenging to maintain, particularly in environments with young children who may inadvertently damage them. Consequently, teachers must exercise vigilance

to safeguard both the equipment and the children, while ensuring that technological tools function effectively to support learning.

Classroom management remains one of the foremost challenges for kindergarten teachers, necessitating ongoing development of skills in this domain. This aligns with Hegwood's (2023) observation that educators at this level devote substantial time to managing behavior and maintaining classroom order, a task made complex by the diverse abilities, personalities, and developmental needs of young learners. Equally critical are the effective use of high-quality instructional materials (Theme 3) and the cultivation of emotional regulation (Theme 4), both of which support a positive and productive learning environment. Furthermore, the imperative to integrate technology in education (Theme 5) is reinforced by Hegwood (2023), who highlights the importance of remaining current with evolving learning technologies.

Across all professions, the ability to cope effectively is essential for sustained productivity, professional growth, and overall well-being. Coping mechanisms encompass strategies employed to manage stress and regulate difficult emotions. For kindergarten teachers, stressors are frequently job-related and are intensified by the demands of addressing the unique characteristics, developmental trajectories, and diverse learning needs of very young learners.

Building positive relationships with learners. The school environment is often regarded as a child's second home, with teachers serving as surrogate parents. Approaching children with the care and attention afforded to one's own child enables teachers to more effectively understand and respond to their developmental and emotional needs. Research indicates that positive teacher–learner relationships enhance motivation, sustain engagement, and reduce behavioral challenges an effect

that is particularly significant for young learners who continue to require strong parental support and guidance.

Improving classroom management skills. Effective classroom management is a cornerstone of successful kindergarten teaching. Traditional approaches often emphasize control rather than connection, relying on reactive strategies such as threats or extrinsic rewards. In contrast, sustainable classroom management prioritizes proactive and developmentally appropriate strategies. These include establishing clear rules, explicitly teaching and practicing routines, using visual and auditory signals, maintaining visual schedules, observing and responding to classroom dynamics, varying instructional approaches, providing behavior-specific praise, responding consistently to disruptions, and implementing fair and predictable consequences. Such strategies foster a positive, structured, and supportive learning environment that promotes engagement and reduces behavioral challenges among young learners.

Pursuing continuous professional growth and development. Professional development programs play a critical role in expanding teachers' knowledge and ensuring their skills remain current. While some veteran educators may initially resist change, continuous learning introduces new teaching techniques tailored to today's learners, enhances confidence, fosters creativity, and prepares teachers for expanded professional responsibilities.

Theme 1 highlights the importance of nurturing strong personal relationships with learners, emphasizing that being valued and appreciated by students serves as a powerful motivator for teachers. This aligns with O'Bryan (2019), who describes early childhood education as a rewarding and fulfilling profession and underscores the significance of a supportive work environment. Theme 2 reflects teachers' confidence in their classroom

management capabilities, consistent with Valente et al. (2024), who identify effective time management and prioritization as essential skills for educators. Theme 3 underscores the value teachers place on professional growth, corroborating O'Bryan's (2019) assertion that staying abreast of industry developments equips educators to navigate emerging challenges.

Best practices in teaching extend beyond effective instructional strategies to encompass a broader set of considerations, including access, equity, quality, governance, and measures promoting learner safety and well-being. Stakeholder engagement and support further reinforce these practices. For kindergarten teachers, best practices can be developed in targeted areas to optimize learner outcomes and achievement.

In particular, kindergarten educators can focus on creating adaptive and individualized learning materials, designing innovations that cultivate foundational literacy and numeracy skills, fostering values formation and discipline, and supporting children's social and emotional development. While instilling a love of learning at an early age is essential, it is equally important to ensure that children continue to enjoy their childhood. Consequently, best practices should contribute to holistic development, addressing both scholastic growth and overall well-being.

Analysis of interviews and focus group discussions (FGDs) revealed five overarching themes that capture the experiences, strategies, and perspectives of kindergarten teachers.

Building a child-centered classroom environment. Learner-centered education is fundamental in early childhood pedagogy, as it prioritizes individual student needs, diverse learning styles, and active engagement in the learning process. By tailoring instruction to these needs, children can progress at their own pace and make pedagogical choices that align with their strengths and interests. Research indicates that learners in such

environments tend to demonstrate greater confidence, improved communication skills, enhanced leadership capacities, and a stronger enjoyment of self-directed learning. Beyond academic outcomes, this approach promotes holistic development by fostering independence, self-esteem, and a sense of belonging within a collaborative classroom community, where all participants contribute to shared learning goals.

Institutionalized reward and recognition system. A classroom reward system serves to acknowledge and reinforce learner achievement and positive behavior. When implemented consistently, such systems motivate students and encourage them to perform to the best of their abilities. Rewards may take the form of privileges, such as sitting beside a friend for a day, or tangible recognition, such as stars on a behavior chart. By recognizing students' efforts, educators communicate appreciation for their hard work, fostering pride, satisfaction, and intrinsic motivation. Recognition can also highlight attributes such as persistence, improvement, and cooperation, which enhance self-confidence, cultivate a sense of accomplishment, and promote respect among peers. Even simple reward systems contribute to creating a positive learning environment, strengthening engagement, and improving overall learning outcomes.

Adopting the principles of inclusive education. Addressing individual learner needs is essential for cultivating an inclusive classroom, where every student has equitable opportunities to succeed. Inclusive education emphasizes the participation of all learners, framing differences in ability not as obstacles but as opportunities that enhance the educational experience for the entire class. By recognizing and valuing diverse strengths and learning profiles, educators can foster a supportive environment that promotes engagement, equity, and holistic development.

Collaborating with parents/guardians. Research demonstrates that

collaboration between parents and teachers positively influences children's academic achievement, work habits, social skills, and emotional well-being. Active parental involvement enables teachers to focus more effectively on instruction, while students whose parents are engaged are more likely to succeed academically and develop stronger social and emotional competencies. Moreover, such collaboration strengthens the relationships among parents, teachers, and the broader school community.

Theme 1 reinforces that the learner is the central focus of every classroom. This is supported by UNESCO (2020), which advocates learner-centered strategies, including cooperative learning, hands-on teaching, and play-based methods, emphasizing that “the art of teaching kindergarten children includes different instructional designs to help them learn at their own pace within a social and collaborative environment.” Theme 2 highlights the effectiveness of acknowledging positive behavior and learning accomplishments as a pedagogical strategy. Theme 3 underscores the importance of recognizing each learner's individuality, while Theme 4 emphasizes the critical role of parents in the teaching–learning process. Research by Popovska et al. (2021) and Kelty and Wakabayashi (2020) suggests that teachers should consistently communicate and collaborate with parents, providing updates on progress, sharing classroom activities, and addressing concerns. Yulianti et al. (2020) further note that strong teacher–parent partnerships are key contributors to children's academic and developmental success.

Recommendations

Teachers have successfully implemented a range of best practices that have significantly enhanced kindergarten teaching within their schools, particularly in areas such as child-centered instruction, classroom-based

reward systems, inclusive education, the promotion of equity and diversity, and active collaboration with parents and other stakeholders. These practices reflect a strong commitment to fostering the holistic development of learners, addressing not only cognitive growth but also social, emotional, and moral development.

To further advance kindergarten teaching, it is recommended that schools provide ongoing professional development focused on innovative pedagogical strategies, differentiated instruction, and the effective integration of technology. Strengthening communication channels among teachers, parents, and the broader community can also reinforce learning support, ensure continuity between home and school, and create a more nurturing and responsive learning environment. By continuously refining these practices and promoting reflective teaching, schools can maximize learner engagement, motivation, and overall development, ensuring that children thrive both academically and personally.

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Chapter 4

Learner Engagement through Instructional Materials: From Game-Based Strategies to Cultural Integration

Instructional materials play a vital role in enhancing learner engagement, deepening understanding, and supporting curriculum goals. This chapter brings together seven works that exemplify innovative approaches to material development across subject areas. In mathematics, resources such as the Reflective Learning Resource Material, Supplementary Workbook, and Instructional Material for Teaching Fractions provide structured pathways for conceptual mastery. In English, Game-Based Vocabulary Building Activities, Interactive Game-Based Spelling Supplementary Materials, and Game-Based Learning Material highlight interactive strategies that reinforce literacy skills. Meanwhile, Integration of Local Arts and Crafts in Teaching demonstrates culturally responsive pedagogy, enriching instruction through community-based resources and creative expression.

Reflective Learning Resource Material in Mathematics

Herbert I. Aquino

Students' performance in mathematics is directly shaped by changes in the educational framework and the fidelity of its implementation (Moreno-Guerrero et al., 2020). Teachers play a central role in this process, not only by developing students' mathematical knowledge and skills but also by fostering their ability to connect mathematical concepts to other disciplines and real-world contexts. Through effective guidance, teachers enable learners to discover, share, and apply their understanding (Li et al., 2024). Mathematics education is an inherently active and complex process; thus, well-designed classroom activities are indispensable in cultivating higher-order thinking skills. These activities help students think logically, systematically, and objectively, while also nurturing openness and adaptability in addressing problems (Su et al., 2016). For instance, problem-solving tasks strengthen creativity and critical thinking by engaging learners in progressive and challenging mental processes (Yu, 2024). Despite these potentials, many students continue to experience difficulties in mastering mathematical concepts, resulting in persistently low achievement levels.

Evidence from international large-scale assessments underscores this concern. The 2018 Programme for International Student Assessment

(PISA) reported that the Philippines obtained an average score of 353 points in mathematics, significantly below the global mean of 489. Moreover, only 19% of Filipino students reached Level 2 proficiency or higher, a benchmark for basic mathematical literacy. These findings highlight what Dela Cruz (2019) describes as the “urgency of resolving problems and inequalities in attaining quality basic education in the country.” At the local level, one national high school in Quezon Province recorded a Mathematics Mean Percentage Score (MPS) of 54.87% in school year 2018–2019, with Grade 9 students scoring the lowest at 53.97%. Both figures are well below the national passing standard of 75%, further illustrating students’ substantial struggles with mathematics learning.

The onset of the COVID-19 pandemic exacerbated these learning gaps. The shift to modular distance learning posed significant challenges for both learners and teachers (Castroverde & Acala, 2021). Dangle and Sumaoang (2020) identified three primary barriers to this modality: insufficient funding for module production and distribution, students’ difficulties in managing self-directed learning, and the limited capacity of many parents to provide academic support at home. Despite these constraints, teachers have sought to adopt alternative strategies to address the diverse needs of learners, reaffirming their pivotal role in mitigating barriers to mathematical achievement (Dayagbil et al., 2021).

Improving mathematics learning requires not only effective pedagogy but also the development of high-quality instructional materials. Hendriana (2017) emphasizes that innovative resources should empower students to explore and maximize their abilities. Since learning materials significantly shape the mastery of lessons (Widodo & Jasmadi, 2008), they must be designed with mechanisms for evaluation, timely feedback (Prastowo, 2012), and opportunities for reflection on the learning process

(Hendriana, 2019). Reflection, in particular, has been shown to be a powerful tool for strengthening mathematical understanding and promoting learner autonomy (Attard, 2017). Such reflective practices become especially vital in distance learning environments, where independent learning and self-regulation are crucial for success.

Reflective Learning as a Tool for Enhancing Mathematics Performance

Reflection can be deliberately scaffolded and encouraged to foster professional growth and reflective practice (Hegarty, 2011). For students, reflective learning activates prior knowledge, enables the reconstruction of understanding, and supports learning from personal experience. It also cultivates metacognitive skills, promotes responsibility for one's own learning, and enhances the capacity to restructure and reframe information (McLeod, 2017). From the teachers' perspective, reflective practice serves as a diagnostic tool, helping identify areas for instructional improvement and guiding pedagogical adjustments that lead to stronger learning outcomes (Orias, 2019).

One widely adopted strategy for reflective learning is journal writing, often combined with situational testing and feedback analysis. Research consistently demonstrates its value in mathematics education. Disilio (2019) found that students who engaged in reflective journaling attained higher mean test scores, produced more complex mathematical explanations, and employed discipline-specific academic language more effectively. Similarly, De Leon-Pineda and Prudente (2022) reported that mathematics journals improved students' attitudes, bolstered their confidence, and strengthened their problem-solving skills. Denton (2018)

further observed that reflective journals helped students regulate negative emotions, such as anxiety and frustration, when confronting difficult mathematical tasks.

According to Costa and Kallick (2020), reflection involves connecting present experiences to prior learning (scaffolding), integrating cognitive and emotional insights from multiple sources, and applying these insights to new situations. While traditional journal writing has proven effective in face-to-face mathematics classrooms, integrating digital tools and diverse instructional approaches can further enrich reflective practices. These strategies may include open-ended, self-reflective exercises as well as structured, content-specific assessments such as forced-choice prompts (Choi et al., 2017).

Within education, learning outcomes are understood as measurable achievements that students are expected to demonstrate as a result of instruction. They capture the knowledge, skills, and dispositions acquired through structured learning experiences (Villamis, 2020). In mathematics, these outcomes commonly emphasize higher-order competencies such as analytical reasoning, representation, and problem-solving skills—capacities that are strengthened when reflection is embedded as an integral component of instruction.

Analysis. Analytical skills denote the deductive capacity to solve mathematical problems (Indriati et al., 2020). In mathematics, analysis entails breaking down material into its fundamental components and understanding the relationships among these parts within a larger structure or purpose (Ariyanto, 2020). Given the abstract nature of mathematical concepts, students must develop the ability to think analytically by applying not only single theories but also multiple, interconnected ideas to construct meaning and solutions (Khusna, 2020). At this level of cognitive

engagement, learners demonstrate their capacity to differentiate, organize, and characterize information in ways that deepen their mathematical reasoning and problem-solving proficiency (Ariyanto, 2020).

Representation. Mathematical representation can be expressed in both visual and non-visual forms. Visual representations include graphs, tables, sketches, and diagrams, whereas non-visual forms involve numerical expressions, equations, and symbolic models (Minarni et al., 2016). As a cognitive process, representation is central to developing conceptual understanding, particularly in solving problems that involve ratios, proportions, and percentages. By translating abstract ideas into more concrete forms, it enables learners to reason logically and to structure knowledge through the systematic use of signs, symbols, and objects (Widakdo et al., 2017). In geometry, for example, the ability to generate and interpret representations is indispensable for accurate problem-solving and for fostering deeper conceptual clarity (Utami et al., 2019).

Problem-solving skills. The overarching goal of mathematics education is to equip students with the capacity to apply mathematical knowledge and skills to real-life challenges (Phonapichat et al., 2014). Central to this aim are problem-solving skills, which require learners to comprehend problems, select appropriate approaches, and adapt strategies to arrive at effective solutions (Surya et al., 2017). These skills involve a range of cognitive processes, including exploration, interpretation, reasoning, prediction, evaluation, and reflection (Anderson, 2009). Beyond their academic significance, problem-solving skills are highly transferable and essential for addressing everyday situations (Pinter, 2012). Teachers play a pivotal role in developing these competencies by structuring learning materials and guiding students in applying problem-solving strategies to diverse mathematical and real-world contexts (Simamora et al., 2019).

Effects of Reflective Learning Resource Material on Achievement of Mathematics Learning Outcome: A Case Study

This study investigates the impact of a reflective learning resource material on the mathematics performance of Grade 9 students. Specifically, it explores students' perceptions of the resource, assesses their performance through pretests and posttests in analytical, representational, and problem-solving skills, and examines whether significant differences exist between pretest and posttest scores. Furthermore, it seeks to determine the relationship between students' evaluations of the resource and their overall performance in mathematics.

Methodology

The study employed a descriptive research design to examine the impact of a reflective learning resource material on students' performance in Mathematics 9. This approach was selected to provide a systematic description and analysis of the material's effectiveness in improving learning outcomes.

A cluster sampling technique was utilized to identify the study participants. From the four Grade 9 sections in a national high school, with a total population of 147 students, one section was selected as the sample. Due to the large population, time constraints, and limited financial resources, the Grade 9 section Cattleya, comprising 35 students, was chosen. The class consisted of 27 girls and 8 boys who served as respondents.

Data collection employed three researcher-developed instruments: (a) the reflective learning resource material, (b) a pretest and posttest designed to measure analytical, representational, and problem-solving

skills, and (c) a survey questionnaire capturing students' reflective learning experiences.

Reflective learning resource material. The reflective learning material was developed using the ICARE model proposed by Hidayat (2017), which comprises five core learning elements: Introduction, Connection, Application, Reflection, and Extension. The material was aligned with Quarter 2 lessons in Mathematics 9, covering key topics such as variations, integral and zero exponents, rational exponents, radical expressions, simplifying radical expressions, operations on radicals, and radical equations. It incorporated the Most Essential Learning Competencies (MELCs) and clearly defined lesson objectives to ensure alignment with curriculum standards. To facilitate deeper learning, mathematics journal templates were integrated into the material, enabling students to articulate, explain, and organize their thinking in written form. A sequence of exercises was also included, progressing from basic to more complex tasks to promote mastery. Each session concluded with a structured reflective activity, designed to help students evaluate their understanding, consolidate insights, and internalize key mathematical concepts.

Pretest and Posttest. Both tests were constructed using a table of specifications aligned with the curriculum goals, the Most Essential Learning Competencies (MELCs), and the Department of Education's self-learning modules for Quarter 2. They were designed to assess students' analytical, representational, and problem-solving skills in equal measure. Content validation was undertaken by subject experts, including an editorial manager, who evaluated the instruments for clarity, comprehensiveness, grammar, and content accuracy. Based on their recommendations, revisions were made to improve question stems, regroup items according to specific

performance indicators in mathematics, and refine the final pool of test items.

The validated instruments, each consisting of 40 items, were administered as pretests and posttests. The pretest was conducted on the first day of the second quarter during the module distribution schedule, with students submitting their responses after four days. The posttest was administered following six consecutive weeks of using the reflective learning material as a supplemental resource, and students returned their completed tests four days after administration.

Survey questionnaire. A researcher-developed survey questionnaire was employed to capture students' perceptions of the impact of the reflective learning resource material. The instrument consisted of six indicators, each represented by five statements measured on a five-point Likert scale. The survey was administered during the eighth week of the second quarter, with clear instructions provided to ensure that students understood its objectives and responded accurately.

Results

Table 1 presents students' evaluation of the reflective learning resource material across six dimensions: positive feelings, obstructing feelings, association, integration, validation, and appropriation. Overall, the results indicate students' agreement with the indicators, reflecting a generally positive appreciation of the material.

In terms of positive feelings, students expressed agreement on all criteria, yielding a general mean of 3.34. This suggests that the reflective learning resource material fostered positive experiences through reflective writing and enabled learners to harness constructive emotions in order to deepen their understanding of mathematical lessons. This result is

consistent with the findings of Guce (2017), who emphasized that opportunities for students to recognize how writing enriches their mathematical learning can cultivate positive emotions and a greater sense of fulfillment.

Table 1

Students' evaluation of the reflective learning resource material

Indicators	Mean	SD	VI
Positive Feelings	3.34	0.71	Agree
Obstructing Feelings	3.20	0.74	Agree
Association	3.27	0.64	Agree
Integration	3.33	0.67	Agree
Validation	3.35	0.68	Agree
Appropriation	3.37	0.67	Agree

Legend: 3.50-4.00- Strongly Agree, 2.50-3.49- Agree; 1.50-2.49 – Disagree; 1.00-1.49 – Strongly Disagree

In terms of obstructing feelings, students also expressed agreement, with an overall mean of 3.20. This indicates that they were able to manage potential negative emotions while using the material. The integration of journal writing and guided prompts appeared to help students regulate affective barriers, sustain a positive attitude toward mathematics, and remain engaged with the topic. As a result, learners had more opportunities to articulate their thoughts, generate new ideas, and strengthen their conceptual understanding.

For association, the overall mean of 3.27 suggests that students were able to connect ideas and emotions from their initial experiences with both prior and current knowledge. Similarly, the other indicators received consistent agreement ratings: integration (M = 3.33, SD = 0.67), validation (M = 3.35, SD = 0.68), and appropriation (M = 3.37, SD = 0.67). These

results demonstrate that the reflective writing tasks embedded in the learning material effectively supported students in linking new concepts to real-life applications, formulating solutions, and re-evaluating experiences within authentic contexts.

Table 2 presents the pretest and posttest results of Grade 9 students.

Table 2

Pretest and Posttest scores of the students

Scores	Pretest		Posttest		Remarks
	F	%	F	%	
Analysis					
12-14	2	5.7	19	54.3	Advanced
9-11	6	17.1	6	17.1	Proficient
6-8	15	42.9	7	20.0	Approaching Proficiency
3-5	11	31.4	2	5.7	Developing
0-2	1	2.9	1	2.9	Beginning
Representation					
12-14	0	1.00	18	51.4	Advanced
9-11	3	8.6	11	31.4	Proficient
6-8	10	28.6	4	11.4	Approaching Proficiency
3-5	17	48.6	2	5.7	Developing
0-2	5	14.3	0	0	Beginning
Problem Solving					
12-14	1	2.9	8	22.9	Advanced
9-11	3	8.6	10	28.6	Proficient
6-8	11	31.4	13	37.1	Approaching Proficiency
3-5	18	51.4	4	11.4	Developing
0-2	2	5.7	0	0	Beginning

In terms of analysis, most students' pretest scores ranged from 6 to 8 points, with the highest frequency (15 students or 42.9%) falling under the approaching proficiency level. Eleven students (31.4%) were classified as developing. These results indicate that prior to the use of the reflective learning resource material, students demonstrated only an average ability to scrutinize and deconstruct mathematical facts. Following the

implementation, most students scored between 12 and 14 points, which corresponds to the advanced level, while seven students remained at the approaching proficiency level. This progression suggests that the material enhanced students' capacity to apply effective strategies for analyzing questions, resulting in more accurate responses and greater mastery of key concepts.

With respect to representation, no student reached the exceptional level in the pretest. Instead, most were within the approaching proficiency to developing range, reflecting only a minimal ability to restate mathematical concepts or expressions in equivalent forms. In the posttest, however, the majority advanced to the proficient and advanced levels, demonstrating marked improvement in their ability to represent and translate mathematical ideas.

For problem-solving, the pretest results showed that most students were at the approaching proficiency to developing levels. After the use of the reflective learning resource material, the majority advanced to the proficient and approaching proficiency levels. This improvement illustrates how the material supported students in becoming more competent and confident in solving mathematical problems.

These findings are consistent with previous studies emphasizing the value of reflective learning strategies. Guce (2017) highlighted that positive emotional engagement fosters deeper understanding, while Kuuk and Arslan (2020) observed that journal writing helps students overcome negative feelings. The favorable evaluation of the reflective learning material also resonates with McCoy's (2013) view that enjoyable learning enhances outcomes, Williams' (2008) finding that it strengthens engagement with new knowledge, and Cowan's (2014) assertion that it provides opportunities for corrective learning. Similarly, Murillo-Llorente

et al. (2021) demonstrated its relevance to real-world applications, Al-Rawahi and Al-Balushi (2015) emphasized its role in problem-solving, Farrah (2012) underscored its capacity to link concepts with experiences, and Habibi et al. (2017) recognized its effectiveness in helping learners organize ideas across levels of understanding.

Table 3

Test of difference between the pretest and posttest on the dependent variable

Mathematics Learning Outcome	Pretest		Posttest		T	Df	Sig.
	Mean	SD	Mean	SD			
Analysis	6.46	2.66	10.54	3.19	-7.591	34	.000
Representation	4.97	2.36	10.94	2.79	-11.289	34	.000
Problem Solving Skills	5.69	2.23	8.69	2.71	-6.493	34	.000

Based on Table 3, the results reveal a significant difference between the pretest and posttest scores of the student-respondents before and after the use of the reflective learning resource material, with a significance value of 0.000 across all mathematics learning outcomes. This indicates a marked improvement in students' performance, as they advanced from the developing and approaching proficiency levels to the advanced level in analysis and representation. In problem-solving, student-respondents also progressed to the approaching proficiency and proficient levels, further demonstrating the positive effect of the intervention.

The statistical evidence confirms that the reflective learning resource material substantially enhanced students' skills and facilitated the attainment of the targeted mathematics learning outcomes. These findings are consistent with the works of Guce (2017), Kuuk and Arslan (2020), McCoy (2013), Williams (2008), Cowan (2014), Murillo-Llorente et al. (2021), Al-Rawahi and Al-Balushi (2015), Farrah (2012), and Habibi et al.

(2017), all of whom emphasized that reflective learning strategies significantly contribute to improved student performance in mathematics.

Table 4

Test of significant relationship between the evaluation of the learning resource material and the students' mathematics performance

Reflective Learning Resource Material	Mathematical Learning Outcomes		
	Analysis	Representation	Problem Solving Skills
Returning to Experience			
Using Positive Feelings	.421*	.306	.416*
Removing Obstructing Feelings	.031	.086	.109
Re-evaluate to Experience			
Association	.157	-.068	.073
Integration	.194	.048	.155
Validation	.278	.217	.386*
Appropriation	.257	.180	.187

Notes: **. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4 presents the significant relationship between students' evaluation of the reflective learning resource material and their test performance results. The data reveal a notable connection between the use of positive feelings and analysis as a mathematical learning outcome, with an r-value of 0.421. Similarly, a significant relationship was observed between positive feelings when engaging with the reflective learning material and problem-solving skills, yielding an r-value of 0.416. In addition, validation in re-evaluating experiences showed a significant relationship with problem-solving skills, reflected in an r-value of 0.386.

These results suggest that students' affective engagement with the reflective learning material particularly in fostering positive emotions and validating learning experiences plays an important role in enhancing their

performance in mathematics. This finding corroborates the work of Viterbo (2019), who demonstrated that the use of more accessible and practical materials, such as learning modules, is significantly associated with learners' attainment of problem-solving skills, particularly in the application of mathematical concepts.

Recommendation

The evaluation results revealed that students responded positively to the use of the reflective learning resource material in their mathematics studies, highlighting its effectiveness in fostering active engagement in learning. Following its integration, students demonstrated substantial improvement, attaining proficient to advanced levels in analysis and representation, and progressing to approaching proficiency and proficient levels in problem-solving skills.

In view of these significant gains in student proficiency, the study strongly recommends the integration of the reflective learning resource material into the Mathematics 9 curriculum. Such integration serves as an effective strategy to enhance student engagement, cultivate higher-order thinking skills, and strengthen overall mastery of mathematical concepts.

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Game-Based Vocabulary Building Activities Material in English

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Vocabulary is a fundamental component of English proficiency, serving as the foundation for listening, speaking, reading, and writing skills, and underpinning overall reading comprehension. Learners can express ideas effectively only through the words they know, and a broad, varied vocabulary enables more precise and complex communication. Consequently, vocabulary knowledge has a direct impact on achievement in both reading and writing.

The COVID-19 pandemic disrupted traditional learning delivery, generating anxiety and disengagement among students, particularly in subjects taught in a second language, such as English. This concern is further underscored by the 2018 Program for International Student Assessment (PISA) results, which revealed low performance among Filipino students in reading. The Philippines ranked 79th globally, with over 80% of students failing to reach the minimum proficiency level and a mean score of 340 compared to the OECD average of 487—one of the largest proportions of low performers among participating countries and

economies.

In response to these challenges, integrating games into lesson delivery has emerged as an effective strategy to enhance engagement and facilitate learning. Whether implemented interactively, online, or offline, game-based activities function as both instructional tools and formative assessment methods, promoting active participation and sustained motivation. There is, therefore, a pressing need to enhance English vocabulary instruction through game-based approaches. By employing interactive, engaging, and contextually meaningful games, teachers can help learners expand their vocabulary, improve comprehension, and strengthen language production, equipping students with the skills required to succeed in 21st-century learning environments.

The Use of Game-Based Approach in Enhancing English Vocabulary

Vocabulary, alongside phonetics and grammar, is fundamental for mastering a foreign language, as it underpins the four core language skills: listening, speaking, reading, and writing. Insufficient vocabulary knowledge hampers language proficiency and may demotivate learners, given that effective communication depends heavily on the words one possesses. Consequently, teaching vocabulary is a central component of language instruction, enabling second language learners to comprehend and express ideas in both spoken and written forms (Hombali, 2018).

Despite its importance, several persistent challenges impede vocabulary acquisition. According to Susanto (2021), many students struggle with correct pronunciation, accurate spelling, and understanding grammatical inflections, all of which complicate the internalization of new

vocabulary. Additional difficulties include selecting the appropriate meaning of words, using terms correctly in context, and interpreting idiomatic or figurative language. Surmanov and Azimova (2020) further note that learners often lack confidence in effective vocabulary-learning strategies and may be uncertain about how to adopt a focused and systematic approach.

Research indicates that educational games are a highly effective tool for addressing these challenges in English language classrooms. While game-based learning is not a new concept, it has gained recognition for its capacity to create engaging, interactive environments that facilitate meaningful language use. Arcagok (2021) emphasizes that game-based activities enhance motivation, provide enjoyable and interactive learning experiences, and support the acquisition of targeted vocabulary. These activities offer contextualized practice opportunities, allowing learners to apply new words in problem-solving tasks, collaborative exercises, and real-life scenarios. Through repeated exposure and active engagement, students can improve pronunciation, spelling, and contextual understanding while reducing the anxiety often associated with language learning.

Game-based practices also support cognitive, socio-emotional, and psychomotor skills, often resulting in higher academic achievement compared to traditional instructional methods (Alotaibi, 2024; Hibana et al., 2024; Manninen et al., 2024). Notably, preschool and primary learners benefit more from game-based vocabulary instruction than secondary students, likely due to their curiosity, enthusiasm, and openness to playful learning. Vocabulary games such as word matching, charades, crossword puzzles, and role-playing activities provide repeated yet varied exposure to new terms, reinforcing retention and promoting deeper processing of word meanings.

Plass et al. (2020) identified four theoretical foundations that underpin the effectiveness of game-based learning: motivational, cognitive, affective, and sociocultural. Motivation, often the strongest driver, is sustained through enjoyable game mechanics, incentive systems, and opportunities for “graceful failure,” where mistakes are treated as learning steps rather than setbacks. Cognitively, games encourage active recall, contextualized application, and problem-solving, all critical for long-term vocabulary retention. Affectively, they reduce anxiety and increase enjoyment, while socioculturally, they foster collaborative interactions, allowing learners to use target vocabulary in authentic communication with peers.

Ultimately, integrating game-based activities into English vocabulary instruction addresses common learning challenges while transforming vocabulary acquisition into a dynamic, enjoyable, and highly effective process. By providing a safe, stimulating environment for practice, these activities bridge the gap between word recognition and fluent, contextually appropriate use in real-life communication.

The Effectiveness of Game-Based Activity Materials in English: A Case Study

This study aimed to develop and enhance game-based activity sheet materials designed to improve the vocabulary performance of Grade 8 learners in English, with particular emphasis on reading and writing skills. Specifically, the study examined learners’ current levels of English vocabulary development, the effectiveness of various learning activities, preferred approaches to vocabulary acquisition, and peer evaluations of the newly developed game-based vocabulary-building materials.

Methodology

The study employed descriptive methods with a focus on instructional development. Descriptive research is designed to examine existing conditions and generate insights that can inform improvements. In this study, the information gathered was intended to provide recommendations for enhancing the effectiveness of the game-based vocabulary-building materials.

Two groups of respondents participated in the study. The first group consisted of 20 teachers with experience teaching English 8, along with four specialists skilled in English instruction and the production of learning resource materials. The second group comprised 110 randomly selected Grade 8 students from four class sections.

Two types of research instruments were utilized. The first consisted of researcher-developed checklist questionnaires for teachers and students. The teacher checklist identified the approaches employed in teaching vocabulary, while the student checklist examined learning preferences. The second instrument was an adapted Learning Resource Materials Development and Evaluation (LRMDS) tool based on DepEd Guidelines and Processes for LRMDS Assessment and Evaluation, used to assess the effectiveness and quality of the developed materials. Teacher questionnaires were administered electronically via Google Forms, whereas student questionnaires were printed and distributed alongside learning modules, in alignment with the school's modular learning modality. Copies of the game-based vocabulary-building activities and evaluation tools were personally delivered to the specialist evaluators by the researcher.

Data collected from respondents were classified, tabulated, and encoded for analysis. Ethical considerations were observed throughout the study, with participation being voluntary. Informed consent was obtained

from all participants, and parental consent was secured to ensure parents were aware of their children’s involvement. For data analysis, statistical techniques including mean, standard deviation, ranking, frequency, and percentage were employed.

Findings

Table 1 presents the results of the summative test scores in English for School Year 2019–2020. It shows the overall Mean Percentage Score (MPS) of the summative tests per quarter, which is only 56.14%, falling within the average level range of 35–65%.

Table 1

Summative test scores in English 8

Quarter	Mean Percentage Score	Interpretation
First Quarter	55.55%	Average
Second Quarter	63.18%	Average
Third Quarter	50.58%	Average
Fourth Quarter	55.24%	Average
Over-all Level	56.14%	Average

Legend: Mastered=96-100%; Closely approximating mastery=86-95%; Moving towards mastery=66-85%; Average=35-65%; Low=15-34%; Absolutely no mastery=0-4%

Vocabulary competence is reflected in learners’ performance on summative assessments. Benlazar (2019) emphasizes that summative evaluation not only measures learners’ vocabulary knowledge but also influences the effectiveness of instructional strategies for vocabulary enhancement. Summative tests serve as a valuable tool for guiding teachers in designing lessons and materials that align with course objectives and address students’ learning needs. The results underscore the importance of exploring innovative strategies to strengthen learners’ vocabulary skills and optimize their language proficiency.

Table 2 presents the learning activities implemented by the teachers.

Table 2
Learning activities implemented by English 8 teachers

Learning Activities	WAM	Interpretation
Direct Approach		
Identification of the parts of speech	3.60	Always
Picture study	3.65	Always
Use of signs and symbols	3.35	Oftentimes
Knowledge on grammar structure	3.60	Always
Use of prefixes, suffixes and root words	3.35	Oftentimes
Communicative Approach		
Dialogue	3.60	Always
Debate	3.15	Oftentimes
Symposium	3.10	Oftentimes
Role playing	3.70	Always
News casting	3.25	Oftentimes
Total Physical Response		
Charades	3.50	Always
Body Language	3.40	Oftentimes
Mimicking	3.40	Oftentimes
Singing	3.40	Oftentimes
Choral recitation	3.35	Oftentimes
Audio-Lingual Approach		
Drills on pronunciation	3.80	Always
Manipulation of new vocabulary in daily conversation	3.55	Always
Appreciation of new vocabulary through constant use	3.60	Always
Application of the new learning as needed	3.70	Always
Model the vocabulary words in communication	3.60	Always

Regarding direct approach activities, picture study emerged as the most frequently employed learning strategy, with a mean score of 3.65, interpreted as “always.” This finding aligns with Carpenter and Olson (2012), who noted that the use of visual aids, such as pictures, in foreign language vocabulary instruction enhances retention and comprehension compared to reliance on words alone. Pictures support visual learners in recalling the word, its meaning, and contextual usage, thereby improving reading comprehension. These results suggest that teachers favor picture study as a direct approach strategy because pairing visual aids with

vocabulary words facilitates the creation of mental images, reinforcing both retention and understanding. Conversely, the use of signs and symbols, as well as morphological analysis strategies such as prefixes, suffixes, and root words, were less frequently applied, each receiving a mean score of 3.35 (“oftentimes”). While visual-based instruction is clearly valued, integrating morphological strategies more consistently could further enhance vocabulary learning.

For communicative approach activities, role-playing ranked highest among the five indicators, with a mean score of 3.70 (“always”). This finding supports Alabsi (2016), who emphasized that role play provides an enjoyable means for students to practice vocabulary in simulated, authentic contexts. In contrast, symposiums, which involve discussing multiple viewpoints on a given topic, received the lowest mean score of 3.10 (“oftentimes”). Overall, the results suggest that role-playing is an engaging and highly effective communicative strategy for reinforcing vocabulary skills.

In the context of total physical response (TPR) activities, charades received the highest mean score of 3.50 (“always”). In this activity, learners represent words through riddles, pictures, tableaux, or dramatic actions, making it the most commonly used strategy among teachers. Conversely, choral recitation scored lowest, with a mean of 3.35 (“oftentimes”). Choral recitation, where the teacher and class read a text aloud together, can reduce anxiety for struggling readers while encouraging participation. These results indicate that teachers recognize the value of active, game-based strategies such as charades, but consistent use of choral recitation could further support vocabulary development.

Finally, all indicators of audio-lingual approach activities were rated as frequently implemented, with pronunciation drills achieving the highest

mean score of 3.80. Drilling, a longstanding feature of second language classrooms, is supported by Fauzia (2018), who demonstrated that structured drill activities significantly improve immediate vocabulary recall. Pronunciation drills aid in storing vocabulary for long-term retention; however, manipulation of newly learned words in daily conversation received the lowest mean score of 3.55 (“always”). Webb (2007) highlights that a word must typically be used 10 to 16 times before it becomes fully internalized, necessitating a combination of memorization, reading, contextual use, and supplementary activities. Overall, the findings indicate that consistent pronunciation drills are highly effective for strengthening vocabulary skills but should be complemented by activities that promote active use of vocabulary in authentic communication contexts.

Table 3

Learners’ preferred approach in learning vocabulary

Approach	F	%
Direct approach	36	32.73%
Communicative approach	28	25.45%
Total physical response	24	21.81%
Audio-lingual approach	23	20.90%

Table 3 presents the preferred approaches of Grade 8 learners for vocabulary acquisition. The results indicate that 36 out of 110 respondents (32.73%) favored activities associated with the direct approach, citing that these activities facilitate the learning of new words and enhance vocabulary skills. Gabarre et al. (2016) describe the direct approach as a method in which English teachers introduce vocabulary through real objects, emphasize oral interaction and spontaneous language use, and avoid translation between the first and second languages. Repeated exposure to vocabulary in varied contexts strengthens word learning, as learners who

see, hear, and engage with specific words multiple times are more likely to retain them. Teachers who provide extended instruction and promote active engagement create multiple opportunities for students to encounter and use new vocabulary, which, in turn, enhances comprehension and retention when these words are later encountered in reading.

Table 4

Acceptability of game-based vocabulary activity material

Area	Mean	Interpretation
Content	3.82	Very Satisfactory
Format	3.75	Very Satisfactory
Presentation and organization	3.45	Very Satisfactory
Accuracy and currency	3.75	Very Satisfactory

Table 4 presents the evaluation ratings of the activity materials by expert evaluators, based on the LRMSD criteria for acceptability. For content acceptability, the materials received an average mean score of 3.82, interpreted as Very Satisfactory and meeting the passing standard under LRMSD guidelines. However, the findings revealed a notable gap: the materials lacked adequate warning or cautionary notes in topics and activities where health and safety could be compromised. This suggests that instructional materials should not only provide knowledge and develop learners’ skills but also explicitly inform students of relevant health and safety protocols. Such considerations are particularly crucial during a pandemic and align with DepEd Order No. 014 s. 2020, which emphasizes that the health and safety of learners, as well as teaching and non-teaching personnel, must be safeguarded at all times.

Regarding format acceptability, the material received an average mean score of 3.75, interpreted as Very Satisfactory and meeting LRMSD standards. Within this dimension, the indicator for print quality, including

letter size, spacing, font style, and overall printing quality, ranked lowest, suggesting that the material did not achieve optimal visual presentation. Proper spacing is essential for text legibility, facilitating the reader's ability to track lines efficiently, while high-quality printing enhances visual appeal and reduces the likelihood of overlooking critical information.

In terms of presentation and organization, the materials obtained an average mean score of 3.45 (Very Satisfactory), also meeting LRMS criteria. However, the indicators for the logical and smooth flow of ideas and sentence length appropriate for the target reader were rated lowest, indicating inconsistencies in sequencing and readability. Matthews and Folivi (2023) note that shorter sentences improve comprehension, whereas longer constructions may hinder it. Ensuring a coherent sequence of lessons and activities promotes deeper understanding and facilitates more effective learning.

For accuracy and currency of information, the materials achieved an average mean score of 3.75 (Very Satisfactory), satisfying LRMS requirements. The most frequently observed issue was the presence of grammatical errors. While such errors may affect comprehension, Alexopoulou (2020) emphasizes that they do not reflect the cognitive abilities or intelligence of second-language learners; rather, they are a natural component of the language acquisition process.

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Interactive Game-Based Spelling Supplementary Materials

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Vocabulary plays a pivotal role in language acquisition, and students' enjoyment of the learning process significantly influences their achievement. Spelling, in particular, extends beyond rote memorization; it is a fundamental skill that underpins both reading and writing proficiency. Mensah et al. (2022) define spelling as the conventional method of representing spoken words in written form, applicable specifically to alphabetic systems. It involves identifying the letters of a word, segmenting them into distinct syllables, and subsequently recombining them to enable accurate reading and pronunciation.

Despite its importance, spelling continues to pose persistent challenges for English language learners. To address these difficulties effectively, teachers must first analyze the nature of their students' spelling errors. Research highlights that such errors may be interlingually influenced arising from the interference of the learner's first language or intralingually driven, resulting from the complexities of the target language itself (Changkakoti & Goswami, 2021).

The prevalence of spelling-related difficulties remains a pressing concern in contemporary classrooms. Apolog et al. (2017) note that many students struggle to write effectively because they cannot spell words correctly. This challenge, which transcends generations, has become increasingly consequential for academic performance. As Cox (2014) emphasizes, structured instruction in spelling is indispensable for enabling students to read with fluency and write with precision.

Within this context, games have emerged as a pedagogical tool that enhances classroom learning and supports the development of spelling and vocabulary. Beyond traditional drill-based exercises, language games stimulate active participation, sustain learner engagement, and encourage authentic communication. Their effectiveness lies in the timing of practice, the quality of the activities, and the extent to which they create meaningful opportunities for language use.

Game-Based and Manipulative Approaches to Teaching Spelling

Spelling refers to the accurate arrangement of letters to form words. It is a transcription skill that underpins writing fluency and provides a foundation for broader language proficiency. Mastery of spelling contributes to the development of speaking, listening, reading, and writing skills, thereby reinforcing multiple dimensions of literacy (Apolog et al., 2017). As Hook and Jones (2009) argue, spelling fosters fluency and automaticity, which in turn facilitate reading comprehension and written expression. Moreover, spelling strengthens the link between sounds and letters, enabling learners to decode and encode words effectively. The acquisition of high-frequency sight words further enhances students' ability to read and write with confidence and accuracy.

Spelling, or orthography, is widely recognized as a neurologically

demanding sub-skill of writing, requiring the integration of phonological knowledge, morphological awareness, and orthographic rule systems (Xuan, 2014). Addressing spelling difficulties therefore calls for innovative and engaging instructional approaches. One promising strategy is the use of spelling games. For instance, Mensah et al. (2022) found that incorporating spelling games into primary education significantly improved pupils' spelling performance. Similarly, Aprillia (2018) demonstrated the effectiveness of Spelling Bee activities in enhancing vocabulary mastery. Through classroom action research, the study showed that these activities encouraged students to share ideas, develop word knowledge, and overcome difficulties in consulting dictionaries ultimately meeting established success criteria for learning outcomes.

Evidence from early childhood contexts reinforces these findings. Nurhayati (2018), in a study of kindergarten learners, reported that limited spelling ability often stemmed from unengaging activities, difficulties in pronouncing and spelling English words, and low learner motivation. By integrating interactive tasks and assessing progress through classroom observations and pre- and post-tests, the intervention yielded measurable improvements in both spelling proficiency and learner motivation.

Different types of spelling games can be integrated into classroom instruction. Crossword puzzles, for example, not only reinforce vocabulary and spelling but also develop problem-solving and critical thinking skills. Paul (2003) identifies crossword puzzles as a popular pedagogical tool that relies on known vocabulary and visual cues, while Hornby (1974, as cited in Bambang, 2013) describes them as structured word grids that enhance both word recall and reading comprehension.

Further extending this approach, Qamariah and Wahyuni (2018) introduced manipulative learning strategies, grounded in constructivist

theory, in their work with third-grade EFL students. By engaging learners through hands-on and visually stimulating materials, the method encouraged exploration and inquiry. Apolog et al. (2017) highlight that manipulatives facilitate active discovery of concepts, while Rosli et al. (2015) emphasize their multisensory nature, which promotes communication, builds learner confidence, and deepens conceptual understanding.

Collectively, research demonstrates that interactive, game-based, and multisensory approaches to spelling instruction not only enhance accuracy but also increase learner motivation and engagement in language learning (Hazaymeh & Khasawneh, 2024; Lago-Ferreiro et al., 2025; Diaudin et al., 2024). These findings underscore the pedagogical value of integrating spelling games as part of a broader literacy development strategy that benefits both early learners and more advanced students.

Effectiveness of Interactive Game-Based Spelling Supplementary Materials for Grade 4 Learners: A Case Study

The purpose of this study is to investigate the effectiveness of game-based learning in enhancing spelling acquisition among Grade 4 learners. By fostering a more interactive and engaging classroom environment, the study seeks to support a learning process that is both effective and enjoyable. Specifically, it aims to determine the level of spelling acquisition of Grade 4 learners across different stages of instruction, assess their performance through pre- and post-tests, and calculate the mean gain in spelling acquisition between these assessments. The study also seeks to examine whether a statistically significant difference exists in spelling performance before and after the intervention. In addition, it evaluates the

acceptability of interactive, game-based spelling supplementary materials for Grade 4 learners, with particular attention to content, language, layout, and format.

Methodology

This study employed a Design-Based Research (DBR) approach, which integrates practical insights from instructional design with research-based evidence. By combining these two sources of knowledge, DBR allows design interventions to be iteratively improved while also contributing to both local and generalizable theory (Christensen & West, 2013). The study was conducted in an elementary school in the District of Batan, Division of Aklan, Philippines, and involved 19 Grade 4 learners.

To evaluate the supplementary learning material, a validation team was convened, consisting of district and school learning resource coordinators alongside English and research coordinators. To ensure content validity, the researcher developed an 80-item test questionnaire, which was reviewed by three subject matter experts. Reliability was established through a pilot test with 30 Grade 4 students from another school. Item analysis, conducted using the Discrimination Index and Difficulty Index in MS Excel, retained only items with values between 0.30 and 0.70. In addition, a 16-item questionnaire adapted from the Department of Education's Alternative Delivery Mode Learning Resource Standards was used to evaluate the material in terms of content, instructional quality, print, design, and layout.

Prior to data collection, formal approval was obtained from the Office of Planning and Research, along with an endorsement from the School Head. Communication letters were duly signed by the researcher, adviser, and the Dean of the Graduate School–MAEd Program. A consent

letter was subsequently distributed to participants, outlining the purpose of the study and requesting voluntary participation.

The development of the game-based spelling supplementary material followed the Successive Approximations Model (SAM), which progresses through three phases: preparation, iterative design, and iterative development (Allen, 2012). During the development stage, the researcher created interactive spelling games intended to strengthen learners' spelling proficiency. In the implementation stage, a pre-test was conducted to establish baseline performance, followed by a post-test to measure the effectiveness of the intervention. Data were encoded and analyzed using the Statistical Package for Social Sciences (SPSS). The final materials were subjected to evaluation by district and school learning resource coordinators, as well as English and research coordinators, to confirm their quality and instructional relevance.

Ethical standards were rigorously observed throughout the research process. Informed consent was obtained from all participants, who were assured of their voluntary participation and their right to withdraw without penalty. The study safeguarded participants' privacy, confidentiality, and cultural sensitivities, and all collected data were anonymized and treated as strictly confidential, unless disclosure was legally mandated.

Findings

Table 1 presents the level of spelling acquisition of grade 4 learners.

The results indicate that the overall mean score for the level of spelling acquisition among Grade 4 learners was classified as "Moderate," with a mean of 7.27 and a standard deviation of 5.09. This suggests that while learners demonstrate a basic level of proficiency in spelling, substantial scope for improvement remains. The moderate performance

reflects their ability to correctly spell a number of words; however, persistent inconsistencies and errors were observed. Such difficulties may hinder the development of written communication skills and, more broadly, limit progress in literacy acquisition.

Table 1
Level of spelling acquisition of Grade 4 students

Level	Mean Score	Description	SD
Correct Stage (Level 5)	5.89	Low	4.76
Transitional Stage (Level 4)	6.42	Moderate	6.02
Phonetic Stage (Level 3)	6.79	Moderate	4.93
Semi Phonetic Stage (Level 2)	7.74	Moderate	5.86
Pre-Communicative Stage (Level 1)	9.53	High	5.47
Over All Mean	7.27	Moderate	5.09

Note: 12.00-15.00 Very High; 9.00-11.99 High; 6.00-8.99 Moderate; 3.00-5.99 Low; 0.00-2.99 Very Low

These findings are consistent with the study of Nurhayati (2018), which identified several factors contributing to low spelling ability among young learners. First, uninteresting or insufficiently engaging learning activities often fail to capture students’ attention and sustain their interest in English. Second, the inherent complexity of English orthography presents challenges for learners, particularly in mastering irregular spelling patterns. Third, low levels of learner motivation limit the sustained effort and practice required for improvement in spelling tasks. Collectively, these factors highlight the importance of adopting more interactive, engaging, and motivational approaches such as game-based learning to strengthen spelling acquisition and, in turn, improve overall literacy outcomes.

Table 2 presents the level of spelling acquisition of Grade 4 learners in the pre-test and post-test following the use of interactive, game-based learning materials.

Table 2*Level of spelling acquisition in pre-test and post-test*

Level of Spelling Acquisition	Pre-Test			Post-Test		
	Mean	Description	SD	Description	Description	SD
Correct Stage (Level 4)	5.89	Low	4.76	13.21	Very High	2.42
Transitional Stage (Level 3)	6.42	Moderate	6.02	13.32	Very High	2.40
Phonetic Stage (Level 3)	6.79	Moderate	4.93	13.11	Very High	2.33
Semi-Phonetic Stage (Level 2)	7.74	Moderate	5.86	12.79	Very High	2.20
Over All Mean Score	6.71	Moderate	5.21	13.11	Very High	2.25

Note: 12.00-15.00 Very High; 9.00-11.99 High; 6.00-8.99 Moderate; 3.00-5.99 Low; 0.00-2.99 Very Low

The results reveal that the overall level of spelling acquisition skills was initially assessed as “Moderate” (M = 6.71, SD = 5.21). However, a marked improvement was observed following the integration of interactive, game-based learning materials, with learners’ spelling acquisition abilities increasing to a “Very High” level (M = 13.11, SD = 2.25) in the post-test. These findings underscore the effectiveness of interactive, game-based resources in enhancing spelling proficiency and demonstrate their potential as a practical instructional strategy for improving literacy outcomes.

This result is consistent with the findings of Mensah et al. (2022), who administered pre-tests to assess pupils’ baseline knowledge of spelling prior to an intervention involving a series of spelling games. Their study showed that such games enabled pupils to acquire new words more easily, leading to significant improvement in spelling performance in the post-test. Collectively, these findings affirm that game-based learning interventions can substantially strengthen spelling skills and contribute to greater learner engagement and success.

Table 3 presents the acceptability level of the developed interactive, game-based spelling supplementary materials, assessed in terms of content,

instructional quality, print features, and design and layout.

Table 3

Level of acceptability of the interactive game-based spelling supplementary material

Acceptability	Mean	Description	SD
Content	4.94	Very Highly Acceptable	0.08
Instructional Quality	4.79	Very Highly Acceptable	0.31
Prints	4.89	Very Highly Acceptable	0.27
Design and Layouts	4.83	Very Highly Acceptable	0.28
Over All	4.86	Very Highly Acceptable	0.24

Note: 4.51-5.00 Very Highly Acceptable; 3.51- 4.50 Highly Acceptable; 2.51-3.50 Acceptable; 1.51-2.50 Fairly Acceptable; 1.00-1.50 Barely Acceptable

Following evaluation by the validating team, the interactive game-based supplementary material was rated “very highly acceptable” (M = 4.86, SD = 0.24). This high level of acceptability was consistent across all dimensions assessed, including content (M = 4.94, SD = 0.08), instructional quality (M = 4.79, SD = 0.31), print features (M = 4.89, SD = 0.27), and design/layout (M = 4.83, SD = 0.28). The consistently strong ratings across these categories demonstrate that the material meets, and in some areas exceeds, the standards established by the Department of Education for instructional resources.

Table 4

Mean gain of the spelling acquisition in the pre and post-tests performance

Spelling Acquisition Test	Mean	Mean Gain
Pre-Test	6.71	6.39
Post Test	13.11	

The increase in spelling acquisition skills from a pre-test mean score of 6.71 to a post-test mean score of 13.11, yielding a mean gain of 6.39 may be attributed to the strategic design and implementation of the interactive, game-based learning material developed for this study.

Table 5*Significant difference in the pre and post-tests using the Wilcoxon-Signed Rank Test*

Spelling Acquisition Test	Mean Rank	Z	p-value
Pre-Test Post Test	0 10	-3.824*	0.000

* $p < 0.05$, significant@5% level of significance

Table 5 presents the results of the Wilcoxon Signed-Rank Test, which examined the difference in spelling performance of Grade 4 learners between the pre-test and post-test. The analysis revealed a statistically significant difference ($Z = -3.824$, $p = 0.000$), indicating marked improvement in spelling acquisition following the integration of the interactive, game-based supplementary material. These findings corroborate those of Javillo (2023), who likewise reported significant gains in learners' spelling performance, with higher post-test scores confirming the positive impact of targeted interventions on spelling proficiency.

Recommendation

The interactive game-based spelling supplementary material developed in this study yielded positive outcomes, demonstrating a substantial improvement in learners' spelling proficiency. Importantly, the resource aligns with the standards set by the Department of Education for effective instructional materials, confirming that game-based interventions can simultaneously meet educational quality benchmarks and function as an innovative strategy for enhancing literacy skills. Taken together, these results highlight the value of interactive learning tools as a meaningful contribution to ongoing efforts to strengthen student learning outcomes.

In light of these findings, it is recommended that Grade 4 learners be provided with increased opportunities to engage in game-based learning activities, particularly through peer collaboration and group-based tasks that

foster both social interaction and academic growth. Teachers are encouraged to integrate the developed game-based spelling supplementary material into the English curriculum and to allocate dedicated instructional time for its use. Furthermore, investments in the design and development of similar interactive learning resources for other grade levels and subject areas are strongly encouraged, building on the demonstrated effectiveness of this approach in improving spelling acquisition.

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Integration of Local Arts and Crafts in Teaching

Guialyn Decinilla

In the Philippine educational system, Contemporary Philippine Arts from the Regions (CPAR) is a core subject in the Senior High School curriculum. The subject highlights the diversity of contemporary artistic practices rooted in the region where the school operates. Its primary aim is to cultivate students' appreciation of multiple artistic disciplines while developing their capacity to analyze works through elements and principles of art. CPAR likewise fosters an integrative approach to arts education, equipping learners with creative competencies and providing tools that may contribute to their future academic or professional trajectories (Department of Education, 2019).

Despite its pedagogical value, the teaching of CPAR presents notable challenges, particularly in localizing and indigenizing content. Teachers are expected to exercise creativity in sourcing reliable and culturally relevant references, drawing from both indigenous traditions and contemporary practices (Lukaka, 2023; Li & Qi, 2025; Samaniego et al., 2024; Mhlauli & Fikelepi-Twani, 2024; Dai et al., 2019). A practical entry point involves conducting an inventory and mapping of cultural, historical, and artistic resources within the locality. As Mak et al. (2014) emphasize,

cultural mapping provides a structured framework that develops students' collaboration and leadership skills. Beyond strengthening students' appreciation of their cultural roots, such mapping enables teachers to monitor engagement and participation. However, balancing these activities with other academic and administrative responsibilities remains a persistent constraint for many educators.

In parallel with these efforts, technological tools increasingly shape the teaching of culture and the arts. Digital platforms, particularly video-based resources available through social media, provide accessible means of instruction. While such tools are practical, they cannot replace the depth of direct cultural engagement. Firsthand exposure to heritage, crafts, and artistic practices enables students to construct deeper connections with their communities. Kokko and Dillon (2010), for instance, integrated group projects and reflective essays to capture learners' experiences with local crafts, illustrating how experiential and interactive approaches foster cultural appreciation.

Empirical evidence consistently underscores the value of experiential learning in cultural and arts education. Engaging with concepts in authentic contexts not only enhances understanding but also strengthens the learner's sense of cultural identity. Dell'Agnese (2022), for example, proposed an instructional framework integrating three complementary strategies: historical contextualization through scholarly readings, artistic appreciation through museum visits and artist interactions, and artistic creation through student-produced works. Similarly, Razali et al. (2018) emphasized the benefits of excursions in creative design education, where students observed contemporary architectural practices as part of their coursework. Music and dance education also employ this principle, enabling students to observe live performances before replicating the

observed techniques in their own practice (Boucher & Moisey, 2019; Payne & Costas, 2020).

At a broader level, sustained partnerships between cultural institutions and the education sector are increasingly recognized as critical for enriching student learning. Escala et al. (2024) argue that such collaborations expand access to authentic cultural resources, foster community engagement, and create synergies between theoretical instruction and real-world artistic practice. These partnerships thus represent an essential pathway for advancing arts education in ways that are both contextually relevant and globally aligned.

Historical and Legal Foundations of Contemporary Philippine Arts

Contemporary art in the Philippines traces its origins to developments in the early twentieth century, shaped by the economic, political, and social transformations brought about by American colonialism and the introduction of new technologies. These changes catalyzed innovative artistic practices, facilitating the evolution of traditional art forms into modern and experimental styles. With the advent of the Information Age, contemporary art expanded further, as digital technologies enabled the emergence of diverse forms, cross-disciplinary approaches, and heightened interactivity in both artistic production and audience engagement (Samdanis, 2016). Consequently, contemporary art has become a dynamic field that continually challenges conventional boundaries, fostering inclusivity and diversity in artistic expression.

Within this evolving landscape, art may be broadly categorized into fine art, popular art, and craft. By medium, it encompasses visual arts,

architecture, music, dance, theater, photography, cinema, broadcast art, digital art, and installation, while traditional forms such as sculpture, literature, and printmaking remain vital to the discipline. This breadth illustrates the inherently dynamic and integrative nature of contemporary art, where innovation is driven by experimentation and cross-cultural dialogue.

The institutionalization of Contemporary Philippine Arts from the Regions (CPAR) in the Senior High School curriculum reflects a deliberate alignment with Sections 14–17, Article XIV of the 1987 Philippine Constitution. These provisions affirm the State’s obligation to preserve, enrich, and ensure the dynamic development of Filipino culture, anchored in the principles of cultural pluralism and freedom of expression. They further mandate the conservation, promotion, and dissemination of the nation’s cultural heritage and artistic wealth, which form part of the cultural patrimony to be protected and regulated by the State.

As a core subject, CPAR seeks to decentralize arts education, countering the longstanding dominance of the Western canon in Philippine cultural discourse. It prioritizes local and regional cultural expressions, emphasizing that art and culture are best understood when examined within their immediate social and historical contexts. By doing so, CPAR situates learners’ engagement with the arts within their own communities and regions, moving beyond the Manila-centric traditions often advanced by institutions such as the Cultural Center of the Philippines, major media networks, and established academic structures. This localization not only diversifies the sources of cultural knowledge but also validates the creative practices of communities that have historically remained on the periphery of national arts education.

The program’s objectives are further reinforced by Republic Act No.

10066, the National Cultural Heritage Act of 2009, which strengthens the mandate of the National Commission for Culture and the Arts (NCCA) and its affiliated cultural agencies to safeguard both tangible and intangible heritage. By integrating CPAR into the curriculum, the education sector operationalizes constitutional and legislative commitments, ensuring that arts instruction simultaneously preserves cultural heritage and promotes inclusivity. In doing so, CPAR advances a culturally responsive framework for arts education that fosters critical awareness, regional identity, and national cohesion among Filipino learners.

Integration and Utilization of Local Arts and Crafts in Teaching Contemporary Philippine Arts from The Regions: A Case Study

This study investigated the integration and pedagogical use of local arts and crafts in the teaching of Contemporary Philippine Arts from the Regions (CPAR) at the Senior High School level. Specifically, it examined the instructional practices, challenges, and strategies employed by teachers to determine how indigenous and community-based art forms are preserved, promoted, and contextualized within the classroom. Building on these insights, the study further sought to develop a Local Arts and Crafts Curriculum Enhancement Program aimed at supporting teachers in systematically incorporating community-based artistic practices into CPAR instruction, thereby fostering both cultural preservation and more contextually relevant arts education.

Methodology

This study employed a qualitative research design, specifically a descriptive narrative inquiry. Narrative inquiry regards participants' stories

as the primary source of data, offering insights into their lived experiences, perspectives, and practices. The research was conducted in Pandan, Antique, Philippines, a coastal municipality in the province of Antique. A total enumeration of Senior High School teachers handling Contemporary Philippine Arts from the Regions (CPAR) in the DepEd District of Pandan was utilized. Seven teachers who were available during the data collection period were invited to participate in interviews. The inclusion criteria required that participants were currently teaching CPAR and were willing to take part in the study. To maintain confidentiality, each participant was assigned a code rather than being identified by name.

Data were gathered through a researcher-developed interview guide, which covered the respondents' profiles, the integration of local arts and crafts in CPAR, and the issues, concerns, and best practices related to teaching and administration. To ensure the clarity, appropriateness, and sensitivity of the questions, the guide was validated by a panel of experts.

Formal communications were first sent to the Schools District Supervisor to secure approval for the conduct of the study, followed by permission from the principals of secondary schools. Once approval was granted, data collection commenced. Ethical standards were strictly observed throughout the process, including obtaining informed consent, guaranteeing confidentiality, and ensuring that participants could freely express their views. They were also informed of the possibility of follow-up interviews to validate findings and confirm that their experiences were accurately represented.

All interviews were transcribed and translated before being subjected to thematic analysis. The analysis focused on identifying recurring patterns across responses, which were then organized into researcher-generated themes that reflected the participants' collective

experiences and perspectives.

Findings

Local arts and crafts integrated into teaching Contemporary Philippine Arts from the Regions (CPAR) are primarily those created from natural and readily available materials. These include frame and decorative arts for walls and ceilings, as well as utilitarian products such as mats, placemats, bags, hats, and fruit baskets. Installation art is also incorporated into instruction. Teachers explained that these art forms are integrated mainly because of their commonality and availability in the locality, their potential to promote local products, and the motivation they provide to students through hands-on learning.

Conversely, certain forms of local arts and crafts are not integrated into CPAR instruction. These include large-scale installation works such as sculptures and architectural structures, along with traditional crafts made from wood, coconut shells, and nito. Their exclusion is largely due to the scarcity and high cost of materials, the limited time available for students to accomplish such tasks, and the risky or hazardous processes involved in their production.

In terms of utilization, local artworks and handicrafts commonly used in CPAR classes include those made from locally sourced materials such as mats, bags, and wall or ceiling decorations. Decorative items crafted from shells, stones, and driftwood often collected from coastal areas are likewise utilized. These materials serve multiple purposes: they promote local products, maximize available natural resources, and foster cultural awareness while transferring knowledge and skills to students. On the other hand, arts and crafts made from wood, clay, and metal including glass or stone sculptures, as well as formal artworks by individual artists are

generally not utilized. Their non-utilization stems from the scarcity of resources, lack of appropriate technology, absence of skilled craftsmen, and safety concerns during production.

The study also highlighted several issues and challenges in integrating local arts and crafts into CPAR instruction. These include students' limited skills, lack of available materials, and safety concerns. Teachers addressed these challenges through strategies such as the use of video tutorials, encouraging parental and peer support, and providing direct guidance during classroom activities. Similarly, challenges in the utilization of local arts and crafts included the difficulty of obtaining materials, teachers' limited art skills, and the absence of necessary tools and equipment. These were addressed through strategies such as demonstrations and guided tutorials from local craftsmen, the use of video lessons, parental assistance, and the optimization of available resources in terms of time and cost.

Best practices in teaching CPAR were also identified. In instruction, teachers emphasized the importance of art application and skills development, ensuring that students gained hands-on experience in creating crafts. Participation in seminars was encouraged to enhance teachers' knowledge and competencies, while mentoring activities allowed teachers to provide more effective guidance in handling diverse art forms. On the administrative side, best practices included capacity-building and skills enhancement programs such as seminars on difficult competencies, training workshops on handicrafts, and the contextualization, localization, and indigenization of the curriculum to align with community culture and available resources.

To address the identified issues and challenges, a Local Arts and Crafts Curriculum Enhancement Program was proposed. The program

emphasizes continuous training for both teachers and students, alongside structured engagement with experts. While expert collaboration is already practiced informally, the program recommends institutionalizing this practice as a regular component of CPAR instruction. Stakeholders are envisioned to play complementary roles: teachers as facilitators of learning, students as recipients of skills and knowledge, administrators as providers of institutional support, and the community as patrons and partners in sustaining the integration of local arts and crafts in education.

Recommendations

CPAR teachers play a crucial role in preserving and promoting local culture through education. One effective starting point is conducting a thorough cultural inventory of local arts and crafts within the community, identifying traditional practices, materials, and techniques that can be meaningfully integrated into the CPAR curriculum. Organizing exposure trips to local art studios, craft workshops, and cultural institutions also enriches instruction, as these experiences provide students with direct engagement in different art forms and hands-on opportunities to create their own artworks under the mentorship of local experts.

Learners, on the other hand, should take an active role in familiarizing themselves with the local arts and crafts in their community and contributing to their promotion. They need to recognize that these art forms are not merely school requirements but vital expressions of culture and identity something to be valued and taken pride in.

School heads are equally significant in this endeavor. They can support teachers by developing effective documentation and assessment strategies for local arts and crafts projects, such as rubrics that assess not only artistic quality but also cultural integration and community relevance.

Furthermore, school heads can implement initiatives that highlight student achievements in CPAR through art exhibitions, awards, and recognition programs. Such efforts foster a positive and supportive artistic environment within the school, encouraging deeper learner engagement with local culture.

At the administrative level, the Department of Education (DepEd) should provide sustained professional development opportunities for CPAR teachers. Training programs, seminars, and workshops focusing on local art forms and traditional crafts can strengthen teachers' capacity to integrate these effectively into instruction. Considering the challenges identified by teachers, an enhancement program is imperative—one that prioritizes continuous training for both teachers and students, while establishing structured engagements with local experts to ensure effective knowledge transfer and skill development.

Lastly, local artists and craftsmen serve as valuable partners in enriching CPAR instruction. Through workshops and training sessions, they can deepen teachers' understanding of art integration strategies. By sharing practical techniques, cultural insights, and accessible resources, they contribute to making art integration both authentic and sustainable within the classroom.

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Supplementary Workbook in Learning Mathematics

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The Philippines continues to confront a persistent challenge in raising students' mathematical proficiency. Despite numerous interventions over the years, Filipino learners still trail behind their peers in neighboring countries. Results from the Program for International Student Assessment (PISA) 2022 revealed no significant improvement compared with the country's performance in 2018. Fewer than one in four Filipino students achieved the minimum proficiency level in mathematics, reading, and science. Although average scores across all subjects increased slightly, the gains were limited to single-digit improvements, and overall performance remained below the OECD average. Mathematics, in particular, registered only a modest increase, rising from 353 in 2018 to 355 in 2022 (Chi, 2023). This persistent gap has been extensively documented in Philippine educational research (Valle, 2024; Ignacio & Bajet, 2025; Jaudinez, 2019; dela Cruz & Hernandez, 2023; Carandang et al., 2024; Mocorro & Mocorro, 2025; Vistro-Yu et al., 2025), with scholars underscoring the urgency of implementing more effective and sustainable solutions. In response, several

studies have recommended pedagogical innovations, including the design of supplementary workbooks as instructional aids (Ibañez et al., 2021; Lomibao, 2016; Magayon & Tan, 2016; Malicoban et al., 2021; Besana et al., 2022; Ayado & Berame, 2022).

Within STEM programs, calculus occupies a pivotal position, with trigonometry serving as a foundational prerequisite. Students are expected to demonstrate mastery of trigonometric concepts, as these form the basis for higher-order mathematical reasoning in calculus and related fields. A robust grasp of trigonometric principles enables learners to approach advanced coursework with greater confidence and problem-solving capacity. However, evidence suggests that many students encounter persistent difficulties in this area. Nanmumpuni and Retnawati (2021), for example, reported that learners across a wide range of cognitive levels and creative thinking skills consistently struggled with fundamental trigonometric concepts. Their findings highlight a widespread vulnerability to errors in problem-solving, thereby underscoring the need for structured pedagogical support and targeted instructional materials.

One strategy with demonstrated effectiveness in strengthening mathematical understanding is the systematic use of workbooks (Yeh et al., 2019). Workbooks provide learners with sequenced exercises that reinforce classroom instruction and gradually build competence in complex concepts. By incorporating illustrative examples, guided practice, and progressively challenging tasks, they not only address common misconceptions but also consolidate students' foundational knowledge. Importantly, well-designed workbooks can be adapted to diverse learning styles, offering visual, concrete, and applied problem-solving opportunities to students who may struggle with abstract reasoning (Malicoban et al., 2021; Besana et al., 2022). Furthermore, they support both independent and collaborative modes

of learning: students may work at their own pace, monitor their progress, and revisit areas of difficulty, while teachers can utilize workbook outputs to diagnose learning gaps and deliver targeted feedback.

The integration of such resources into the mathematics curriculum has been shown to foster critical thinking, increase engagement, and strengthen the link between theoretical knowledge and practical application (Ayado & Berame, 2022; Rivera, 2023). Taken together, the evidence suggests that supplementing traditional instruction with research-informed, well-structured workbooks offers a pragmatic and scalable approach to addressing the persistent learning gaps of Filipino students in mathematics and trigonometry.

Enhancing Learning in Mathematics through Workbooks and Supplemental Materials

Difficulties in learning trigonometry are rooted in several interrelated factors. Irawan et al. (2019) noted that students' disinterest often arises from weak comprehension of fundamental concepts, leading to discouragement and declining motivation. This aligns with the findings of Nanmumpuni and Retnawati (2021), who observed that students across all levels of creative thinking ability struggled with trigonometric concepts, committing errors regardless of cognitive capacity. Similarly, Arhin and Hokor (2021) reported that learners frequently failed to transfer rudimentary knowledge into practical applications, thereby exposing the gap between basic comprehension and problem-solving proficiency.

Further studies have identified more specific barriers to trigonometric learning. Rahayu and Rosjanuardi (2022) highlighted epistemological obstacles in analytic trigonometry arising from insufficient

mastery of prerequisite topics. Nurmeidina and Rafidiyah (2019) likewise identified poor problem comprehension, misapplication of concepts, and limited familiarity with problem formats as significant barriers. Complementing these insights, Adawiyah and Kurniasari (2020) demonstrated that variations in learning styles influence how effectively students acquire trigonometric knowledge. Haryani et al. (2022) also noted the frequent difficulty students encounter in identifying and applying appropriate formulas to solve specific problems.

These learning difficulties are further compounded by systemic issues related to pedagogy and curriculum. Maghirang and Banzon (2023) emphasized that performance in trigonometry depends on strong foundational knowledge, active learning strategies, and effective teaching approaches. Similarly, Delima (2022) underscored the continued difficulty of trigonometry for both students and teachers, despite its acknowledged importance in the curriculum. Empirical evidence reflects these challenges: Batidor and Casinillo (2021) found that achievement in trigonometry consistently remained below satisfactory levels, pointing to the need for stronger teacher preparation. Likewise, Padernal and Diego (2020) reported that pre-calculus performance remained only average across diverse student backgrounds, underscoring the broader necessity for instructional enhancement.

To address these challenges, workbooks and other supplemental learning materials have been recognized as effective tools for improving student performance. Gyamfi et al. (2021) described workbooks as instructional resources that scaffold learners' progression through complex concepts, while Bordia (2022) highlighted their role in reinforcing conceptual clarity through varied exercises. Collado and Abubo (2021) found that students using workbooks outperformed peers who relied solely

on lectures, while Benitez (2020) affirmed that well-designed workbooks—meeting standards of content quality, examples, and assessment—contributed to improved competency. However, Mithans et al. (2022) noted that students tended to engage with workbooks more frequently in school than at home, suggesting a need for strategies that promote their broader use beyond classroom contexts.

Beyond conventional workbooks, diverse supplemental learning resources have also demonstrated positive effects on teaching and learning. Agbunag (2022), for instance, showed that contextualized and localized e-learning resources in Physics improved instructional processes, recommending their continuous adaptation. Similarly, Decorina (2022) validated supplementary learning packages that supported independent learning during the “new normal,” advocating for ongoing refinement to enhance quality. Talas and Panoy (2023) further confirmed that supplemental materials strengthened critical thinking, as evidenced by significant improvements in pre- and post-test results.

The integration of culturally relevant and subject-specific supplemental resources has likewise been shown to enhance student engagement and motivation. Besonia et al. (2023) found that culturally grounded materials fostered stronger connections between personal experiences and academic learning, particularly in digital environments. Saldo and Walag (2023) emphasized that supplemental approaches embedded in classroom instruction not only improved learning outcomes but also supported the development of 21st-century skills. In a similar vein, Alejandria et al. (2023) reported positive learner feedback on an educational tool for mastering the periodic table, which students described as both enjoyable and effective.

The validation of workbooks across disciplines further underscores

their instructional value. Utami et al. (2023) reported that Generation Z students responded positively to workbook use, while Fran (2022) demonstrated that validated workbooks effectively supported both teachers and students, enhancing research-based learning. Sulistina and Salimaturossidah (2023) confirmed the feasibility of their workbook through expert evaluation and readability tests, while Rahayu et al. (2022) validated an e-workbook as effective in promoting collaboration and critical thinking. Similarly, Araza and Magnaye (2023) showed that MELCS-based workbooks effectively bridged theoretical and practical learning.

Technological innovations have further advanced workbook development. Akouaydi et al. (2021) demonstrated that digital workbooks incorporating tactile devices improved both feedback and learning processes. Perkins et al. (2023) emphasized their role in promoting self-directed learning and formative assessment, while Greubel et al. (2023) concluded that well-designed digital workbooks enhanced academic relevance and increased student enjoyment.

Teacher-developed and subject-specific workbooks have also proven effective in meeting learner needs. Comay-Ao et al. (2019) designed an arithmetic workbook highly rated by master teachers for its responsiveness to learners' difficulties, while Inocencio and Calimlim (2021) documented significant gains in Science performance from teacher-developed workbooks. Basilio and Sigua (2022) confirmed the utility of validated instructional modules, and Bernido (2020) found that inquiry-based materials fostered deeper learning. Likewise, Manzano (2023) reported excellent ratings for instructional materials in both content quality and pedagogical effectiveness.

Other studies reinforced the broader usability and relevance of workbook-like resources. Lacea and Buscano (2023) highly rated Learning

Activity Sheets (LAS) for appropriateness and practicality, while Navarra et al. (2022) advocated greater TESDA investment in effective workbook resources. Dominado et al. (2023) emphasized their engaging potential in contexts lacking modern instructional tools, and Rogayan and Dollete (2019) confirmed workbook acceptability in terms of coherence and usefulness. Similarly, Homillano (2023) reported significant learning gains in Science, Technology, and Society following the integration of an instructional module, highlighting the sustained value of workbook development in improving learning outcomes.

Development and Validation of TRIBOO: A Supplementary Workbook for Learning Basic Concepts of Trigonometry

This study sought to address the low proficiency of Grade 12 STEM students in trigonometry through the development and validation of TRIBOO, a supplementary workbook designed to strengthen foundational understanding of basic trigonometric concepts. The workbook was subjected to validation by mathematics teachers from various schools to ensure content accuracy, pedagogical soundness, and instructional relevance. It features clearly stated lesson objectives, concise explanations, illustrative examples, structured exercises, and real-world application problems. Together, these components aim to enhance conceptual clarity, provide meaningful practice, and support students in developing deeper and more durable learning in trigonometry.

Methodology

This study employed a quantitative research design, a systematic and empirical approach that describes, explains, and predicts phenomena

using numerical data. Specifically, a quasi-experimental one-group pre-test–post-test design was utilized to compare students’ performance before and after the use of TRIBOO, thereby determining its effectiveness in improving learning outcomes.

The research was conducted in the Senior High School Department of a public university in Laguna, Philippines. Convenience sampling, a non-probability sampling technique, was applied to select participants who were readily accessible. A total of 35 Grade 12 STEM students participated in the implementation of TRIBOO, while five expert validators in mathematics education were engaged to evaluate the workbook’s content, instructional soundness, and overall quality.

Table 1
Six (6) phases of ASSURE model

Phase 1: Analysis	A survey and pre-test were conducted to identify the least learned concepts and assess students’ proficiency in the basic concepts of trigonometry.
Phase 2: Stating Objectives	The results of the survey and pre-test served as the basis for the specific objectives of the workbook.
Phase 3: Selecting Method and Materials	TRIBOO is made available in both printed and digital formats, and its content follows a structured sequence for each topic.
Phase 4: Utilizing the Method	The workbook content was organized using the Most Essential Learning Competencies (MELCs) of the STEM strand. Each topic begins with a pre-assessment to gauge prior knowledge, followed by a recall activity, a concise lesson, and exercises to reinforce understanding and build mastery.
Phase 5: Requires learners’ participation	TRIBOO incorporates engaging activities aligned with its learning objectives, including hands-on exercises, problem-solving tasks, and open-ended questions for self-reflection.
Phase 6: Evaluation	After rigorous validation by five experts, the workbook was pilot-tested with Grade 12 STEM students, who then completed a post-test.

Data collection involved a 15-item pre-test administered to assess students’ baseline proficiency in trigonometry and identify areas of difficulty. Following this, TRIBOO was introduced as the intervention, after

which a post-test was conducted to measure learning gains and proficiency improvement. The study was systematically guided by the six phases of the ASSURE model, which provided the framework for designing, implementing, and evaluating the intervention.

The researchers secured permission to administer a pen-and-paper one-group pre-test and post-test. The data collected provided valuable evidence on the effectiveness of the validated workbook as a supplemental learning resource. Descriptive statistics, specifically the mean and standard deviation, were employed to determine students' proficiency levels in the basic concepts of trigonometry before and after exposure to TRIBOO. To further establish the significance of observed differences, a paired t-test was conducted to compare pre-test and post-test scores, thereby assessing the impact of the intervention on student performance.

Findings

Table 1 presents the mean proficiency level of Grade 12 STEM students in the basic concepts of trigonometry, as measured by their pre-test scores.

Table 1

Mean level of students' proficiency on the basic concepts of trigonometry

Test	Mean	SD	Interpretation
Pre-Test	5.06	2.00	Poor
Post-test	10.00	1.55	Good

Legend: 13 – 15 Very Good; 10 – 12 Good; 7 – 9 Fair; 4 – 6 Poor; 0 – 3 Very Poor

In the pre-test, students obtained a mean score of 5.06 out of 15, indicating performance just above the midpoint. The standard deviation of 2.00 suggests moderate variability, with some students performing

significantly higher or lower than the average. Based on the predefined interpretation scale, this mean score falls within the poor category, confirming that Grade 12 STEM students demonstrated low proficiency in the basic concepts of trigonometry. Obeng et al. (2024) noted that trigonometry is often perceived as more abstract and challenging than other mathematical domains, largely because it requires students to connect geometric representations (e.g., triangles and diagrams) with numerical symbols and algebraic reasoning. Such abstraction can hinder conceptual understanding and lead to lower levels of achievement. Addressing this gap requires additional instructional support that bridges conceptual and procedural knowledge. Targeted interventions particularly the use of structured workbooks have been shown to enhance both proficiency and confidence in solving trigonometric problems. Inocencio and Calimlim (2021), for instance, reported that teacher-developed workbooks significantly improved student performance, underscoring their utility as instructional scaffolds.

In the post-test, students achieved a mean score of 10.00, categorized as good performance. The lower standard deviation of 1.55 indicates that scores were more tightly clustered around the mean, suggesting greater consistency across student outcomes. These findings demonstrate that, following the implementation of TRIBOO, students exhibited marked improvement in their proficiency in the basic concepts of trigonometry.

The positive learning gains may be attributed to the workbook's structured design, which provided learners with step-by-step guidance, diverse examples, and practice opportunities that reinforced conceptual clarity and problem-solving skills. Consistent with the findings of Collado and Abubo (2021), students who engaged with workbook-based instruction

outperformed those taught solely through traditional lecture methods. This highlights the value of integrating structured workbook exercises into trigonometry instruction, not only to improve student outcomes but also to promote deeper understanding and mastery of mathematical concepts.

Table 2

Test of significant difference between the pre-test and post-test results

Item	Mean	SD	Mean Difference	T-Test	Critical Value	Interpretation
Pre-Test	5.06	2.00	4.94	12.18	2.032	Significant
Post-Test	10.00	1.55				

Table 2 presents the difference between students' pre-test and post-test performance in the basic concepts of trigonometry. The analysis yielded a mean difference of 4.94 and a computed t-value of 12.18, which exceeds the critical t-value of 2.032 at the 0.05 level of significance. Consequently, the null hypothesis was rejected, indicating a statistically significant difference between pre-test and post-test results.

The post-test scores, which were substantially higher than the pre-test scores, provide clear evidence that the use of the TRIBOO workbook positively influenced students' proficiency in trigonometry. This finding aligns with Talas and Panoy (2023), who demonstrated that supplemental materials contribute to improvements in students' critical thinking skills, as reflected in significant pre- and post-test gains. Integrating such resources into instruction can therefore help learners strengthen their ability to analyze, evaluate, and synthesize information more effectively.

At the same time, Collado and Abubo (2021) emphasized that while workbook use enhances academic performance, its impact is maximized when paired with effective instructional strategies. This underscores the

pivotal role of teachers in facilitating workbook use not only by integrating the material into classroom practice but also by fostering a supportive and engaging learning environment. Thus, while TRIBOO proved effective as a supplemental resource, its success ultimately depends on thoughtful pedagogy and the quality of instructional delivery.

Table 3

Overall rating of the TRIBOO among the five expert validators

Criteria	Mean	SD	Interpretation
1. Workbook Objectives	3.92	0.28	Highly Acceptable
2. Workbook Content	3.64	0.49	Highly Acceptable
3. Workbook Format and Language	3.72	0.46	Highly Acceptable
4. Workbook Relevance	3.72	0.46	Highly Acceptable
Overall Weighted Mean	3.71	0.55	Highly Acceptable

Table 3 presents the overall ratings of TRIBOO as evaluated by five expert validators across four criteria: workbook objectives, content, format and language, and relevance. The workbook objectives obtained the highest mean rating of 3.92 with a standard deviation of 0.28, indicating strong clarity and alignment with intended learning outcomes. The content was rated with a mean of 3.64 (SD = 0.49), reflecting its adequacy in addressing the fundamental concepts of trigonometry. Meanwhile, both format and language and relevance received a mean of 3.72 with a standard deviation of 0.46, suggesting that the workbook was presented in an accessible manner and was considered highly pertinent to student learning needs.

All criteria were interpreted as “highly acceptable.” The overall weighted mean of 3.71 (SD = 0.55) further supports this interpretation, indicating that the validators collectively found the TRIBOO workbook to be an effective and appropriate supplemental learning material for teaching

the basic concepts of trigonometry. These findings affirm that the workbook possesses both instructional value and practical applicability in enhancing student proficiency.

Recommendation

Students can utilize TRIBOO as an effective study tool to review fundamental concepts and engage in self-paced learning at their own convenience. For mathematics teachers, the validated workbook is recommended as a supplemental resource that can enhance instructional strategies and address diverse student learning needs. To maximize accessibility, it is further recommended that TRIBOO be made available online, enabling both students and teachers to benefit from greater flexibility and ease of use.

For future research, pilot testing TRIBOO with a larger and more diverse group of students is suggested to strengthen the evaluation of its effectiveness and determine its potential for wider implementation. Such initiatives will not only validate its broader applicability but also provide valuable insights into refining its content and delivery for greater impact in mathematics education.

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Game-based Learning Material in English

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The English language, with its complex grammar rules and extensive vocabulary, poses a considerable challenge for learners, particularly those acquiring it as a second language. For Filipino students, this challenge is further compounded by a limited vocabulary, which often becomes a major barrier to achieving proficiency. Such constraints hinder their ability to read, write, listen, and speak effectively in English, thereby underscoring the urgent need for innovative and effective learning strategies.

One promising approach is game-based learning, which has been widely applied across grade levels to enhance engagement and improve specific learning outcomes. Educational games provide meaningful opportunities for learners to understand course content more deeply while actively participating in the learning process. Prodigy (2021) highlights that game-based learning leverages the motivational features of games to shape learning outcomes, while Alotaibi (2024) demonstrates that students exhibit improved comprehension and participation when exposed to educational games. Similarly, Pratama and Setyaningrum (2018) present evidence that such games significantly enhance learning performance. This approach has further developed into gamification, wherein learners earn points, receive rewards, and

climb leaderboards, making the learning experience both challenging and rewarding.

Despite these advancements, many schools continue to face persistent challenges in addressing learners' reading and comprehension skills. Students' written outputs and performance tasks in English often fall below expected standards, commonly exhibiting grammatical errors, poor sentence construction, and difficulty in writing coherent paragraphs with minimal mistakes. Furthermore, routine-based lessons tend to disengage students, who often lose interest quickly. In contrast, learners show greater motivation and participation when lessons incorporate dynamic and interactive strategies such as group activities, quiz bees, and educational games.

Gamification in Education

Gamification has emerged as a widely studied instructional strategy across educational settings, drawing increasing attention from researchers in recent years (Pratama & Setyaningrum, 2018; Yildirim, 2017). Defined as the application of game elements and mechanics in non-game contexts, gamification integrates points, badges, rewards, leaderboards, and levels into classroom instruction to enhance motivation, engagement, and achievement (Deterding et al., 2011; Nah et al., 2014; Rachels & Rockinson-Szapkiw, 2018). While game-based learning typically involves students playing or creating full games, gamification refers to embedding selected game elements into learning tasks to enrich traditional instruction. This distinction underscores gamification's versatility, as it can complement rather than replace established pedagogical approaches.

Research highlights gamification's potential to improve learner engagement, motivation, and performance across diverse subjects. Nah et al. (2014) identify essential elements points, levels, challenges, and progress indicators that foster sustained attention and enjoyment. Similarly, Bartle's

(1996) classification of gamer types (achievers, explorers, socializers, and killers) provides insight into how different students may respond to gamified tasks, emphasizing the importance of tailoring design to learner profiles. Empirical findings generally support gamification's benefits: studies have reported increased participation, persistence, and comprehension among students exposed to gamified activities (Zahedi et al., 2021; Alotaibi, 2024; Arufe-Giráldez et al., 2022).

Despite promising outcomes, research also reveals mixed findings. Hanus and Fox (2015) observed declines in intrinsic motivation and performance when gamification was poorly designed, while Bai et al. (2020) noted that competitive elements such as leaderboards may discourage lower-performing students. Similarly, excessive or poorly aligned rewards risk shifting student focus from meaningful learning to extrinsic incentives. These concerns highlight the necessity of aligning gamification mechanics with instructional objectives, managing cognitive load, and ensuring inclusivity. Scholars therefore recommend hybrid approaches, where gamification complements traditional instruction rather than replacing it, to maximize both engagement and deep learning (Fithriani, 2021).

The application of gamification in language education, particularly vocabulary acquisition, has gained considerable attention in English as a Foreign Language (EFL) contexts. Research indicates that gamified tools provide repeated exposure, contextualized practice, and immediate feedback, thereby improving retention and learner autonomy. Ekin and Kaya (2020) demonstrated that vocabulary games significantly enhanced EFL students' word recall, while Purgina et al. (2020) found that gamified apps increased motivation and sustained participation in vocabulary learning. Moreover, Al-Marouf et al. (2020) reported that gamification promoted collaborative learning and reduced anxiety, making it especially beneficial in language classrooms where affective factors often hinder progress.

Taken together, the literature affirms gamification's promise as an instructional innovation that enhances engagement and learning outcomes when thoughtfully designed. While limitations such as potential overemphasis on rewards or competitive stress must be addressed, evidence suggests that gamification is particularly effective in vocabulary instruction, where repetition and contextual application are crucial. A balanced approach that combines gamified strategies with traditional methods appears most effective in sustaining both learner motivation and long-term language development.

Let Us Play: An Innovative Learning Approach To Learning English Vocabulary

This study aims to investigate the effectiveness of gamified learning as an innovative pedagogical strategy for enhancing vocabulary acquisition. Specifically, it examines how the integration of game-based elements into English lessons influences students' vocabulary proficiency and fosters greater engagement in the learning process.

Methodology

This study employed a quasi-experimental design to examine the causal relationship between gamified learning and vocabulary acquisition. Unlike true experimental designs, quasi-experiments do not rely on random assignment but instead group participants according to specific criteria.

The research was conducted in a public high school in the District of Libacao, Philippines, with Grade 8 learners as respondents. Groupings were formed based on the students' final English grades from the previous school year. Learners with comparable performance levels were matched and then proportionally assigned to the control and experimental groups, each consisting of 15 students. To measure vocabulary proficiency, a researcher-made English

Proficiency Test was developed, drawing from a standardized vocabulary and proficiency test. The instrument comprised 50 multiple-choice items aligned with the Grade 8 English curriculum. Two parallel forms were created for the pre-test and post-test, and subject experts validated the items to ensure content accuracy and reliability.

Prior to implementation, the necessary permissions were obtained from school and division officials. Both groups first took the pre-test, after which the experimental group underwent an eight-week intervention consisting of gamified vocabulary lessons. Games were designed and adapted by the researcher to align with lesson competencies while accommodating contextual constraints such as limited internet connectivity and students' restricted access to mobile devices. Structured lesson plans were prepared to facilitate the integration of vocabulary games. Following the intervention, a post-test was administered to both groups.

Data were analyzed using the Mean Percentage Score (MPS) to determine learners' proficiency levels and the t-test to assess the significance of differences between the control and experimental groups.

Findings

Table 1 presents the pre-test performance of both groups. In the control group, which was taught using the conventional method, most learners obtained scores within the average range (18–32). Specifically, seven students reached the satisfactory proficiency level, while eight fell within the weak proficiency range (9–17). The group's overall mean score was 18, corresponding to a satisfactory proficiency level. These findings suggest that prior to the intervention, learners generally exhibited only average proficiency in English vocabulary.

Table 1*Pre-test score of learners in English vocabulary*

Score	Description	Interpretation	F	%
Conventional Approach				
18-32	Average	Satisfactory Proficiency	7	46.67
9-17	Low	Weak Proficiency	8	53.33
Overall Mean: 18.00 (Satisfactory Proficiency)				
Gamified Approach				
18-32	Average	Satisfactory Proficiency	7	46.67
9-17	Low	Weak Proficiency	7	46.67
3-8	Very Low	Poor Proficiency	1	6.67
Overall Mean: 18.00 (Satisfactory Proficiency)				

On the other hand, the pre-test results of the experimental group, which was taught using a gamified approach, indicate that seven learners scored within the satisfactory proficiency range (18–32), another seven fell within the weak proficiency range (9–17), and one performed at the very weak level (0–8). The group’s overall mean score of 16.07 was interpreted as weak proficiency, suggesting that learners initially possessed low English vocabulary skills. This finding aligns with Afzal’s (2019) observation that students with limited vocabulary knowledge tend to perform poorly in language-related courses.

The post-test results of both groups are presented in Table 2. In the control group, taught through the conventional method, learners obtained an overall mean score of 32.00, corresponding to satisfactory proficiency. Within this group, seven students scored between 33–42, advancing toward good proficiency, while the remaining eight stayed within the satisfactory range (18–32). The 15-point increase in the mean score from pre-test to post-test demonstrates that the conventional method contributed to improving learners’ vocabulary skills.

Table 2*Post-test score of learners in English vocabulary*

Score	Description	Interpretation	F	%
Conventional Approach				
33-42	Moving Towards Mastery	Good Proficiency	7	46.67
18-32	Average	Satisfactory Proficiency	8	53.33
Over-all Mean: 32.00 (Satisfactory Proficiency)				
Gamified Approach				
33-42	Moving Towards Mastery	Good Proficiency	15	100
Over-all Mean: 37.6 (Good Proficiency)				

Under the gamified approach, all 15 respondents scored within the range of 33–42, corresponding to good proficiency. The group attained an overall mean score of 37.6, likewise interpreted as good proficiency. These results provide strong evidence of the effectiveness of gamification in enhancing learners’ English vocabulary skills. The findings are consistent with Li and Liu (2022), who emphasized that gamified strategies not only improve vocabulary acquisition but also enhance learner satisfaction, promote enjoyment in the learning process, and significantly increase the participation of introverted students.

Table 3 presents a comparison of the pre-test and post-test results in English vocabulary between learners taught using the conventional method and those exposed to gamified instruction.

Table 3*Difference between the pre-test and post-test scores of learners in English vocabulary*

Intervention	Score	t-value	p-value	Decision
Pre-Test				
Conventional Method	18.00 (Satisfactory Proficiency)	-0.98	0.34	Accept Ho
Gamified Approach	16.07 (Weak Proficiency)			
Post-Test				
Conventional Method	32.00 (Satisfactory Proficiency)	3.94	0.00*	Reject Ho
Gamified Approach	37.60 (Good Proficiency)			

**- Highly Significant at 1% alpha level

In terms of the pre-test scores, the computed t-value was -0.98 with a p-value of 0.34, which is greater than the 0.05 significance level. This result indicates no significant difference between the control and experimental groups prior to the intervention, suggesting that both groups were initially comparable in their English vocabulary proficiency. In contrast, the post-test analysis revealed a statistically significant difference between the two approaches. The p-value of 0.00, which falls below the 0.05 threshold, confirms that learners exposed to gamified instruction achieved significantly higher scores compared to those taught using the conventional method.

These findings affirm the effectiveness of gamification in enhancing vocabulary acquisition. Yu (2023) supports this result, reporting that gamified English vocabulary learning significantly improves learning outcomes, motivation, and student satisfaction compared to non-gamified approaches. Similarly, the study of Kijpoonphol and Phumchanin (2018) revealed that although students expressed greater satisfaction with traditional methods, the gamified group obtained higher post-test scores, particularly in learning phrasal verbs. This suggests that gamified instruction not only improves academic performance but also provides learners with a more engaging and effective learning experience.

Table 4

Difference between the conventional method and gamified approach

Test	Score	t-value	p-value	Decision
Conventional Method				
Pre-test	18.00 (Satisfactory Proficiency)	-7.18185	<0.00001*	Reject Ho
Post-test	32.00 (Satisfactory Proficiency)			
Gamified Approach				
Pre-test	16.07 (Weak Proficiency)	-14.7341	<0.0001**	Reject Ho
Post-test	37.60 (Good Proficiency)			

** - Highly Significant at 1% alpha level

Based on the computed p-values of the pre-test and post-test scores, Table 4 reveals a highly significant difference in the English vocabulary performance of Grade 8 learners under both the conventional and gamified approaches. For the conventional method, the p-value of 0.00001, which is less than the 0.05 significance level at the 1% alpha level, indicates a significant improvement between the pre-test and post-test scores. This demonstrates that conventional teaching remains effective in enhancing English vocabulary skills. It suggests that when properly implemented, traditional instructional methods can still produce positive learning outcomes. Similarly, learners exposed to the gamified approach also showed a highly significant improvement, as indicated by the p-value of 0.00001. This underscores the effectiveness of gamification in promoting vocabulary development. While both approaches proved beneficial, the gamified method yielded greater gains in performance, suggesting that integrating game-based elements may further enhance the effectiveness of vocabulary instruction.

Recommendations

It is recommended that educators incorporate gamified strategies into English vocabulary instruction to foster higher levels of engagement and motivation among learners. Practical applications may include interactive activities such as language games, quizzes, and digital platforms that encourage active participation while reinforcing vocabulary acquisition. At the policy level, the Department of Education may consider revising the English curriculum to embed gamification as a complementary instructional approach. This could involve the development of instructional resources, training programs, and digital materials that equip teachers with the necessary tools and competencies to effectively implement gamified strategies. Moreover, curriculum design should extend beyond traditional

classroom practices and promote innovation, providing educators with the flexibility to adopt learner-centered methodologies that not only enhance vocabulary learning but also improve overall academic outcomes.

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Instructional Material for Teaching Fraction

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Elementary learners' struggles with fractions pose a major obstacle to building a strong mathematical foundation. Unlike whole numbers, fractions often lack immediate real-world referents, making their abstract nature especially challenging for young learners (Barmby, 2018). The shift from using concrete tools, such as fraction strips, to engaging with abstract computational tasks intensifies these difficulties, requiring students to develop a deeper conceptual grasp of number relationships (Clarke & Roche, 2020). Individual learner differences, including limitations in working memory or spatial reasoning, further exacerbate comprehension challenges (Fuchs et al., 2013). In addition, widespread misconceptions such as misinterpreting the fraction bar as a subtraction sign frequently result in calculation errors (Bailey et al., 2018).

Research consistently shows that solving fraction-based word problems is particularly problematic for learners (Kenney & Ntow, 2024; López-Martín et al., 2022; Bhatia et al., 2023; Copur-Gencturk & Doleck, 2021). These challenges often stem from difficulties in problem interpretation, translating situations into mathematical expressions, and selecting appropriate operations. Learners also tend to omit units in their

answers, lowering accuracy (Istiqomah & Prabawanto, 2019). Moreover, gaps persist in understanding fundamental fraction concepts, including arithmetic operations and problem-solving strategies (Hariyani et al., 2022).

National and regional assessments mirror these struggles. The Philippines ranked low in mathematics proficiency in PISA 2018 (DepEd – National Report, 2019). While the National Achievement Test (NAT) scores showed modest gains between 2005 and 2013, results still fell short of the 75 percent benchmark. More recently, a district-level assessment in San Jose revealed that 15.8% of Grade 3 learners lacked basic numeracy skills, with fractions identified as a key area of weakness.

These persistent gaps underscore the need to design supplementary instructional materials tailored to fraction learning. Such resources can scaffold conceptual understanding, bridge knowledge gaps, and provide guided practice in solving and creating fraction-based problems. Addressing these challenges not only aligns with the Department of Education’s thrust to strengthen numeracy but also highlights the potential of design-based research in producing responsive, evidence-based solutions.

The Impact of Learning Materials in Teaching Fraction

Fractions remain one of the most challenging concepts in mathematics for learners. While many students succeed with whole numbers in early grades, rational numbers often pose significant difficulties (Siegler & Lortie-Forgues, 2017). Proficiency with fractions is not only essential for success in higher-level mathematics but also serves as a foundation for various careers and real-world applications (Fennell & Karp, 2017). The inherent complexity of fractions contributes to learners’ struggles, making deep conceptual understanding difficult to achieve

(Kurniawan et al., 2018; Simon et al., 2018). Students with weak foundational knowledge often face difficulties progressing to advanced concepts such as algebra (Loc et al., 2017; Pearn & Stephens, 2015), and poor fraction proficiency has been linked to underperformance in general mathematics and algebra (Ubah & Bansilal, 2018).

Elementary learners, in particular, encounter challenges with foundational concepts, including part-whole relationships, equivalence, and operations like multiplication and division (Barmby, 2019; Jitendra & Griffin, 2020). They often struggle to connect conceptual understanding with procedural fluency, underscoring the need for a curriculum that supports the effective application of fraction knowledge (Staub & Stein, 2018; Cai & Jitendra, 2022). Cognitive and motivational factors also contribute to these challenges. Neglecting embodied approaches can hinder conceptual grasp (Nemirovsky & Ferrara, 2018), while anxiety and low confidence in proportional reasoning further impede learning (Hunting, 2019).

Recent literature highlights the potential of technology-enhanced instruction and contextually relevant examples to address these difficulties. Dynamic visualizations, interactive feedback, and real-world applications can scaffold fraction learning and promote meaningful engagement (Hofer & Reinhold, 2025). These approaches emphasize the importance of targeted instructional materials that bridge gaps in both conceptual understanding and procedural fluency.

Research demonstrates that well-designed instructional materials, particularly gamified and technology-enhanced tools, significantly improve students' fraction learning. Gamified learning strategies, such as fraction board games for third graders, have been shown to boost motivation, encourage strategic thinking, and support discovery-based learning (Khoo

& Wong, 2021; Hsu et al., 2022). Similarly, technology-integrated tools, such as virtual manipulatives with dynamic visual representations, enhance proportional reasoning and explanation skills (Yeo & Park, 2023; Moschkovich, 2019). Interactive computer manipulatives also yield significant gains for students with and without learning disabilities, underscoring technology's role in making fraction concepts more accessible (Ozimek & Jitendra, 2021). However, the success of these approaches depends on careful design, age-appropriate mechanics, equitable access, and students' familiarity with digital tools (Borko & Whitin, 2021; Hsu et al., 2022).

Teacher-developed instructional materials and inquiry-based approaches also support fraction learning by fostering engagement, critical thinking, and problem-solving. Empowering teachers to design activities tailored to their pedagogical styles enables more personalized learning (Borko & Whitin, 2021; Cai & Jitendra, 2022). Culturally responsive tools, such as Mayan fraction bars, can further strengthen engagement by bridging cultural contexts and making learning more meaningful (Rivera & Barroso, 2022). Tangible and interactive learning resources, such as the Fractangi number line, have also been found to foster exploration, enjoyment, and representational understanding (Mpiladeri et al., 2016).

The development and use of instructional materials are crucial for effective teaching and learning. Materials provide essential scaffolding that enables students to construct knowledge independently while supporting teachers in presenting information clearly (Onasanwa & Omosewo, 2011). Incorporating student feedback and teacher consultation ensures that resources are practical, pedagogically sound, and responsive to classroom needs (Moschkovich, 2019; Cai & Jitendra, 2022). Continuous refinement such as adding practice problems, accommodating diverse learning styles,

and simplifying explanations further enhances adaptability and effectiveness (Khoo & Wong, 2021; Borko & Whitin, 2021; Yeo & Park, 2023). Overall, the development of interactive, adaptable, and culturally responsive instructional materials is essential to overcoming challenges in fraction learning and improving students' conceptual understanding and procedural fluency.

Development and Validation of Instructional Material for Teaching Fraction

This study aims to determine the level of acceptability of the developed and validated instructional material for teaching fractions among Grade 5 pupils, focusing on its content, usability, and effectiveness in supporting conceptual understanding and procedural fluency

Methodology

This study employed a design-based research (DBR) approach utilizing the Analysis, Design, Development, Implementation, and Evaluation (ADDIE) model to develop and validate instructional materials for teaching fractions. The research was conducted at Sibalom South District, Schools Division of Antique, Philippines. The participants included 47 Grade 5 pupils, who were administered a diagnostic test on fractions to identify their least mastered competencies, and three mathematics experts who served as validators of the instructional materials.

The data-gathering instruments consisted of two components: (1) a mastery skills test, and (2) an instructional material assessment checklist. The mastery skills test was a 60-item multiple-choice examination prepared with a Table of Specifications to ensure content validity. Following pilot testing, 40 reliable items were retained and used to identify specific learning

gaps in fractions, serving as the foundation for the design of supplementary instructional materials.

Based on the diagnostic results, a 20-item activity sheet was developed, targeting six competencies where learners demonstrated low mastery. The instructional material incorporated problem-solving and problem-creation tasks involving the addition, subtraction, multiplication, and division of fractions and whole numbers. To evaluate the material, the instructional material assessment tool was employed. This checklist measured the quality of the developed instructional material across several dimensions, including content, clarity, accuracy, comprehensiveness, graphical quality, readability, and overall usability, using a 5-point Likert scale.

The research procedure followed three phases:

Phase 1: Preparation and validation of instruments. All instruments were prepared and validated by mathematics experts to ensure reliability and content accuracy. Likewise, the developed instructional materials were reviewed, evaluated, and revised based on expert feedback, ensuring alignment with the identified competencies and adherence to pedagogical standards.

Phase 2: Identification of least mastered competencies. A diagnostic test was administered to identify six least mastered competencies in fractions. Based on the results, instructional materials were developed to enhance pupils' problem-solving and problem-creation skills specifically targeting these competencies.

Phase 3: Experimental teaching. A pretest was administered to determine the pupils' initial mastery levels in fractions prior to the intervention. The pupils were then taught using the developed instructional materials, which included activity sheets and supplementary videos, over a

two-month period. Following the intervention, a posttest was administered to measure their mastery levels after using the instructional materials.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 22. The mean was computed to determine pupils' scores in the diagnostic test, pretest, and posttest, as well as to assess the acceptability of the instructional materials. To determine whether there were significant differences between the pretest and posttest results, a t-test for dependent samples was employed.

Ethical considerations were strictly observed throughout the study. Coordination with school authorities was secured, and informed consent letters were distributed to both pupils and their guardians. Participants were made aware of the purpose of the study, the voluntary nature of their participation, and the confidentiality of their responses. Informed consent was obtained prior to administering the instruments, ensuring that all participants fully understood their rights and the study procedures.

Findings

Table 1 presents the least mastered mathematics competencies of Grade 5 pupils, specifically on operations involving fractions. A total of 47 pupils were assessed across six competencies, yielding an overall mean score of 27.81 with a standard deviation of 3.79, which is interpreted as “high.” Among the competencies, the highest mean score was recorded in “Solves routine and non-routine problems involving addition and subtraction of fractions using appropriate problem-solving strategies and tools” ($M = 6.26$). This indicates that, while addition and subtraction of fractions continue to pose challenges, pupils demonstrated comparatively better performance in applying problem-solving strategies and tools. Nonetheless, consistent practice and scaffolding remain necessary to

strengthen their proficiency.

On the other hand, competencies with lower mean scores highlight areas where pupils experience greater difficulty, underscoring the need for targeted instructional interventions. These results provide a clear basis for developing supplementary instructional materials to address pupils' learning gaps in fraction operations.

Table 1

Least mastered competencies of Grade 5 pupils

Most Essential Learning Competencies	Mean Score
1. Solves routine and non-routine problems involving addition and/or subtraction of fractions using appropriate problem-solving strategies and tools.	6.26
2. Creates problems (with reasonable answers) involving addition and/or subtraction of fractions using appropriate problem-solving strategies.	4.7
3. Solves routine and non-routine problems involving multiplication without or with addition and subtraction of fractions and whole numbers using appropriate problem-solving strategies and tools.	5.28
4. Creates problems with (reasonable answers) involving multiplication of fractions.	4.38
5. Solves routine or non-routine problems involving division without or with any of the other operations of fractions and whole numbers using appropriate problem-solving strategies and tools.	4.43
6. Creates problems (with reasonable answers) involving division or any of the other operations of fractions and whole numbers.	2.83
Over All Mean Score	27.81
Description	High
SD	3.79

Note: 32.01-40.00 Very High; 24.01- 32.00 High; 16.01-24.00 Moderate; 8.01-16.00 Low; 0.00-8.00 Very Low

In contrast, the competency “Creates problems (with reasonable answers) involving addition and/or subtraction of fractions using appropriate problem-solving strategies” (M = 4.70) received a lower mean score. This indicates that pupils found problem creation more difficult than

problem solving. The challenge may be attributed to their limited exposure and practice in formulating mathematical problems, reflecting difficulties in the creative aspect of mathematics learning (Loc et al., 2017; Hariyani et al., 2022). This suggests the need for instructional strategies that encourage creative thinking and problem construction.

For multiplication, the competency “Solves routine and non-routine problems involving multiplication without or with addition and subtraction of fractions and whole numbers using appropriate problem-solving strategies and tools” ($M = 5.28$) reflected moderate proficiency. Pupils demonstrated slightly better understanding when solving multiplication problems than when creating them, but still required improved strategies for integrating multiple operations. Meanwhile, “Creates problems (with reasonable answers) involving multiplication of fractions” ($M = 4.38$) showed that pupils had difficulty formulating multiplication problems. This highlights gaps in applying conceptual understanding to higher-order tasks, underscoring the need for instructional practices that strengthen reasoning and creativity.

The competency “Solves routine or non-routine problems involving division without or with any of the other operations of fractions and whole numbers using appropriate problem-solving strategies and tools” ($M = 4.43$) revealed moderate challenges. While pupils could attempt division problems, their application of strategies and tools remained weak. Finally, the lowest mean score was obtained in “Creates problems (with reasonable answers) involving division or any of the other operations of fractions and whole numbers” ($M = 2.83$). This was identified as the least mastered competency, suggesting that pupils struggled significantly with formulating division problems. These findings emphasize the need for targeted interventions, particularly instructional practices that foster problem

creation, strengthen conceptual understanding of division with fractions, and promote higher-order thinking skills.

The needs assessment thus served as the foundation for the iterative design and refinement of the instructional materials. The diagnostic test revealed persistent challenges in both problem-solving tasks and problem creation across the four fundamental operations. To address these gaps, instructional materials were specifically developed to target the identified areas of difficulty.

The core intervention took the form of a 20-item activity sheet designed to enhance pupils' mastery of problem-solving and problem-creation in fractions. The activity sheet emphasized both solving and constructing problems involving addition, subtraction, multiplication, and division of fractions and whole numbers. Its primary objective was to equip pupils with effective strategies and tools for solving both routine and non-routine problems, while also fostering creativity and higher-order thinking in problem formulation.

The activity sheet was carefully structured around the least mastered competencies in fractions, which included:

- Solves routine and non-routine problems involving addition and subtraction of fractions using appropriate problem-solving strategies and tools (4 items)
- Creates problems (with reasonable answers) involving addition and subtraction of fractions using appropriate problem-solving strategies (3 items)
- Solves routine and non-routine problems involving multiplication without or with addition and subtraction of fractions and whole numbers using appropriate problem-solving strategies and tools (4 items)
- Creates problems (with reasonable answers) involving multiplication of fractions (3 items)
- Solves routine or non-routine problems involving division without or with any of the other operations of fractions and

whole numbers using appropriate problem-solving strategies and tools (3 items)

- Creates problems (with reasonable answers) involving division or any of the other operations of fractions and whole numbers (3 items)

By directly targeting these least-mastered competencies, the instructional material sought to strengthen pupils’ procedural fluency and deepen their conceptual understanding, while also enhancing their problem-posing skills. In doing so, it aimed to bridge critical learning gaps in fractions and promote higher-order mathematical thinking

Table 2

Mastery level of Grade 5 pupils in solving fractions before and after the utilization of the validated instructional materials

Test	Mean Score	Description	SD
Pre-test	9.94	Moderate	2.00
Post-Test	13.06	High	2.12

Note: 16.01-20.00 Very High; 12.01- 16.00 High; 8.01-12.00 Moderate; 4.01-8.00 Low; 0.00-4.00 Very Low

Table 2 presents the baseline assessment of Grade 5 pupils’ proficiency in fractions prior to the implementation of the validated instructional materials. The results revealed a mean mastery level of 9.94 with a standard deviation of 2.00, interpreted as “moderate.” This indicates that pupils demonstrated a moderate ability to solve addition and subtraction problems with fractions, reflecting some competence in applying problem-solving strategies and tools effectively. However, they still required additional practice and guidance to strengthen these skills. In contrast, pupils exhibited greater difficulty in generating their own problems for

these operations, suggesting challenges in the creative dimension of mathematics, likely due to limited exposure and practice in problem formulation.

The findings further indicate that pupils struggled with multiplication and division problems, both in solving and creating them. Difficulties were particularly evident when applying conceptual knowledge to problem formulation, underscoring gaps in higher-order thinking skills. Division tasks, in particular, revealed limited proficiency in the application of strategies and tools, highlighting the need for instructional interventions that foster problem construction and deepen conceptual understanding.

Following the integration of the validated instructional materials, pupils' mastery showed notable improvement. The mean score increased to 13.06 with a standard deviation of 2.12, classified as "high." This suggests that pupils' ability to solve fraction problems improved considerably, reflecting a positive shift in their capacity for creative application of mathematical concepts. Progress was particularly evident in strategies for multiplication, although many pupils continued to demonstrate limited proficiency in integrating multiple operations involving fractions. These results point to the necessity of sustained, targeted instruction that builds progressively on existing knowledge. Overall, the findings indicate gradual improvement in solving complex fraction problems, demonstrating enhanced conceptual understanding, problem-solving competence, and creative application of mathematical knowledge.

Table 3 presents the t-test results, illustrating the significant difference in Grade 5 pupils' mastery levels before and after the utilization of the validated instructional materials.

Table 3

T-test results on the differences in the level of mastery before and after the utilization of the validated instructional materials

Tests	Mean	t-value	df	p	Interpretation
Pretest	9.94	-15.395	46	.000*	Significant
Post-test	13.06				

**p. < .05, significant*

The results revealed a significant difference in the mastery level of Grade 5 pupils in solving fractions after using the validated instructional materials, $t(46) = -15.395$, $p < .05$. This indicates that pupils who utilized the instructional materials demonstrated a significantly higher level of mastery in fraction problem-solving. These findings suggest that the validated instructional materials effectively enhanced pupils' understanding and ability to solve fraction problems.

However, the results also indicated that while most competencies showed significant improvement, one area did not, highlighting the need for continuous assessment and potential curriculum adjustments to ensure comprehensive mastery of all fraction competencies. These outcomes reinforce the claim that the developed instructional materials successfully addressed the identified learning gaps, providing appropriate strategies and tools to strengthen fraction skills (Shin et al., 2022).

Furthermore, the study demonstrates the potential of targeted, design-based instructional materials to effectively support Filipino elementary pupils in overcoming specific learning difficulties. Table 4 presents the level of acceptability of the instructional materials, as evaluated by three mathematics experts across multiple criteria, including learning content, quality, comprehensiveness, conciseness, clarity, accuracy, graphical completeness, and readability.

Table 4*Level of acceptability of the developed instructional material*

Indicators	Mean	Interpretation
Learning Content	3.5	Acceptable
Quality	3.92	Acceptable
Comprehensiveness	4.17	Acceptable
Conciseness	3.92	Acceptable
Clarity	4.18	Acceptable
Accuracy	3.67	Acceptable
Graphical Completeness	4.00	Acceptable
Readability	4.58	Very Acceptable
Overall Mean	3.99	Acceptable

The results indicated that the overall acceptability of the instructional materials was rated as acceptable, with a mean score of 3.99. This demonstrates that the materials were well-received by evaluators and are likely effective in supporting the teaching and learning of fractions among Grade 5 pupils.

Specifically, the Learning Content received a mean score of 3.50, classified as high, suggesting that the materials comprehensively covered fraction-related topics and contributed to a robust learning experience. The Quality of the instructional materials was similarly rated high, with a mean score of 3.92, indicating that the content was valuable and effectively supported student learning.

In terms of Comprehensiveness, the materials achieved a mean score of 4.17, highlighting thorough coverage of fraction concepts and promoting deeper understanding. Conciseness received a mean score of 3.92, showing that the materials presented information effectively without unnecessary complexity, thereby enhancing learning efficiency. Clarity was rated high at 4.18, reflecting straightforward and easily understandable presentation of concepts. Accuracy scored 3.67, demonstrating the precision of the fraction-related content.

The Graphical Completeness of the materials was rated high ($M = 4.00$), indicating effective integration of visual elements that supported comprehension. Finally, Readability received the highest rating, with a very high mean of 4.58, suggesting that the materials were exceptionally clear and accessible to learners. These results collectively affirm that the instructional materials are pedagogically sound, user-friendly, and capable of enhancing students' mastery of fraction competencies.

Conclusion

The results indicate that well-designed instructional materials can significantly enhance pupils' understanding and application of fraction concepts. At the same time, the findings underscore the importance of continuous refinement to ensure that all areas of fraction learning are comprehensively addressed. This highlights the need for a targeted and adaptive approach in developing instructional materials, enabling students not only to improve in specific competencies but also to achieve well-rounded mastery of fractions. Consequently, sustained efforts in curriculum development and instructional innovation are recommended to fully support pupils' mathematical growth.

The positive evaluation across multiple dimensions of instructional quality validates both the design and content of the materials. It also emphasizes the critical role of readability, clarity, and engaging presentation in facilitating learning. These results suggest that instructional resources should remain accessible, visually appealing, and learner-centered to enhance students' experiences and outcomes in mathematics. Future materials should continue to prioritize clarity, accuracy, and engaging content while incorporating regular assessment and feedback to ensure ongoing improvement and effectiveness.

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