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RESEARCH BULLETIN

ENHANCING SENIOR HIGH SCHOOL TEACHERS' SELF-REFLECTION, INSTRUCTIONAL PRACTICES, AND RESEARCH ENGAGEMENT THROUGH A STRUCTURED EVALUATION TOOL: A PATHWAY TO A CULTURE OF EXCELLENCE

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INTRODUCTION

The teaching profession continually evolves to meet the 21st century educational demands, requiring teachers to adapt to diverse learner needs and outcome-based curricula. In Carcar City Division, Senior High School (SHS) teachers face challenges in instructional effectiveness due to limited resources and traditional summative evaluations.

This action research introduces a **Structured Evaluation Tool** *to enhance teacher self-reflection, instructional practices, and research engagement*. Anchored in Schön's reflective practitioner framework and constructivist principles, the tool promotes systematic self-assessment, peer collaboration, and evidence-based teaching.

The study aims to foster continuous professional growth, improve classroom strategies, and cultivate a culture of instructional excellence.

DISCUSSION OF RESULTS

The research employed a pre-intervention and post-intervention assessment to evaluate Senior High School teachers' self-reflection, instructional practices, and professional growth using the Structured Evaluation Tool. The data collected before and after the intervention are summarized in the following tables.

Table 1
Overall Performance of Teachers Before the Intervention

Category	Weighted Mean	Verbal Interpretation	% of Teachers Strongly Agree/Agree
Usability and Relevance	4.20	Agree	60%
Impact on Instructional Practices	4.15	Agree	55%
Professional Development and Growth	4.10	Agree	50%
Overall Effectiveness	4.15	Agree	55%

Table 2
Overall Performance of Teachers After the Intervention

Category	Weighted Mean	Verbal Interpretation	% of Teachers Strongly Agree/Agree
Usability and Relevance	4.78	Strongly Agree	100%
Impact on Instructional Practices	4.78	Strongly Agree	100%
Professional Development and Growth	4.73	Strongly Agree	100%
Overall Effectiveness	4.90	Strongly Agree	100%

The findings show a marked improvement in teachers' reflective practices, instructional clarity, and professional growth after using the Structured Evaluation Tool. The overall effectiveness mean increased from 4.15 (pre-intervention) to 4.80 (post-intervention), indicating that teachers became more reflective, research-oriented, and collaborative in their teaching.

Teachers noted improvements in lesson planning, student engagement, and research instruction. Qualitative feedback highlighted enhanced reflection, peer collaboration, and evidence-based decision-making. Suggestions for adding comment spaces and expanding the tool's applicability point to opportunities for refinement and long-term sustainability.

Qualitative analysis reinforced these results, highlighting five key themes: *facilitating reflective practice, enhancing instructional clarity and student engagement, promoting professional growth and research engagement, fostering collaboration and evidence-based teaching, and opportunities for refinement*. Teachers reported that the tool encouraged deliberate reflection, improved lesson planning, and supported research-oriented instruction. Peer collaboration and structured feedback strengthened instructional strategies and cultivated a culture of continuous improvement. Suggestions for adding comment spaces and adapting the tool for other subjects point to its potential for sustainability and broader applicability.

The intervention effectively promoted a reflective, research-informed, and collaborative teaching environment, supporting continuous professional development and improved instructional quality within Senior High School classrooms.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

This action research confirms that the Structured Evaluation Tool is an effective and sustainable means of strengthening teachers' reflective practice, instructional clarity, and research engagement. Its structured design guided teachers beyond routine teaching toward more thoughtful, evidence-based, and collaborative practices, fostering stronger professional dialogue, greater ownership of teaching, and a culture of continuous learning. Reflection, when supported by clear criteria and guided prompts, emerged as a powerful driver of professional growth and instructional improvement.

From the researcher's perspective as a school head, the study was both professionally enriching and personally meaningful, reinforcing the importance of intentional leadership in building a reflective school culture grounded in trust, support, and collaboration.

The Structured Evaluation Tool proved to be more than a research output; it functioned as an empowering framework that encourages teachers to see themselves as reflective practitioners and lifelong learners.

Based on these findings, it is recommended that the tool be expanded across subject areas and enhanced with spaces for qualitative reflections to deepen contextualized feedback. Promoting collaborative reflection through peer observation and integrating the tool into ongoing professional development, school improvement plans, and learning action cells will help ensure sustainability and maximize its long-term impact on teaching quality and professional growth.

REFERENCE

Schön, D. A. (1983). The reflective practitioner: How professionals think in action. Basic Books.

RESEARCH DOCUMENTATION


School heads and research coordinators are mentoring teachers. Coaching sessions emphasized the proper use of the tool in lesson planning and research instruction, fostering confidence and competence among teachers. research subjects.


Teachers sharing insights during a Learning Action Cell (LAC) session. Description: Reflection sheets and feedback were discussed collaboratively, highlighting best practices, and reinforcing the culture of continuous improvement.


Senior High School teachers gathered during the Division-led research clinic facilitated by the focal person. The session introduced the Structured Evaluation Tool, with teachers actively engaging in discussions on how to integrate reflective practices into their instructional routines.


Senior High School students presenting and defending their research outputs with guidance from the Structured Evaluation Tool. The photo captures students confidently explaining their research objectives, methodology, and findings. The tool supported them in organizing their work, clarifying instructional goals, and strengthening their ability to communicate evidence-based results. This demonstrates the tool's impact not only on teachers' reflective practice but also on student engagement and achievement in research-related activities.

ENRICHING TEACHERS' COMPETENCE IN INNOVATIVE TEACHING SCHEMES THROUGH THE MANUAL OF INSTRUCTIONAL SUPERVISION (MIS): MECHANISM TO INCREASE LEARNERS' PERFORMANCE IN MULTIGRADE CLASSES

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INTRODUCTION

Instructional supervision is defined as a collaborative, school-based stewardship designed to elevate teaching quality and learning environments. This function, executed by a range of educational leaders from department heads to district supervisors, involves providing systematic guidance, support, and evaluative feedback to teachers. Republic Act 9155 codifies this as a primary responsibility of school heads, establishing them as instructional leaders empowered to drive educational achievement. Their role is further clarified in DO 24, s. 2020, which tasks them with creating an enabling academic atmosphere. Complementing this, Public Schools District Supervisors are mandated to guide and mentor school heads in their supervisory duties, ultimately fostering a culture where teachers continuously reflect on and improve their practice to better serve learners.

A 2020 study by Ubogu highlighted a significant gap in educational oversight, revealing that instructional supervisors often fail to perform key duties such as regular classroom visitations and teacher monitoring. The study recommended allocating more resources to enhance supervisory capacity. Echoing this need for better support, a 2021 survey of instructional leaders across 19 Schools Division Offices confirmed that establishing clear standards would empower supervisors by providing a definitive guide for their actions and building their confidence. To meet this demand, the Manual of Instructional Supervision (MIS) has been developed. This manual is positioned as an essential, practical guide for instructional managers, designed to ensure the effective delivery of instruction and ultimately improve student learning outcomes.

Recent scholarship underscores the importance of structured teacher development. For instance, a 2024 study by Khotimah et al. identified key strategies for improving the competence of Islamic religious education teachers within a madrasah-based management system. Their findings highlight the effectiveness of innovative strategies, collaborative approaches, and technology integration. This academic perspective aligns with the researcher's practical experience as the school head of a multigrade school in Valencia, Bohol. From this vantage point, it is clear that regular supervision is essential for providing teachers with the targeted technical assistance needed to master the complexities of multigrade instruction. Inspired by the MIS-Mechanism, the researcher has developed the project "Enrich Teachers' Competence in Innovative Teaching Schemes (ENTECOMINTES)" to directly address this need and ultimately enhance the learning performance of students at Tausion Elementary School.

DISCUSSION OF RESULTS

Teachers' Competence in MG Teaching Schemes Before the Intervention

Observation based, it was found out that 3 of 3 MG teachers in Tausion ES have struggles in handling multigrade classes in terms of the correct and appropriate teaching schemes to use from the planning to delivery of the lesson. Obviously, there were misalignment of the competencies and the transition between grades is quite unsystematic and confusing.

Indeed, Teaching Schemes in an MG class plays a vital role in meeting the expected learning outcomes and maximizing learners' potentials. It has been essential for learners to develop better skill and understanding towards

a better performance and learning strengths in addressing learning gaps. This data served as a basis for understanding the current competence level of teachers and proficiency levels of learners, identifying strengths, and pinpointing eas requiring intervention, as shown in Table 1.

Table 1

Teachers' Level of Competence in MG Teaching Schemes Before the Intervention

Functional Objectives

Teachers	KRA 1 Content Knowledge and Pedagogy	KRA 2 Diversity of Learners, Assessment & Reporting	KRA 3 Curriculum and Planning	KRA 4 Community Linkages and Professional Engagement, Professional Growth and Professional Development	Level of Capability	Priority for Development
Rose	4	3	4	5	Towards Proficiency	KRA 2
Saie	3	2	4	5	Towards Proficiency	KRA 2
Yong	3	2	3	5	Towards Proficiency	KRA 2

Table 1 presented the teachers level of competence under functional objectives before the intervention. It can be gleaned that Rose has demonstrated good competence across all tested KRAs with a rate of 4,3, 4, 5 respectively with 3 as the lowest rate under KRA 2 on diversity of learners, assessment and reporting, thereby the identified priority for development. On the other hand, Saie and Yong have both demonstrated strong capability level in KRA 5, but the weakest in KRA 2. Generally, all of them have shown the same priority for development.

It is important to emphasize that the domains of Diversity of Learners, Assessment, and Reporting encompassed several key practices. These included 9 Central Visayas fostering a learner-centered environment through instructional strategies that are sensitive to learners' linguistic, cultural, socio-economic, and religious backgrounds. It also involved planning and implementing teaching approaches that address the special educational needs of learners facing challenging circumstances, such as those related to geographic isolation, chronic illness, displacement due to armed conflict, urban resettlement, natural disasters, child abuse, or child labor. Additionally, it highlighted the use of strategies that ensure timely, accurate, and constructive feedback to enhance learners' academic performance.

In this regard, the researcher underscored the importance of adopting responsive teaching strategies that consider learners' diverse backgrounds, cater to their specific educational needs, and provide meaningful feedback to support improvement. Overall, these considerations pointed to the necessity of implementing an appropriate and innovative instructional approach.

Table 2

Teachers' Level of Competence in MG Teaching Schemes Before the Intervention

Core Behavioral Competencies

Teachers	Self-Management	Professionalism and Ethics	Results and Focus	Teamwork	Service Orientation	Innovation	Priority for Development
Rose	4	4	3	5	5	3	Results & Focus/ Innovation
Saie	4	4	3	5	5	3	Results & Focus/ Innovation
Yong	4	4	3	5	5	3	Results & Focus/ Innovation

Table 2 revealed the core behavioral competencies of Tausion teachers. As portrayed, all the three of them have the same strength in self-management, professionalism and ethics, teamwork and service orientation. Likewise, of same development priority on results and focus, and innovation which only has a rate of 3, the least.

Overall, teacher participants do need to innovate for an appropriate planning and teaching strategies for multigrade classes as such to be more focus and results oriented in the context of teaching performance and learning outcomes.

Table 3

N=29

Level of Proficiency	*No. of Learners*	*%AGE*
OUTSTANDING	*2*	*6.90*
VERY SATISFACTORY	*15*	*51.72*
SATISFACTORY	*6*	*20.69*
FAIRLY SATISFACTORY	*5*	*17.24*
DID NOT MEET EXPECTATIONS	*1*	*3.45*

Table 3 reflected the teacher's supervisory needs. Rose and Yong have average rating of 2.035 and 2.54, both belongs

to Directive IS Category. While Saie on the other hand has an average rating of 2.18 and is categorized as Collaborative, meaning with a higher competence and low supervisory needs.

Table 4

Consolidation of Teachers' Supervisory Needs

Teacher	MIS Form 2 Average Rating	Description
Rose	2.035	Directive
Saie	2.18	Collaborative
Yong	2.54	Directive

Table 4 portrays the teacher's supervisory needs. Procedurewise in the Manual of Instructional Supervision (MIS), form 2 is accomplished between teacher and school head to identify the kind of supervision to be done.

Rose got an average of 2.035 which falls under Directive that means she requires high instructional supervision. While Saie got an average of 2.18 which falls under Collaborative, meaning she needs moderate supervision. Furthermore, Yong has an average of 2.54 of which range is on Directive that requires high supervision.

Overall, they need the school head supervisions in order to address the indicators they marked as high and very high need for guidance, supervision and technical assistance.

Table 5

Consolidation of Teacher's Pre-Classroom Observable Indicators

Teacher	Number of Observe Classroom Indicators	Description
Rose	7	Directive
Saie	7	Directive
Yong	6	Directive

Table 5 shows the pre-classroom observations of the participants. It is revealed that Rose and Saie got the same number of classroom observable 11 indicators which is 7, while Yong got 6. All three of them are classified under Directive Level of teaching competence that needs high supervisory guidance and technical assistance from the school head & IS provider.

Table 6

Tausion Learners' School Consolidated QRA Results Grade 1-6 (Quarter 1)

Teacher	Teacher's Needs to Improve	School Heads Rating on the Teacher's Needs	Average Rating	IS Category
Rose	2	2.07	2.035	Directive
Saie	2.07	2.29	2.18	Collaborative
Yong	2.5	2.57	2.54	Directive

Table 6 reveals the consolidated Q1-Quarterly Results on Assessments of Tausion Elementary School S.Y. 2025-2025. Data-based, out of 29 learners enrolled, 2 or 6.90% fall under outstanding level, 15 or 51.72% in very satisfactory level, 6 or 20.69% in satisfactory, and 5 or 17.24% in fairly satisfactory level of proficiency, while there's 1 or 3.45% who did not meet expectations.

Generally, the result shows a need to address the learning gaps of these 12 learners who are struggling and at risk of failing through an innovative teaching scheme to recover and patch up the gaps.

This outcome is primarily attributed to the inability of educators to adapt to students' preferences for digital learning. Interestingly, the classroom environment showed a negative correlation, suggesting that learning outcomes were more heavily influenced by the quality of instruction than by the physical setting. Gruijters and Behrman (2020) note that if developed nations in Europe and North America struggle to improve learning outcomes, developing countries in Asia and Africa face even steeper hurdles. Their research highlights that teachers in these regions contend with a multitude of challenges, including low student motivation and systemic poverty.

Consequently, the role of the educator is paramount in driving student performance. To reach or exceed performance standards, targeted interventions are necessary to enhance teacher competence.

Performance of Teachers After the Intervention

This section highlighted the teachers' levels of competence after the intervention. Notable improvements were observed in the

preparations of their lesson plans using the appropriate teaching schemes with the alignment of competencies for the grade based on the provided budget of work for multigrade classes from DepEd Region VII. Based on the conducted MIS-Classroom Observations, the delivery of the lesson from drill to wrap up is smoothly, comprehensively, and systematically done. The transitions became efficient with no loop holes and idle times in both grades. The teacher's confidence is evident, and the entire teaching-learning process is productive and effective through performance, evaluation and assessment results.

Table 7

Consolidation of Teacher's Teaching Competence & Performance After the Implementation

Teacher	Classroom Observation Rating	Remarks
Rose	7	Proficient
Saie	7	Proficient
Yong	6	Proficient

Table 7 shows the teacher's teaching competence & performance after the implementation of the study. Rose and Saie got the same rating of 7, while Yong has a rating of 6. Generally, the 3 of them have shown proficiency and competence.

Table 8

Tausion Learners' School Consolidated QRA Results Grade 1-6 (Quarter 2) After the Implementation

N=29

Level of Proficiency	No. of Learners	%AGE
OUTSTANDING	5	17.24
VERY SATISFACTORY	20	68.97
SATISFACTORY	2	6.90
FAIRLY SATISFACTORY	2	6.90
DID NOT MEET EXPECTATIONS	0	0

Table 8 portrays the learners' quarter 2 QRA Results after the implementation of the study. The number of outstanding learners were 5, very satisfactory were 20, satisfactory 2, fairly satisfactory 2, and no one did not meet the expectations. Therefore, the intervention was effective and has a positive impact to both the teachers' teaching competence and the learners' learning outcomes.

In addition, educational literature is abundant with studies conducted to associate teaching strategies to students' learning outcomes. These studies (see, for example, Zhu & Kaiser, 2022) show a close relationship revealing that the more effective the teaching strategies the higher the learning outcomes. Limited attention has, however, been given to how teaching strategies influence learners' learning strategies.

A significant instructional challenge lies in the diverse levels of comprehension within a single classroom (Du Plessis, 2019). This heterogeneity, rooted in students' varied backgrounds, necessitates personalized instruction-a task that often proves difficult for educators accustomed to rigid, traditional methodologies. To bridge these gaps, teachers must implement strategies that foster self-regulated learning, which Al-Bahrani (2022) identifies as a critical skill for navigating a rapidly evolving world. In today's educational landscape, the cultivation of 21st-century skills is imperative; consequently, students who lack self-regulation and independent learning abilities are at a higher risk of academic marginalization (Gorgoz & Tican, 2020). Therefore, it is essential for educators to refine their pedagogical approaches using evidence-based outcomes to support diverse learners effectively.

Based on findings from this study, it showed that embracing the innovative teaching schemes in handling multigrade classes through MIS mechanism has indeed made a positive impact towards teachers' teaching competence thus, increasing learners' performance and academic achievements.

Comparative Analysis of Learners' Performance before and after the intervention

This section highlighted the QRA Results on Assessments of learners from quarter 1 to quarter 2. The data provided insights into the effectiveness of the intervention in addressing the learners' learning gaps across all learning areas.

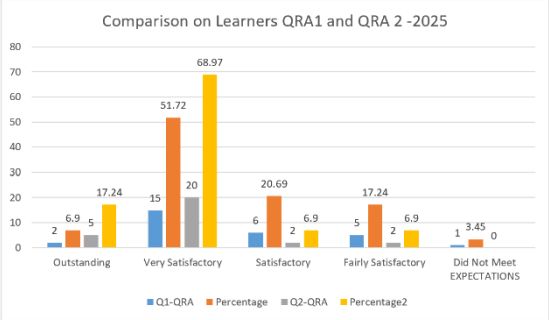

Figure 1-*Comparative Analysis of Learners' Performance before and after the intervention*

Figure 1 shows the comparison of learners' performance. It clearly reveals the increase of learners' performance based on the quarterly results of assessments. Outstanding learners from 6.9 to 17.4 percent, Very Satisfactory is from 51.72 goes up to 68.97, Satisfactory is from 20.69 goes down to 6.9, Fairly Satisfactory is from 17.24 has decreased to 6.9 and Did Not Expectations from 1 to zero.

It's clear that the intervention made was effective. Like the study conducted by Freeman et al. (2014) compared student performance in a traditional lecture-based course with a course that incorporated active learning strategies. The results showed that students in the active learning course performed better on exams and demonstrated a deeper understanding of the Central Visayas 14 material. This highlights the effectiveness of active learning in promoting student engagement and enhancing learning outcomes.

Evidently too, the ENTECOMINTES Through MIS: Mechanism has enhanced teachers' competence in innovative teaching schemes in handling multigrade classes, thus yielded substantial increase in the quarterly result on assessments. This indicates that the study was effective for both teachers and learners across varying levels of proficiency.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The Manual of Instructional Supervision (MIS) is a tool in helping teachers' grow in knowledge and skills in the performance of their tasks and in ensuring that the educational needs of diverse learners are met through classroom observations. This is one of the many ways in giving the appropriate technical assistance especially to teachers who are yet categorized under directive level of supervisory needs.

The ENTECOMINTES Through MIS Mechanism is crucial to enhancing teachers' competence and increasing learners' performance. This is affirmed by Sh. Siti Haizumah (2019) said that the teacher's quality rests on the competence of the teacher in determining the learning success and facilitation. A teacher's quality is a group of skilled, competent, qualified, passionate, committed and with the soul of an educator (Ministry of Education Malaysia, 2006). Therefore, it is clearly shown that teacher's competency is very important in implementing classroom assessment that is effective in order to fulfill the objective of the said classroom assessment.

There were various contributory factors to the success of the study. First, the study is focused on the orientation of the participants on innovative teaching schemes in handling multigrade classes, the crafting of the lesson plans using the schemes learned, the MIS procedures in the conduct of classroom observations.

Using the ENTECOMINTES Through MIS: Mechanism has helped teachers enhanced their teaching competence and learners reinforce their understanding and increase their learning results.

The teacher's readiness from lesson plan, instructional materials, game-based activities, use of differentiated instructions and inclusion of ICT in teaching is also contributory factors to the positive impact of the study. Moreover, the teacher's skill and mastery in delivering the lesson had kept learners' interest and full engagement all throughout the lesson.

However, the implementation of the ENTECOMINTES Through MIS: Mechanism was not without challenges. The time constraints of teachers in the preparations of the lesson plans using the innovative teaching schemes and its corresponding instructional material is not an easy task. Secondly, the complexities of the school head's roles and

responsibilities between the study and seminars/trainings to attend to in the district, division and region hinders the efficiency in beating the timelines of the study implementation.

The feedbacking between the researcher and the participants is the most challenging part. This is where teachers are interrogated on the strengths and weaknesses in the delivery of the schemes, the challenges they met, how they addressed the challenges, and how are they going to improve the delivery if they are given the chance to reteach the lesson. This is the avenue in asking the teachers on what technical assistance they would need from the school head/IS provider to enhance their competence and improve the learning outcomes among learners.

If the researcher has to conduct another similar study, few modifications are recommended to further enhance both teachers and learners' learning experiences. First, to have enough time in the conduct of LAC sessions where crafting of the lesson plans using the innovative teaching schemes is done. This is the blueprint by which the effective and efficient delivery of the lesson relies upon. Next is the preparations of the powerpoint presentations, visual aids, instructional materials and concrete manipulatives shall be in advance and appropriate to the age level of children. Furthermore, the Is provider to have ample time in the conduct of actual classroom observation by which teachers are given technical assistance as needed. Lastly, the inclusion of inclusive education in regular classes shall be given emphasis in the preparation of the plan, activities and interventions, not isolated from the group but part of the team.

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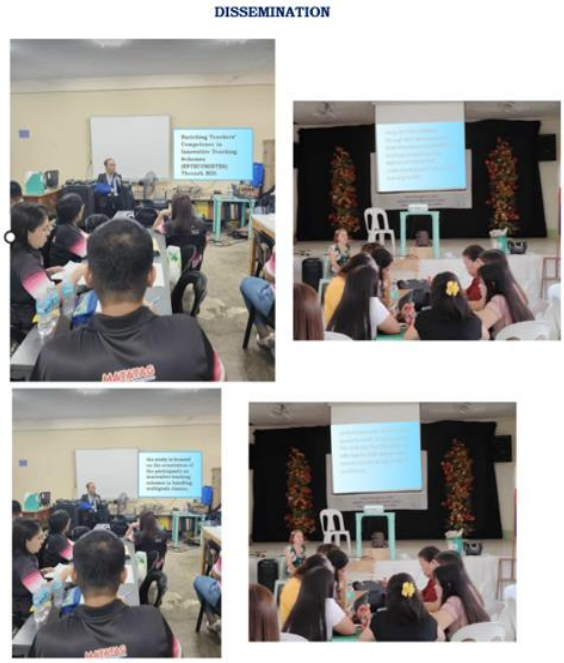
RESEARCH DOCUMENTATION

Teacher Orientation on ENTECOMINTES Implementation

DISSEMINATION



ENTECOMINTES dissemination during INSET 2025 at Valencia District, Valencia, Bohol

ENHANCING ADMINISTRATIVE EFFICIENCY THROUGH STRUCTURED MENTORING AND COACHING FOR NEWLY HIRED NON-TEACHING PERSONNEL

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INTRODUCTION

The administrative efficiency of schools relies heavily on the competence of non-teaching personnel, particularly newly hired Administrative Officers II (ADOF II), who handle critical tasks such as records management, personnel administration, property custodianship, and financial coordination. Although DepEd Order No. 32, s. 2020 highlights the need to develop both teaching and non-teaching staff, gaps in onboarding and support systems persist, especially for early-career administrative personnel in the Borbon District. Recurring issues-such as delayed submissions, incomplete records, and difficulty managing multiple KRAs-underscore the need for structured capacity-building. This action research evaluated a Structured Mentoring and Coaching Program aimed at improving the performance of newly hired ADOFs by providing job-embedded guidance and practical workflow tools. The study culminated in the development of a mentoring framework equipped with templates, checklists, and calendars to support long-term professional growth and strengthen administrative processes across district schools.

DISCUSSION OF RESULTS

Characterization

The study involved five early-career Administrative Officers (ADOFs), all partnered with their respective school heads to support collaborative school governance. Their workloads varied—three handled two schools, one managed three schools, and one male participant oversaw a single school. Most were female, and one received additional mentorship from a senior ADOF. This diversity in assignments and experiences provided wide-ranging insights into the challenges faced by novice administrative personnel.

Underlying Themes and Essences During the Mentoring and Coaching Sessions

Theme 1: Improved Time and Workflow Discipline

The mentoring program enhanced task management through structured calendars, checklists, and reminders. Participants reported clearer schedules, fewer overlapping deadlines, and more organized workloads. These tools promoted better planning, reduced stress, and improved productivity.

Theme 2: Strengthened Records Management and Data Accuracy

ADOFs noted improved keeping through standardized folders, naming conventions, and intake logs. Despite remaining backlogs, they experienced better tracking of documents and more consistent submission of files. These practices contributed to greater accuracy and compliance.

Theme 3: Property Control and Storage Challenges

Property custodianship remained the most difficult area due to incomplete tagging, limited storage, and inconsistent issuance logs. Although labeling improved, physical constraints and heavy workloads hindered full efficiency in inventory management.

Theme 4: Reinforced Compliance Habits

Compliance improved significantly as participants regularly monitored CSC Form 6 submissions and used acknowledgment receipts. These practices increased transparency, ensured consistent follow-up, and helped institutionalize routine compliance habits across schools.

Theme 5: Capability Gains Through Templates and Peer Support

Participants reported greater accuracy and confidence in preparing administrative outputs such as SOB, AIP, APP, and financial reports. Templates, checklists, and peer review reduced errors and improved timeliness. These tools supported stronger competency development and more consistent documentation.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Reflecting on the outcomes of this action research, the Structured Mentoring and Coaching Program proved highly valuable in strengthening the administrative competencies of newly hired ADOF II personnel. The intervention helped participants develop clearer workflows, more organized records systems, stronger compliance habits, and greater confidence in preparing administrative and financial reports. The use of practical tools-such as calendars, checklists, templates, and peer support-played a significant role in improving accuracy and efficiency across their KRAs. While property custodianship remained a persistent challenge due to limited storage and incomplete tagging, the overall improvements demonstrated how structured, job-embedded mentoring can transform daily administrative operations and reduce the burden of trial-and-error learning among early-career non-teaching staff.

The experience underscored the importance of sustaining mentoring initiatives and integrating standardized tools into district onboarding systems for new ADOFs. Continued capacity building, collaborative problem-solving with school heads, and strengthened support structures can further address remaining gaps, especially in inventory management. Moving forward, I intend to advocate for the institutionalization of this mentoring framework at the district level, ensuring that every new ADOF receives consistent guidance and resources. This research reaffirms that investing in the growth of non-teaching personnel is essential for efficient school governance and ultimately contributes to more responsive, organized, and accountable administrative systems that directly support teachers and learners.

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RESEARCH DOCUMENTATION

nducting needs assessment and orientation to all
ly hired non-teaching personnel of Borbon District

Mentoring and Coaching sessions

Discussed the results of the study to all school heads and non-teaching personnel of Borbon District

AR Advocacy Materials shared during the Regional ManCom last January 2026 at DepEd Ecotech Center, Cebu

ENHANCING TEACHERS' CLASSROOM-BASED ACTION RESEARCH PRODUCTIVITY THROUGH STRUCTURED PROGRESS MONITORING AND COACHING

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INTRODUCTION

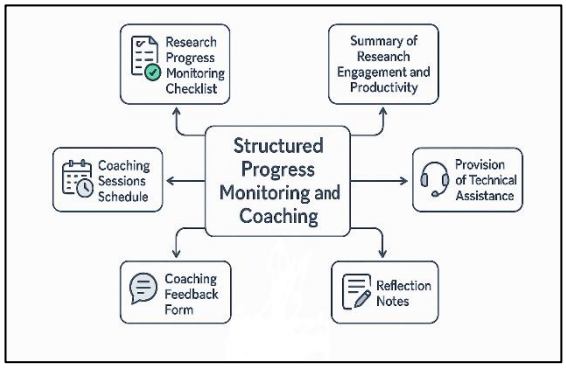
Schools serve as the foundation of the formal education system, ensuring the delivery of quality, accessible, and relevant basic education as mandated by Republic Act No. 9155 (2001). Within this context, School Heads are expected to go beyond administrative functions and act as instructional leaders who promote continuous improvement through research-driven and evidence-based practices. Anchored on the Philippine Professional Standards for School Heads (PPSSH), particularly Domain 1: Leading Strategically, school leaders are tasked to cultivate a culture of research to enhance school performance, while the Philippine Professional Standards for Teachers' (PPST) Domain 1: Content Knowledge and Pedagogy, likewise emphasizes teachers' responsibility to engage in reflective and evidenced-based teaching practices. Action Research (AR), as defined by DepEd (2017), serves as a systematic and reflective process for improving instructional practices and addressing contextual school issues, contributing to teacher competence and improved learner outcomes. Supporting policies such as DepEd Order No. 39, s. 2016 and DepEd Order No. 16, s. 2017 reinforced the institutionalization of research culture in schools.

Despite these directives, Mandaue City Central School (MCCS) continued to face challenges in promoting research engagement among teachers as evidenced by its zero (0) completed research outputs, against a baseline target of twelve (12) which consequently resulted to a low OPCRF rating of 3.67 in Objective 1.4.4 for SY 2023-2024. Findings from FGD and interviews revealed key barriers, including teachers' limited research knowledge and skills, absence of systematic monitoring and coaching, lack of individualized support and feedback mechanisms, and competing workload demands. These gaps highlighted the necessity of an office-based research initiative, leading to the implementation of the researcher-developed Structured Progress Monitoring and Coaching intervention aimed at enhancing teachers' research competence, engagement, and productivity.

Specifically, the study targeted an increase from 0 to at least 12 completed AR outputs validated by the Schools Division Research Committee by the end of SY 2024-2025, while also aiming to achieve a perfect OPCRF rating of 5.00 in Objective 1.4.4. Furthermore, this initiative envisioned beyond numerical gains, by aspiring to inculcate a strong culture and enduring value for teachers' involvement in research and innovative practices not only at MCCS but also in other schools of SDO - Mandaue City.

DISCUSSION OF RESULTS

The study implemented a researcher-developed Structured Progress Monitoring and Coaching intervention framework designed to enhance teachers' competence and productivity in conducting Classroom-Based Action Research (CBAR). The intervention was operationalized through six (6) contextualized research instruments that ensured continuous support, monitoring, and guidance throughout the entire research cycle.



At its core, the framework integrated structured monitoring, systematic coaching, individualized technical assistance, and reflective documentation through the use of the

Progress Monitoring Checklist, Coaching Sessions Schedule, Coaching Feedback Form, One-on-One Technical Assistance, Reflection Notes, and Summary of Research Engagement and Productivity. Each instrument was strategically designed to address specific research gaps identified during the baseline phase. Collectively, these tools established a feedback-driven, supportive, and accountable system that promoted consistent teacher progress, strengthened research competence, and fostered professional growth.

As an innovation, the Structured Progress Monitoring and Coaching Model transformed classroom-based action research from an isolated, compliance-driven task into a collaborative, systematic, and school-supported process. The intervention ensured that teachers did not progress through the research process without adequate guidance, mentoring, and technical assistance. Furthermore, the study employed a descriptive mixed-method design, which enabled a comprehensive analysis of improvements in research productivity with reflective insights into teachers' experiences, attitudes, and professional development.

The significant improvements observed in teachers' engagement and productivity in action research, as well as the strengthened research culture within the school, are reflected in the comparative results presented below.

Table 1. *Comparative Results of Research Engagement and Productivity Before and After the Intervention*

Category	SY 2023-2024 (Before)	SY 2024-2025 (After)	Rate of Increase	Remarks
Total No. of Teachers	123	123	–	Constant faculty complement
Teachers Engaged in AR	11	40	+263.6%	Broadened participation beyond Master Teachers; active involvement of T1–T3
School Target AR Proposals and Completed ARs	11	12	–	Target for both proposal and completion phases
Completed ARs	0	37	+37 outputs / +308% beyond target	Major rise in productivity; completion exceeded school target of 12
Engagement Rate	8.9%	32.5%	+23.6 percentage points	Engagement extended from Master Teachers to all teaching ranks
Productivity Rate	0%	92.5%	+92.5 percentage points	High completion and validation; sustained research competence

Table 1 showed a marked increase in both research participation and productivity after the implementation of the Structured Progress Monitoring and Coaching intervention. Prior to the intervention, only 11 teachers were engaged in action research, with zero (0) completed outputs, resulting in very low engagement (8.9%) and no productivity (0%). After the intervention, the number of teachers engaged rose to 40, representing a 263.6% increase, while completed research outputs reached 37, achieving a high productivity rate of 92.5%. Furthermore, the engagement rate improved from 8.9% to 32.5%, indicating broader participation across teaching ranks, particularly among Teachers I-III. The productivity rate also significantly increased from 0% to 92.5%, demonstrating that teachers were not only participating but were successfully completing and validating their research outputs.

The significant improvement in the school's research performance, as influenced by the effectiveness of the Structured Progress Monitoring and Coaching intervention, is reflected in the comparative OPCRF results presented right below.

Table 2. *Comparative Results in OPCRF Ratings for Objective 1.4.4. Before and After Intervention*

OPCRF KRA	Indicators	School Target	Actual Result	Target Rating	Actual Rating	Remarks
Objective 1.4.4. – "Promote a culture of research to facilitate data-driven and evidence-based innovations"	Submission of 12 AR Proposals	12	40	5.00	5.00	Indicators exceeded the target. / OPCRF target rating fully achieved.
	Submission of 12 Completed AR	12	37			

The data underscored significant increase in the school's OPCRF rating under Objective 1.4.4, from 3.67 in SY 2023 - 2024 to a perfect 5.00 in SY 2024 - 2025, indicating improved research engagement and performance. This 36.2% increase was driven by the significant rise in research outputs, with 40 proposals and 37 completed studies, exceeding the target of 12. The results highlight the effectiveness of structured monitoring, coaching, and technical assistance in enhancing teachers' research productivity.

Aside from the remarkable improvements in teachers' research performance, the validation status of AR outputs likewise demonstrated a substantial upward trajectory in both quantity and quality. The improvements in the quality and credibility of research outputs are reflected in Table 3, which displayed a significant increase in validation across all levels after the implementation of the intervention.

Table 3. *Research Outputs Validation Status Before and After the Intervention*

Validation Level	SY 2023-2024	SY 2024-2025	% Increase	Remarks
School Validated	0	37	+100%	All completed ARs successfully validated at school level
Division Validated	0	37	+100%	All outputs endorsed and validated by the division office
Regional Validated	0	1	+2.7%	One study adopted for BERF-funded implementation

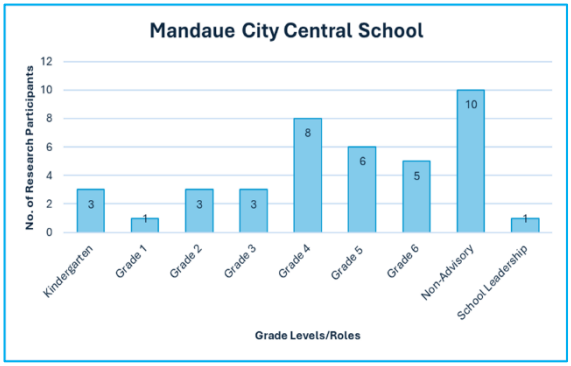
The data indicated that from 0 validated studies in SY 2023-2024, a total of 37 research outputs were successfully validated at both the school and division levels in SY 2024-2025, representing a 100% increase. Notably, 1 study achieved regional validation and was approved for Basic Education Research Fund (BERF) implementation. This milestone demonstrated a shift from compliance-driven research engagement to a more innovation-oriented and quality-driven research culture. It also highlighted the strengthened mentoring, monitoring, and quality assurance mechanisms, as well as the improved capacity of teachers to produce research outputs that met higher institutional standards.

The quantitative findings directly answered **Research Question 1:** *"How effective is the implementation of Structured Progress Monitoring and Coaching in enhancing teachers' competence and productivity in crafting and completing classroom-based action research at MCCS?"* by demonstrating measurable improvements in teachers' research engagement and productivity. These results provided strong empirical evidence that the intervention successfully enhanced teachers' competence in crafting and completing classroom-based action research.

The significant increase in participation, from 11 to 40 teachers, completed outputs, from 0 to 37, productivity rate from 0% to 92.5%, and OPCRF rating 3.67 to 5.00 provided clear, empirical evidence that the intervention successfully enhanced teachers' competence in conducting classroom-based action research. After careful review and analysis, these results collectively confirmed that the Structured Monitoring and Coaching had a positive and measurable impact on teacher performance, thereby fully addressing RQ 1. However, while the quantitative findings established the extent of improvement, they did not fully capture the depth of teachers' experiences. Thus, qualitative data were further examined to provide a richer explanation and to address the second research question.

The graph in Figure 1, portrayed a clear picture of inclusive and diversified research engagement across all grade levels at MCCS, reflecting the gradual institutionalization of a strong research culture within the school.

Figure 1. *Research Engagement by Grade Level for SY 2024-2025*

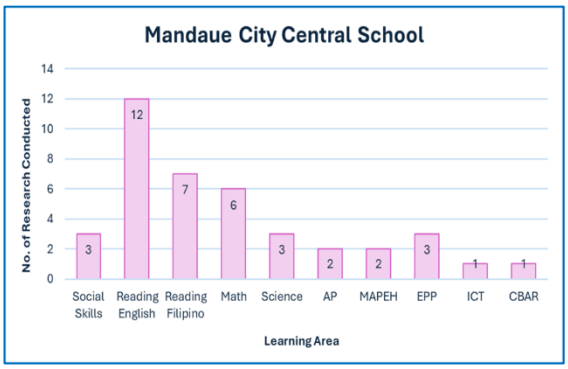


The data revealed inclusive and diversified research engagement across all grade levels, demonstrating a shift toward collaborative and school-wide participation. Engagement was highest among Grade 4 (61.5%), Non-Advisory teachers (50%), and Grade 5 (42.9%), while moderate participation was observed in Grade 6 (33.3%). Lower

engagement rates were noted in Kindergarten (23.1%), Grades 2 and 3 (18.7%), and Grade 1 (6.3%), indicating the need for targeted support for early-grade teachers. Overall results disclosed that MCCS's Action Research program evolved from a limited activity into a collective professional practice, fostering collaboration, shared ownership, and a strengthened research culture within the school.

Likewise, Figure 2 below portrayed the diversity of research engagement across learning areas, showing that AR extended beyond a single domain into a broad, interdisciplinary practice. The highest concentration of studies was observed in English (12), Filipino (7), and Mathematics (6), indicating a strong focus on addressing literacy and numeracy gaps. Moderate engagement was noted in Kindergarten developmental skills, Science, and EPP (3 studies each), while AP and MAPEH (2 each) and ICT (1) reflected emerging research areas that may benefit from further support.

Figure 2. *Research Engagement by Learning Area for SY 2024-2025*



The entire distribution demonstrated that teachers across all ranks contributed to a balanced and inclusive research agenda, covering multiple subject areas and grade levels. This revealed a shift of perspective toward a more collaborative and interdisciplinary research culture within the school.

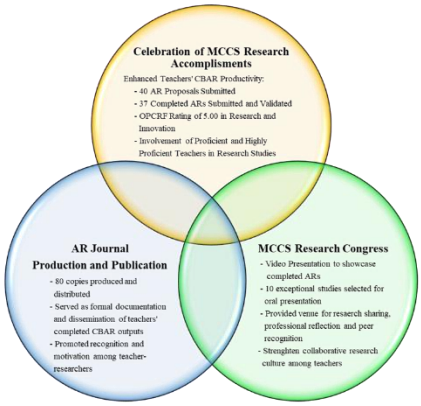
Similarly, qualitative findings from Reflection Notes and Coaching Feedback Forms revealed a significant transformation in teachers' perspectives, practices, and engagement in classroom-based action research. Many teacher-participants, particularly those in the Teacher I-III ranks, described the experience as their first meaningful exposure to the research process, attributing their progress to structured mentoring, timely feedback, and step-by-step guidance provided throughout the intervention. These support mechanisms helped demystify research, transforming it from a perceived burden into a manageable, purposeful, and professionally enriching practice for improving instruction and learner outcomes.

The post-intervention qualitative data demonstrated a more collaborative, inclusive, and diversified pattern of research engagement across grade levels and learning areas. Teachers across various roles actively participated, shared insights, and engaged in professional dialogue, fostering collective ownership of the research process and strengthening a community of practice within the school.

This shift indicated that classroom-based action research evolved from an isolated, compliance-driven task into a sustained, school-wide professional practice. These findings directly addressed **Research Question 2:** *"How does the implementation of Structured Progress Monitoring and Coaching enhance teachers' productivity in crafting and completing classroom-based action research?"* by demonstrating that the intervention enhanced teachers' productivity through systematic support structures that reduced barriers, built confidence, and promoted sustained engagement.

Overall, the results highlighted the intervention's effectiveness in strengthening teachers' research competence while cultivating a sustainable and research-oriented school culture. This success culminated in two key milestones: the MCCS Action Research Journal and the School-Based Research Congress, which reinforced research culture through recognition, dissemination, and collaboration.

Figure 3. *Strengthening the Research Culture at MCCS through the School-Level Research Congress and Publication of Outputs via the AR/CI Journal*



The school-level Research Congress showcased 10 exemplary studies, providing a platform for sharing, reflection, and peer learning, while the MCCS AR/CI Journal, with 80 copies produced, served as a formal repository of 37 completed studies, promoting visibility and motivation. Collectively, these initiatives underscored MCCS's achievements 40 proposals, 37 completed studies, and a 5.00 OPCRF rating, demonstrating a clear shift toward a collaborative, research-driven school community.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The results confirmed that the alignment of the intervention tools with teachers' needs effectively supported all stages of the research process, from conceptualization to completion, through systematic and responsive mechanisms. Structured Coaching Sessions and One-on-One Technical Assistance enhanced teachers' research knowledge, skills, and confidence, while the Progress Monitoring Checklist ensured accountability and consistent progress. Coaching Feedback Forms and Reflection Notes further supported teachers in managing competing responsibilities while sustaining motivation and professional growth.

The integration of quantitative and qualitative findings provided strong evidence of the effectiveness of the Structured Progress Monitoring and Coaching intervention. From an initial baseline of zero (0) completed studies, the school produced 37 completed and validated action research outputs, far exceeding the target of 12. This led to a perfect OPCRF rating of 5.00, demonstrating significant improvement in research competence, productivity, and institutional performance.

Beyond these outcomes, the intervention cultivated a sustainable research culture characterized by collaboration, accountability, and reflective practice. It transformed Action Research from a compliance-driven task into a meaningful tool for instructional improvement, positioning MCCS as a research-driven learning community.

Based on the findings of the study, it is recommended that the Structured Progress Monitoring and Coaching framework be sustained to maintain and further enhance teachers' research competence and productivity. To ensure inclusivity, differentiated support mechanisms should be strengthened, particularly for teachers with lower levels of engagement, such as those in the early grade levels, through targeted coaching and capacity-building activities. The school is also encouraged to continue and expand dissemination platforms, such as the Research Congress and the Action Research Journal, to promote collaboration, recognition, and motivation among teachers.

Embarking on this research journey was both a professional mission and a personal calling to transform how teachers perceive and engage in AR. Initially, many teachers viewed research as an added burden due to limited knowledge, time, and confidence, highlighting the need for a mindset shift. Through persistence, empathy, and the implementation of the Structured Progress Monitoring and Coaching intervention, teachers gradually developed confidence as consistent mentoring, technical assistance, and monitoring tools provided clarity and support. What began as

hesitation evolved into active engagement, with teachers recognizing research as a meaningful tool for improving classroom practices.

This journey also reinforced that effective leadership lies in inspiration and support, as small milestones built confidence and professional pride, ultimately culminating in the MCCS Action Research Journal, a tangible symbol of collaboration, growth, and teachers' valuable contributions to the school's learning community.

RESEARCH DOCUMENTATION

Research Results Dissemination and Advocacy
Umapad Elementary School

Research Results Dissemination and Advocacy
Leonard Wood Elementary School

Research Results Dissemination and Advocacy
Basak Elementary School

Leonard Wood Elementary School
LAC Session Series: Orientation, Coaching, and Mentoring

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ENHANCING THE CAPACITY OF SCHOOL HEADS AND L&D COORDINATORS IN CRAFTING CPD APPLICATION PROGRAMS THROUGH THE GUIDED RESOURCE OPTIMIZATION WORKSHOP (GROW) PROCESS IN NORTH DISTRICT 5

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INTRODUCTION

PRC-CPD (Professional Regulation Commission-Continuing Professional Development) Training Programs help teachers stay up to date with the latest educational standards. These programs support lifelong learning, skill building, and professional growth and development. Through a series of workshops, teachers get practical experience and can apply what they learn in real situations.

Studies highlight the benefits of CPD programs, which focus on teaching delivery skills, personal and professional development, and renewal of license. De Guzman and Delos Santos (2021) reveal that CPD plays a significant role in improving the teaching and learning skills of the public-school teachers. This CPD program is a clear shift from traditional learning to more interactive and reflective CPD workshops that meet specific professional needs. It helps people work more efficiently and feel more satisfied in their jobs by building leadership and communication abilities. A study of Eraut (2020) found that utilizing workshops in learning can enhance skills and competencies. In addition, the study of Lopez and Castro (2022) found that the need for CPD is urgent as technology evolves, since more work is now required in digital skills. CPD programs that include literacy and technical abilities in technology have become essential for teachers.

CPD application programs play a key role in upgrading teaching development and growth in their careers. Many studies show that CPD boosts teaching performance, job satisfaction, and professional career growth, especially as technology and education change quickly. Currently, only one school in North District 5 has an approved CPD application program. This study leads to answer the research questions: How does the Guided

Resource Optimization Workshop (GROW) Process enhance the capacity of School Heads and L&D Coordinators in Horth District 5 to develop and submit quality CPD application programs for professional development and transformation? This study suggests using the Guided Resource Optimization Workshop (GROW) Process to help create more CPD applications. The goal is to help School Heads and Learning and Development (L&D) teams increase the number and quality of CPD applications in North District 5. The GROW process is seen as a way to support professional growth and encourage collaboration with experts.

DISCUSSION OF RESULTS

The results of the study were through qualitative action research design with FGDs. The data will be analyzed from participants' experiences and perceptions will be used to evaluate the program's alignment with DepEd Policy and Guidelines. Thematic analysis will be used, and that includes familiarization with the data, generating codes, determining themes, and refining the themes to understand how the program enhances competencies and meets policy objectives.

From the responses of the participants of 8 School Heads and 8 L&D Coordinators in North District 5 of the Schools Division of Cebu City, this study revealed eight (8) significant themes characterized the participants' responses to the GROW Process.

However, themes were not interpreted as independent results but as complementary contributors to a unified pattern. These themes were deduced from the transcripts of the respondents.

Theme 1: *L&D Program Design and Engagement*
Theme 2: *Assessment on Teacher's Needs*
Theme 3: *Professional Growth and Development*
Theme 4: *Implementation and Records Keeping*
Theme 5: *Speaker and Facilitator Alignment*
Theme 6: *Feedback and Challenges*
Theme 7: *Planning and Technical Assistance*
Theme 8: *Challenges on Time, Logistics, and Expenses*

Interpretation of Results

These were the following findings of the study:

1. The crafting of INSET and L&D CPD Application Program faced challenges such as identifying teachers' real training needs and aligning them with classroom realities and K to 12 curriculum demands.
2. Time Constraint, Budget Requirements, Availability of the Venue, and Logistics affected the pre-implementation and implementation of the L&D Program.
3. PRC-accredited resource speakers and learning facilitators were one of the most significant challenges encountered by the program proponents
4. Technical assistance and support from DREC during planning, mentoring, and implementation greatly helped L&D teams in crafting, implementing, and comply requirements for the CPD application program applying the GROW process.
5. The GROW process provided clear guidelines and a step-by-step procedure in crafting and improving the quality of L&D program designs aligned to the teachers' needs.

Consistent collaboration with the members of the school L&D Team, DREC, and teacher needs-based assessment alignment during the crafting and planning enabled the successful development and implementation of CPD-approved INSET and L&D programs using the GROW process.

By implementing the GROW Process, the researcher observed that School Heads and L&D Teams gained more ideas and confidence in crafting a CPD application to meet the teachers' needs and aligned to the quality standards of the department.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Despite constraints in time, resources, and speaker availability, effective collaboration, proper guidance, and need-based planning enabled the successful development and implementation of practical, engaging, and CPD-approved INSET and L&D Programs using the GROW process.

The 100% submission rate of North District 5 underscores that the "failure to submit" in previous years was due to a lack of structured instruction in the crafting of the CPD application. The 23-step GROW process CPD requirements from Application for Accreditation of CPD Program, Certificate for Participants/Attendees, Program Matrix Schedule, Instructional Design, Evaluation Method or Tool, Resume of the Resource Person/s, Valid Professional Identification Card/Receipt of Renewal of Resource Persons, Financial Plan/Breakdown of Expenses and Program Promotional Banner proving that when technical assistance is provided through a collaborative framework, administrative bottlenecks are removed.

The success of North District 5 in crafting, submitting, and implementing the CPD-accredited application program serves as a model for the entire Schools Division of Cebu City, proving that the Guided Resource

Optimization Workshop is the key to sustaining a culture of excellence in crafting a CPD application program for the benefit of our teaching personnel and learners

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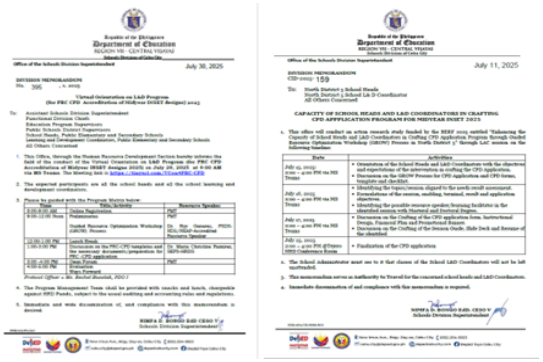
RESEARCH DOCUMENTATION

DISSEMINATION AND UTILIZATION ADVOCACIES

Pre-Implementation Phase *(Before)*

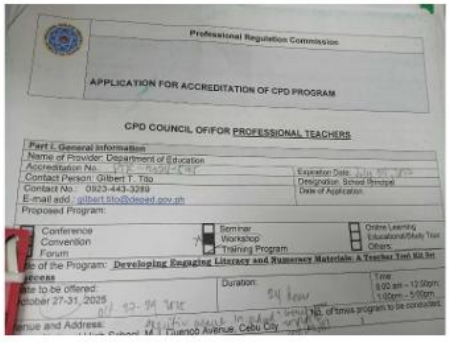
The pre-implementation phase of the GROW Process intervention focused on the process of collaboration of the School Heads and L&D Coordinators in CPD application programs. This included the submission of the innovation proposal containing its objectives and activities of the intervention, as well as the planning and preparation of necessary materials to ensure the successful implementation y the proponent.



Implementation Phase *(During)*

The implementation phase of the GROW Process intervention involved a series of LAC session activities designed to enhance and upskill the School Heads and L&D Coordinators through the CPD application process. These activities included orientation of the School Heads and L&D Coordinators with the objectives and expectations of the intervention, discussions on CPD application program process, and timeline of submission to the Continuing Professional Development Accreditation System (CPDAS). Participants were guided through the different CPD templates, identified the priority needs based on the assessment result from Learning and Development Needs Assessment (LDNA), Electronic Self-Assessment Tool (e-SAT), Individual Developmental Needs Assessment, Focus Group Discussion, and Others; formulated results, application, terminal and enabling objectives of the CPD Programs; designed instructional design and financial plan; and identified potential learning facilitators with Masteral and Doctoral Degree. The researcher provided technical assistance to the School Heads and L&D Coordinators throughout the crafting of the CPD application program to ensure the successful submission and implementation.

The researcher conducted the LAC session on crafting CPD Application Program using GROW Process



The researcher provides technical assistance on the crafting of the CPD Application Program using GROW Process

Post-Implementation Phase *(After)*

The last stage of the post-implementation is the interpretation of the data results, which highlighted on evaluating the School Heads and L&D Coordinators their experience and journey in crafting the CPD application program. This included the focus group discussions which gathered their insights and experiences with the intervention. Data analysis was conducted to validate the result of the intervention.

Tejero ES	ARAL TAYO: (Act, Reflect, Apply, Lead. Teach and Adapt for your Outcome)
Tejero NHS	Developing Engaging Literacy and Numeracy Materials: A Teacher Tool Kit for Success
Regino Night	SPARK:Sharpening Professional Actualization through Responsive Knowledge: An In-Service Training for Teachers 2025
Regino ES	Empowering Educators for Innovative and Inclusive Teaching
Carreta ES	Reignite, Rethink, Revamp: Teaching Strategies & Research for Classroom Success

Number of CPD accredited programs in the North District 5, Division of Cebu City

RESEARCH PROGRESS MONITORING AND TA PROVISION

Provided TA provision and monitoring on the CPD program and implementation

CUSTOMIZED E-SELF DIRECTED LEARNING (E-SDL) COURSEBOOK FOR STRUCTURED INDUCTION PROGRAMS OF NEWLY HIRED NON-TEACHING PERSONNEL (NTP)

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INTRODUCTION

The Human Resource Development (HRD) of DepEd-Schools Division of Toledo City believed that a comprehensive induction program for non-teaching personnel is necessary to bridge the gap in their professional development. Currently, there are structured induction programs in place for teaching staff and school heads, which have shown to be effective in enhancing performance and job processes. However, there is a lack of a similar program for non-teaching personnel, which can result in confusion, disorientation, and decreased productivity as they are new in their field of work.

Induction programs for newly hired non-teaching personnel (NTP) in educational institution like Department of Education (DepEd) in the Philippines, play a crucial role in enhancing their performance and job processes that can foster the professional development of non-teaching personnel in educational settings. More likely to make a positive difference in the learning environment and feel a deeper connection to their work when they receive comprehensive induction that addresses their skills and emotional well-being. These programs are designed to provide essential support and resources for employees as they transition into their roles, ensuring that they feel equipped and valued in their positions.

Some researches emphasize several key elements of structured induction programs that play a significant role in the professional growth of non-teaching personnel (NTP's). For instance, according to Berk, L. E. (2016) in her study titled "Enhancing Non-Teaching Staff Professional Development Through Structured Induction Programs," Berk examines the impact of structured induction programs on non-teaching personnel in schools. The study highlights how these programs provide essential training, clarify job expectations, and facilitate skill development, ultimately leading to improved performance and job satisfaction among non-teaching personnel (NTP's).

There are various components of induction programs and their relationship with the retention and professional growth of non-teaching employees. The study identifies key practices that contribute to effective onboarding and underscores the benefits of mentorship and ongoing support in enhancing the professional capabilities of non-teaching staff (Gordon, S. P., & Louis, K. S., 2009).

Through structured induction programs intended solely for non-teaching personnel (NTP's) help personnel in acquiring the necessary skills to thrive in their respective key result area (KRA's), roles and functions. This focused approach not only enhances individual performance but also fosters a sense of confidence among employees as they navigate their new positions.

The absence of an induction program for non-teaching personnel in the Department of Education (DepEd) can result in a multitude of problems that affect various aspects of the organization such as confusion and disorientation that new personnel may experience in their respective roles. Thus, without clear information and orientation, they may struggle to understand their responsibilities, leading to miscommunication and inefficiency in the educational institutions.

The said e-SDL coursebook comprises four distinct courses: Course 1 focuses on the DepEd Non-Teaching Personnel, Course 2 covers the DepEd Citizens' Charter 2025, Course 3 addresses Administrative Procedures and Office Protocols, and Course 4 centers on Financial Literacy.

Lack of proper orientation, training and development such as providing any means of materials for them to understand and orient

their jobs like face-to-face orientation and even e-self directed learning tools through coursebook wherein all essential topics is being discuss in this tool.

Employees may find it challenging to develop the essential skills required for their roles, hindering their performance and limiting their growth opportunities. As a result, they may feel undervalued and unprepared, leading to decreased job satisfaction and a higher likelihood of turnover, in this sense, induction program among non-teaching personnel through e-self directed learning is very essential nowadays.

The integration of new employees into the work environment is also a pressing concern in the absence of induction programs. Without proper support and orientation, new hires may feel isolated and disconnected from their colleagues, which can negatively impact team morale and collaboration. This lack of support can create a ripple effect, leading to decreased productivity and a less positive work culture.

Higher turnover rates are another significant consequence of neglecting induction programs for non-teaching personnel. When employees feel unprepared or unsupported, they may be more likely to leave the organization, leading to increased recruitment costs and a loss of valuable institutional knowledge. This can be particularly problematic in an educational setting, where continuity and consistency are essential for providing high-quality support to students and teachers.

Ultimately, the absence of induction programs can have far-reaching consequences for the Department of Education (DepEd) as a whole. Without effective support and training, non-teaching staff may struggle to fulfill their roles and responsibilities, compromising the quality of educational support provided. This can ultimately impact the organization's ability to achieve its goals and deliver on its mission, making the implementation of induction programs a vital investment in staff development and organizational success.

The Department of Education (DepEd) in the Philippines provides an induction program for newly hired non-teaching personnel, as outlined in DepEd Order No. 2, s. 2019, however, it is not yet introduced through electronic learning tool coursebook for NTPIP. This program aims to facilitate effective integration into the school system while enhancing their skills and knowledge for their roles. A specialized coursebook accompanies the program, covering essential topics such as DepEd's mission, roles and responsibilities, citizens charter, financial literacy and other DepEd programs. The program is implemented by Schools Division Offices (SDOs) and facilitated by trained individuals, lasting 3-5 days based on specific needs, and conducted annually or as necessary. Overall, the induction program strives to equip non-teaching personnel with the competencies required to support the educational process effectively.

Moreover, effective induction programs simplify the onboarding process for new hires. By providing the right resources and support from the beginning, these initiatives enable staff members to transition into their roles seamlessly.

As a result of these well-organized induction programs, institutions can cultivate a more capable workforce. Employees who feel adequately prepared and well-supported are more likely to contribute positively to the institution's goals. It also offers several advantages for newly hired NTP's by providing flexible self-paced learning that fits around their schedules, personalizes the learning experience to focus on individual development needs, enhances accessibility for those in resource-limited or remote settings, and streamlines the induction process to ensure all teachers gain the essential knowledge and skills uniformly.

The innovation process is explained and synthesized using the SAM model. The Successive Approximation Model (SAM) can be illustrated through developing an online training or electronic self-directed learning mode for newly hired NTP's in DepEd SDO Toledo City. Below is an example of how the SAM model could be applied in this study.

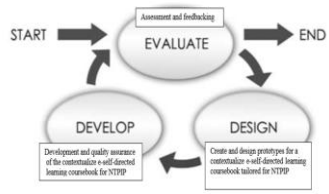

Figure 2: The Successive Approximation Model (SAM)

DISCUSSION OF RESULTS

The respondents' assessment of the level of agreement of regarding the Customized e-SDL Coursebook for NTP Induction Program in DepEd Toledo City Division was very essential in conducting this action research because it ensures the validity and reliability of the coursebook as a training resource. Specifically, it helps to determine whether the stakeholders such as trainers, new NTP's and administrators share a common understanding and acceptance of the content, structure and effectiveness of the coursebook. This consensus is crucial for identifying areas that need improvement, ensuring the coursebook meets the learners' needs, and fostering buy in and support for its implementation. Ultimately, this assessment aids in making informed decisions to enhance the quality and relevance of the induction programs, leading to more effective training outcomes. These variables investigated in the study, and specific data about this are presented in Table 1a and 1b.

Table. 1a

Part 1: Level of agreement of 13 newly hired NTP's in the Customized e-SDL Coursebook for NTP Induction Program in terms of content relevance, clarity of instructions, engagement, interactivity, practicality, self-assessment opportunities, support resources and overall satisfaction.

STATEMENTS	MEAN	OVER ALL MEAN	INTERPRETATION
Content Relevance			
The coursebook content is relevant to my learning needs.	4.92	4.91	Strongly Agree
The information presented in the coursebook directly addresses my specific learning objectives and interests.	4.92		Strongly Agree
It aligns with what I am currently trying to learn or achieve, making it a valuable resource.	4.85		Strongly Agree
The coursebook's content is tailored to meet the needs and goals that I have for my learning.	4.92		Strongly Agree
I find it applicable and useful for my learning process.	4.92		Strongly Agree
Clarity of Instructions			
The instructions provided in the coursebook are clear and easy to follow.	5.0	4.91	Strongly Agree
The guidelines presented in the coursebook are straightforward and simple to understand.	4.92		Strongly Agree
Users will find the steps easy to implement without confusion.	4.77		Strongly Agree
The clarity of the instructions facilitates an effective learning experience.	4.92		Strongly Agree
Learners can easily navigate through the material due to its comprehensibility.	4.92		Strongly Agree
Engagement			
The coursebook engages me and motivates me to learn independently.	5.0	4.34	Strongly Agree
The coursebook captures my attention and inspires me to pursue learning on my own.	4.92		Strongly Agree
It encourages me to take initiative in my career journey.	5.0		Strongly Agree
I find that the coursebook effectively fosters my ability to study independently.	4.85		Strongly Agree
It challenges me and enhances my desire to learn without relying solely on external guidance.	4.92		Strongly Agree
Interactivity			
The activities and exercises in the coursebook promote active learning.	4.92	4.91	Strongly Agree
The tasks and exercises included in the coursebook encourage students to engage actively in the learning process.	4.92		Strongly Agree
They are designed to foster participation and hands-on involvement.	4.92		Strongly Agree
By working through these activities, learners can deepen their understanding of the material.	4.85		Strongly Agree
This approach helps to enhance critical thinking and retention of knowledge.	4.92		Strongly Agree
Practicality			
The coursebook provides practical examples and applications of the concepts learned.	4.85	4.92	Strongly Agree
It enables the NTP's to understand complex ideas more effectively.	4.92		Strongly Agree
The coursebook facilitates the transfer of knowledge to the professional setting.	4.92		Strongly Agree
The coursebook empowers learners to develop problem-solving skills and think critically.	4.92		Strongly Agree
Learners gain a deeper understanding of the subject matter.	4.92		Strongly Agree
Self-Assessment Opportunities			
It incorporates tools that allow me to monitor my progress in learning.	4.92	4.9	Strongly Agree
I can measure my understanding of the material using these effective assessment methods.	4.92		Strongly Agree
These resources play a crucial role in reflecting on my grasp of the subject matter.	4.85		Strongly Agree
The self-assessment features are beneficial for tracking my learning journey in my respective job.	4.92		Strongly Agree
Support Resources			
The available resources (e.g., online materials, references) complement the coursebook well.	5.0	4.97	Strongly Agree
The resources provided, such as online materials and references, effectively enhance the coursebook.	5.0		Strongly Agree
They serve as valuable supplements that enrich the learning experience.	5.0		Strongly Agree
These additional tools help reinforce the concepts presented in the coursebook.	4.92		Strongly Agree
The available resources significantly improve the usefulness of the coursebook.	4.92		Strongly Agree
Overall Satisfaction			
I am satisfied with the overall quality of the self-directed learning coursebook.	5.0	4.94	Strongly Agree
I am pleased with the overall standard of the self-directed learning coursebook.	4.92		Strongly Agree
The quality of the coursebook meets my expectations.	4.92		Strongly Agree
I appreciate the content and presentation.	4.92		Strongly Agree
I am content with the coursebook's quality.	4.92		Strongly Agree

As a result, the overall strong agreement fosters a supportive learning environment that can boost the confidence, competence, and motivation of new NTPs, ultimately contributing to improved performance and service delivery within the division. And this was supported by Garrison, D. R., Anderson, T., & Archer, W. (2010) in his book entitled "*e-learning in the 21st century: A framework for research and practice* wherein he emphasizes the importance of relevant content, clear instructions, and interactivity in fostering effective e-learning environments that promote engagement and self-directed learning.

Table.1b

STATEMENTS	MEAN	INTERPRETATION
How relevant is the coursebook content to you learning needs?	3.92	Very relevant
How clear are the instructions in the course book?	3.77	Very relevant
How engaging is the coursebook?	3.92	Very engaging
How likely are you to recommend customized e-self-directed learning coursebook to someone else?	3.92	Very likely

Therefore, the customized e-self directed learning coursebook is considered highly effective, relevant, clear, and engaging by learners. Its positive reception suggests it effectively meets learners' needs and can enhance the NTP induction program. Investing in such well-designed, learner-centered materials can lead to improved training outcomes and professional development within the division.

Implementation Scheme

Objectives	Activities	Time Allotment/ Inclusive Dates	Person/s Involved	Resources Needed	Budgetary Require-ments	Expected Output/ Target Outcome	Accom-plishment Indicators (MOVs)
A.PRE-IMPLEMENTATION PHASE							
To identify skills and knowledge gaps of NTP's.	NTP's Needs Assessment and identification of participants	3 days / November 2024	Researchers, HRD, Head of Personnel section	N/A	N/A	identify the skills and knowledge gaps needed of NTP's prior to onboarding	List of identified NTP's needs in their job
To develop coursebook materials informed by the results of the assessments.	Coursebook content development	45 days / Jan.-Feb. 2025	Researchers, HRD, HRMO	Computer, papers, pen and office manual	N/A	Coursebook comprehensive content	Coursebook layout
To elaborate the proposed action research to the panels.	Proposing action research to the committee	1 hr / February 4, 2025	SDRC, HRD, researchers	Proposed manuscript and research presentation	N/A	Suggestions and recommendation from SDRC	Certificate of Acceptance
To choose and create a suitable online platform that aligns with the needs.	Technology integration of the proposed coursebook	14 days Feb 5-18, 2025	Programmers, researchers	Computer, internet connectivity, content manual	P10,000	e-self- directed learning coursebook	Online platform of coursebook
To helps confirm that the information presented in the coursebooks is accurate, up-to-date, and relevant	Conduct of Quality Assurance	7 days / Feb. 19-27, 2025	Division Research Committee	Computer, internet connectivity, content manual	N/A	Ensuring content accuracy and quality	Certificate of Quality Assurance
To evaluate the coursebook with a select group of NTP participants.	Pilot Testing/Dry Run	1 day / 2nd week of March 2025	HRD, selected NTP's, HRMO	Computer, internet connectivity, e-SDL coursebook	N/A	Feedbacking	Accomplished feedback form
To inform and provide permission from the SDS and the participants on the conduct of the study.	Preparation and distribution of transmittal letters to SDS and participants.	2 days / Feb. 24, 2025	researchers, participants, SDS	Transmittal Letters	N/A	Permission to conduct the study	Accomplished and approved Transmittal Letters
B. IMPLEMENTATION PHASE							
To facilitate the usage of e-SDL coursebook to the potential participants as alternative in face to face NTPIP.	Administer the e-SDL coursebook to the participants	Oct. 2025	Researchers, NTP's participants	Computer, internet connectivity,	NONE	facilitate the usage of e-SDL coursebook	Certificate of Completion
To conduct of survey using detailed questionnaires and data gathering	Perform survey and data gathering among participants	Oct. 2025	Researchers, NTP's participants	Survey questionnaires	N/A	Interpretation of survey data	Accomplished survey form Statistical data, result and findings
To evaluate the innovation	Evaluation of tool (e-SDL coursebook)	last week of Oct. 2025	Researchers, NTP's participants	Evaluation tool	N/A	Facilitate evaluation and feedbacking	Accomplished evaluation and feedback forms
tool used in NTPIP							
C. POST-IMPLEMENTATION PHASE							
To discuss the result and findings of the study	Discussion of results and findings among involved persons	Oct. 2025	researchers	Statistical result	N/A	Crafting of recommendations base on the result and findings gathered.	Results and findings data
To plan for data utilization and dissemination	Data utilization and dissemination	Oct. 2025	Researchers, SDS, HRD	Related data	N/A	Utilization of the tool	Coursebook tool
To plan of possible actions for application of the tools in the SDO-Toledo	Application of the tools in the SDO-Toledo	Nov. 2025	Researchers, SDS, HRD	Permit to operate from SDS	N/A	e-SDL coursebook	Accomplished permit to operate

Figure 1: The e-SDL Dashboard

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

This comprehensive reflection highlights the critical importance of structured induction programs for non-teaching personnel within the Department of Education,

particularly in the context of DepEd Toledo City. Recognizing that existing programs effectively support teaching staff and school heads, it becomes evident that non-teaching personnel also require targeted onboarding initiatives to ensure they are well-prepared and integrated into their roles. The absence of such programs can lead to confusion, inefficiency, and decreased morale, underscoring the need for tailored solutions like an e-Self Directed Learning (eSDL) coursebook that addresses their specific needs.

The current challenges faced by non-teaching personnel-such as feelings of disconnection, lack of clarity about their roles, and higher turnover rates—demonstrate the urgent need for effective onboarding solutions. Without proper orientation and support, these employees may struggle to fulfill their responsibilities, which can negatively impact the overall quality of educational support and institutional stability. An innovative approach, like the proposed e-SDL coursebook, offers a flexible, accessible, and comprehensive means to address these gaps by providing self-paced learning modules tailored to their specific roles and responsibilities.

In conclusion, the development and implementation of a customized e-Self Directed Learning coursebook stand as a vital strategic intervention to strengthen the onboarding process for non-teaching personnel in DepEd Toledo City. Such a program promises to improve their awareness of policies, procedures, and responsibilities, ultimately leading to a more competent, confident, and motivated workforce. This aligns with the broader goal of enhancing organizational effectiveness and ensuring that all staff contribute meaningfully to the department's mission of providing quality education.

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RESEARCH BULLETIN

BYTES OVER BINDERS: ENHANCING INSTRUCTIONAL SUPERVISION THROUGH A CONSOLIDATED MS EXCEL-BASED TOOL FOR IMPROVED EFFICIENCY, ACCURACY, AND ACCESSIBILITY OF CLASSROOM OBSERVATION DOCUMENTATION

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INTRODUCTION

Instructional supervision plays a critical role in improving teacher performance and learner outcomes through coaching, mentoring, classroom observations, and continuous professional support. The Department of Education (DepEd) utilizes the Philippine Professional Standards for Teachers (PPST) as basis for the reflective practice and professional growth of the teachers. Region VII's Manual of Instructional Supervision (MIS) and DepEd's Multi-Year Performance Management and Evaluation System (PMES) provide mechanisms for monitoring instructional quality in public schools (Department of Education [DepEd], 2017; DepEd Region VII, 2023)

Despite these frameworks, instructional supervision providers often encounter extensive documentation requirements that reduce the time available for meaningful coaching conversations. Studies have shown that excessive paperwork and administrative tasks can limit instructional leaders' ability to focus on teacher development and professional feedback (McGhee & Stark, 2021; Andal, 2024).

At Don Andres Soriano National High School, master teachers were required to prepare and organize multiple instructional supervision forms, including Detailed Lesson Plans, Classroom Observation Notes (CON), MIS Form 3 (Pre-Observation), MIS Form 4 (Actual and Post Observation), Classroom Observation Tool (COT) Rating Sheet, and the Performance Monitoring & Coaching Form (PMCF) documents. This process often results in the duplication of work, delayed documentation, and difficulty assessing records when needed.

Responding to DepEd's digital transformation agenda and EDCOM 2's recommendations on reducing teacher workload through technology integration (EDCOM 2, 2025), this action research introduced Bytes Over Binders, a cloud-hosted MS Excel-based instructional supervision system that consolidates all supervision forms into a single automated workbook accessible through Microsoft Teams and OneDrive.

The study aimed to determine the effect of the innovation on the efficiency, accuracy, and accessibility of classroom observation documentation among five (5) master teachers serving as instructional supervision providers.

DISCUSSION OF RESULTS

Classroom Observation Documentation Before the Intervention

The pre-implementation findings revealed that participants generally perceived their documentation processes as functional but inefficient. While efficiency (M=2.850 and accuracy (M=2.80) fell within the "High" category, accessibility (M=2.60) was situated at the low-to-high boundary, indicating challenges in retrieving, sharing, and managing observation records.

Table 1
Pre-Implementation Domain Summary (Perception Survey; Likert 1–4)

Domain	Mean (M)	Interpretation
Efficiency	2.85	High
Accuracy	2.80	High
Accessibility	2.60	Low → High boundary

Notes: Likert: 1=Strongly Disagree; 4=Strongly Agree. Bands: 3.50–4.00=Very High; 2.50–3.49=High; 1.50–2.49=Low; 1.00–1.49=Very Low.

The findings suggest that traditional paper-based systems may create barriers to timely information retrieval and collaborative documentation. UNESCO (2023) observed that inefficient documentation systems can impede educational productivity when information is scattered across multiple locations and formats. Likewise, Salva et al. (2023) reported that instructional supervisors frequently encounter challenges in managing supervision records due to fragmented documentation practices.

The baseline results therefore highlighted the need for a centralized and technology-supported supervision system.

Performance After Intervention

The following implementation of the consolidated Excel-based tool, all documentation domains improved substantially.

Table 2

Post-Implementation Domain Summary (Perception Survey; Likert 1–4)

Domain	Mean (M)	Interpretation
Efficiency	3.60	Very High
Accuracy	3.65	Very High
Accessibility	3.85	Very High

All three domains moved into the "Very High" band, and variability narrowed most for Accessibility (SD: 0.87 → 0.34), indicating stronger agreement among participants after implementation.

Accessibility registered the highest rating (M=3.85), indicating that participants experienced significant improvements in retrieving observation records, sharing files, and collaborating with teachers through cloud-based platforms.

These findings support previous studies that highlighted the benefits of digital technologies in streamlining educational processes. According to Dela Cruz and Blanco (2022), technology-assisted instructional leadership enhances data management and documentation efficiency among educational leaders. Similarly, UNESCO (2023) emphasized that cloud-based systems improve information accessibility and support collaborative work environments.

Participants also reported that automation features reduced repetitive clerical tasks and documentation errors, allowing more time for mentoring conversations and instructional supervision should prioritize professional dialogue rather than compliance-oriented paperwork.

Comparative Analysis of Documentation Processes Before and After the Intervention

Table 3

Pre–Post Comparative Analysis by Domain

Domain	Pre Mean	Post Mean	Mean Δ (Post-Pre)	Band Shift
Efficiency	2.85	3.60	+0.75	High → Very High
Accuracy	2.80	3.65	+0.85	High → Very High
Accessibility	2.60	3.85	+1.25	Low / High Boundary → Very High

The largest improvement was observed in accessibility, which increased by 1.25 points. Efficiency and accuracy also improved considerably, demonstrating the effectiveness of consolidating all instructional supervision requirements within a single automated workbook.

Statistical analysis further revealed a significant improvement in accessibility ($t(4) = 3.23$, $p = .032$) while efficiency and accuracy demonstrated moderate practical effects. These findings indicate that the innovation contributed positively to instructional supervision workflows.

The results are consistent with the findings of Singzon (2024), who concluded that technology integration strengthens instructional practices by providing timely access to data and improving organizational efficiency. Furthermore, EDCOM 2 (2025) emphasized that digitization initiatives are essential for reducing workload and enabling educators to focus on teaching and learning improvement.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Conclusions

The implementation of the Bytes Over Binders innovation significantly improved the efficiency, accuracy, and accessibility of classroom observation documentation among instructional supervision providers. The use of consolidated MS Excel-based tool supported digital transformation while maintaining compliance with DepEd instructional supervision requirements.

Accessibility emerged as the most improved domain, demonstrating the effectiveness of cloud-based storage and collaborative digital systems in facilitating information retrieval and sharing. Efficiency and accuracy likewise improved through automation, integration of forms, and reduction of redundant documentation processes.

Overall, the innovation demonstrates that low-cost digital solutions can strengthen instructional supervision practices while

reducing administrative burden and increasing opportunities for meaningful feedback and professional development. This finding aligns with the recommendations of UNESCO (2023), EDCOM 2 (2025), and McGhee and Stark (2021), all of whom advocate leveraging technology to enhance educational leadership and teacher support systems.

Reflections

The success of the innovation can be attributed to the integration of automation, cloud accessibility, and collaborative features within a familiar platform such as Microsoft Excel. The shared access provided through Teams and OneDrive facilitated transparency and strengthened communication between instructional supervision providers and teachers.

However, implementation challenges were also encountered. Internet connectivity limitations, differences in software versions, and varying levels of digital competence affected initial adoption. These findings mirror UNESCO's (2023) observation that digital transformation initiatives require infrastructure readiness and ongoing capacity building to achieve sustainable implementation.

The study reinforced the belief that the purpose of instructional supervision should be development rather than compliance driven. By reducing the paperwork, the innovation created more opportunities for reflective conversations, coaching, and professional learning among teachers.

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INNOVATION WORKFLOW

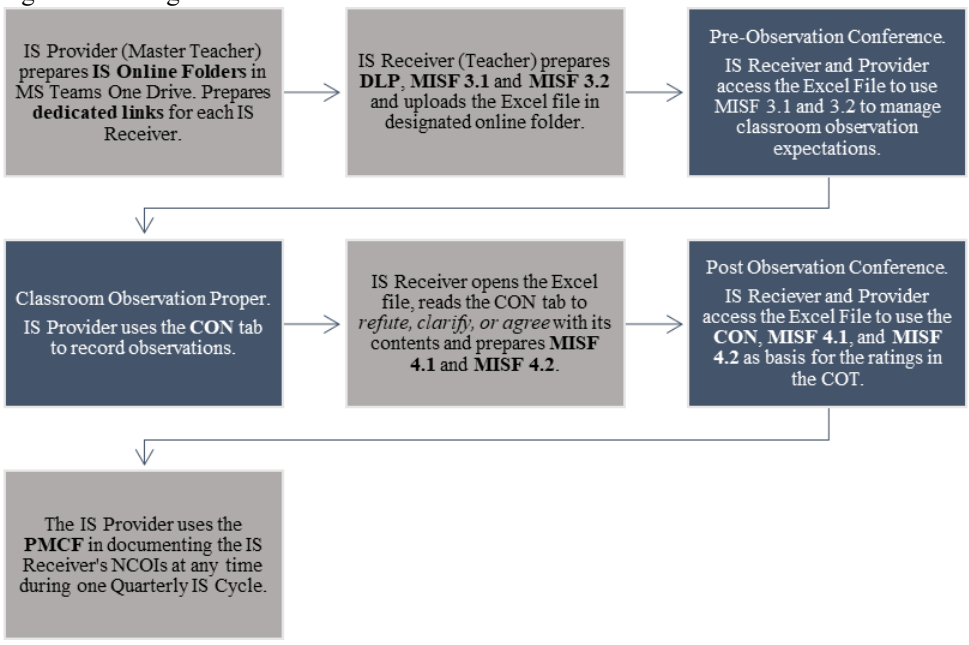

PHOTO DOCUMENTATION

This documentation covers the pre-implementation, actual implementation and post-implementation of Bytes Over Binders at Don Andres Soriano National High School, Don Andres Soriano, Toledo City.

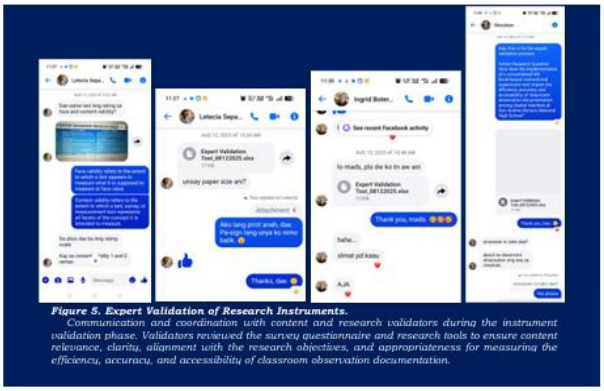

Figure 5. Expert Validation of Research Instruments.
Communication and coordination with content and research validators during the instrument validation phase. Validators reviewed the survey questionnaire and research tools to ensure content relevance, clarity, alignment with the research objectives, and appropriateness for measuring the efficiency, accuracy, and accessibility of classroom observation documentation.

Figure 6. Ethical Clearance and Baseline Assessment of Participants.
Master Teacher participants were oriented on the objectives and procedures of the study, completed the required informed consent and confidentiality forms, and participated in baseline data collection to establish pre-implementation measures of efficiency, accuracy, and accessibility in classroom observation documentation.

Figure 4. Stakeholder Consultation and Innovation Refinement.
Consultation meeting with teachers from Cantabaco National High School to gather feedback, validate user needs, and identify improvements for the development of the Bytes Over Binders digital instructional supervision system prior to implementation.

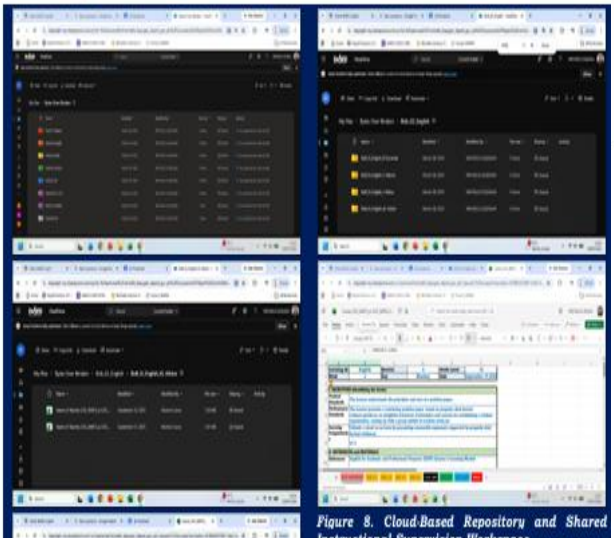

Figure 8. Cloud-Based Repository and Shared Instructional Supervision Workspace.
Screenshots of the Bytes Over Binders OneDrive repository showing the organized folder structure, teacher-specific supervision records, and the consolidated MS Excel-based instructional supervision workbook. The cloud-hosted system enabled Master Teachers and teacher-participants to access, accomplish, retrieve, and share MIS and PMES supervision documents in real time, improving the efficiency, accuracy, and accessibility of classroom observation documentation.

Figure 10. Final Research Defense Before the Division Research Committee
*The researcher presented the completed action research, **Bytes Over Binders**, before the Division Research Committee for technical evaluation and validation. Panel members reviewed the study's methodology, findings, and implications and provided recommendations to strengthen the manuscript prior to its dissemination and presentation during the 2025 Division Research Management Congress.*

Figure 11. Post-Defense Technical Consultation and Research Enhancement
Following the final defense, the researcher received technical comments, recommendations, and research enhancement notes from Division Research Committee members. The consultation guided the refinement of the manuscript and ensured its readiness for dissemination, utilization, and future scale-up initiatives. In the photo is SDO Toledo City's CID Chief, Dr. Maria Kenneth Nengasca.

Figure 12. Division-Level Dissemination of the Bytes Over Binders Research.
The researcher shared the study's methodology, findings, and implications during the 2025 Division Research Management Congress, providing stakeholders with evidence on how digital technologies can improve the efficiency, accuracy, and accessibility of instructional supervision documentation.

Figure 13. Research Advocacy and Utilization Exhibit.
The Bytes Over Binders research exhibit highlighted the innovation's cloud-based instructional supervision system, facilitating stakeholder awareness, encouraging potential adoption, and supporting the utilization of research-based digital solutions in educational management.

ENHANCING ACCURACY, EFFICIENCY, AND ACCESSIBILITY IN SCHOOL REPORTING THROUGH PROJECT CSDM (COMPREHENSIVE SCHOOL DATA MANAGEMENT)

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INTRODUCTION

Data management is critical in education for decision-making, work efficiency, and quality services. South City Central School is one of the largest elementary schools in Toledo City Division with 1,903 learners from kindergarten to Grade 6, including learners in the Special Needs Education (SNED) program. The school have 70 teaching and 4 non-teaching personnel responsible for compiling, analyzing, and reporting learners' performance, particularly in the Quarterly Assessment Report (QAR) and Form 14.

The school relies on manual or semi-digital data collection methods, which are time-consuming, subject to errors, and limited real-time access to data. High population with considerable number of teachers finds data management a very complicated task and it may hinders appropriate discission making.

To address these problems, this action research implements the Comprehensive School Data Management (CSDM) system, which utilizes MS Excel, Microsoft OneDrive and Canva to manage data collection, automated computations, consolidate records, and provide secure, centralized consol. The system's design is user-friendly, reduce repetitive manual tasks, enhance consistency, and allow teaching and non-teaching personnel to focus effectively on instructional and administrative responsibilities.

According to Salva, Cadavedo, and Patinga (2023), Singzon (2024), and McGhee and Stark (2023), technology-driven data boosts work efficiency. It also reduces errors and improves file accessibility for better decision-making. However, there are gaps in context-specific applications at the elementary school level in the Philippines. This is particularly true in areas with large student populations and limited use of information and communication technology (ICT). This study aims to fill these gaps by creating a digital solution tailored for South City Central School.

DISCUSSION OF RESULTS

How Project CSDM enhance the accuracy, efficiency, and accessibility of teaching and non-teaching personnel in the preparation of the Quarterly Assessment Report (QAR) and Form 14 during the school year 2024–2025?

Accuracy. The pre-implementation assessment reveals that teaching and non-teaching personnel at the school often made mistakes in data entry, calculations, and consolidations when using traditional templates. These errors mainly stemmed from manual calculations, inconsistent data checks, and a lack of procedures for handling data.

After launching Project CSDM, a T-Test of Dependent Means showed a significant improvement in accuracy ($p < 0.05$) for both the Quarterly Assessment Report (QAR) and Form 14 templates. Automated formulas in the Excel templates cut down on errors, while the centralized OneDrive repository reduced data inconsistencies and the number of document versions.

Reflection: The improvement in accuracy demonstrates that a structured, automated system can reduce errors and ensure reliable consolidation and reporting. The school teaching and non-teaching personnel acknowledged that having an automated templates guided them to input data correctly, providing confidence in the submitted reports.

Efficiency. Before Project CSDM, teachers said that preparing QAR and Form 14 took a lot of time. It often required several

hours per report because of repetitive manual calculations and checking data.

After implementation, the time spent on data preparation decreased significantly. Automation allowed staff to focus on data entry while formulas calculated totals, averages, and other math tasks automatically. Real-time access to the centralized repository dashboard removed delays, especially in file sharing and retrieval.

Reflection: Efficiency shows that Project CSDM helps teachers and non-teaching staff complete tasks faster without sacrificing quality. Participants pointed out that they could spend more time on instructional planning and supporting learners instead of doing clerical work. The use of digital tools created a culture of organized and efficient data management, highlighting the benefits of ICT in school administration.

Accessibility: Before implementation, retrieving and sharing data depended on where files were stored or on unreliable storage methods. Staff often had trouble accessing historical data or collaborating on reports in real time.

With Project CSDM, the centralized OneDrive repository provided secure, remote access for authorized staff from various devices. Feedback showed that staff could easily retrieve, update, and share data anytime, anywhere, which led to better coordination and collaboration.

Reflection: Improved accessibility enabled staff to manage data proactively, helping with timely interventions to monitor student performance. It also fostered transparency, as administrators could track updates in real time. The upgrade in accessibility fits well with modern educational practices that need flexible, cloud-based solutions for managing school data.

Table 1. *Summary of Findings*

Indicator	Template	Pre-Implementation Mean Score	Post-Implementation Mean Score	Mean Difference	T-Value	Significance (p-value)	Interpretation
Accuracy	QAR	3.2	4.7	1.5	-4.49	0.0012	Significant improvement: errors reduced through automation
	Form 14	3.0	4.8	1.8	-5.40	0.0008	Significant improvement; consolidation and validation effective
Efficiency	QAR	2.9	4.6	1.7	-4.49	0.0012	Time required for reporting decreased significantly
	Form 14	2.8	4.7	1.9	-5.59	0.0007	Automation reduced workload and manual computation
Accessibility	QAR	3.1	4.8	1.7	-4.18	0.0018	Centralized OneDrive improved real-time access
	Form 14	3.0	4.9	1.9	-5.50	0.0006	Staff could securely retrieve and share data efficiently

Notes:
•Mean scores were based on a 5-point Likert scale (1 = Poor, 5 = Excellent).
•Negative T-values indicate improvement in post-implementation performance.
•p-values < 0.05 indicate statistically significant improvements.

Reflection from Table:

•Accuracy: Automated formulas and validation rules drastically reduced errors.
•Efficiency: Streamlined workflows and automated computation saved considerable time.
•Accessibility: Cloud-based OneDrive enabled secure, collaborative access across devices, fostering real-time data management.

The findings collectively indicate that Project CSDM significantly enhanced accuracy, efficiency, and accessibility in the preparation of QAR and Form 14. The integration of MS Excel and OneDrive streamlined data management processes while fostering professional growth among staff by improving ICT competencies.

Key Reflections:

1.Professional Empowerment: Staff gained confidence in handling digital tools, reducing reliance on manual processes.

2.Process Improvement: Automation and centralized storage created a systematic workflow, reducing redundancy and errors.

3.Sustainability: Structured templates and cloud storage provide a replicable model for future school years, ensuring continued improvement.

Conclusion:

Project CSDM effectively addresses the gaps identified in the pre-implementation phase, providing a practical, school-specific solution for digital data management. The positive outcomes suggest that similar interventions could adopted in other schools facing challenges with accuracy, efficiency, and accessibility in reporting, making it a sustainable and scalable model for educational institutions.

- storage (OneDrive) enabled anytime, anywhere access, fostering collaboration.

Implications and Recommendations

Based on the findings and reflections from the implementation of Project CSDM, several implications and recommendations emerge for school administration, teaching staff, and future research:

Implications

1. **Enhanced Data-Driven Decision Making**

The significant improvement in accuracy, efficiency, and accessibility implies that school staff can make more informed decisions regarding learner performance, instructional planning, and resource allocation. Reliable and timely data supports initiative-taking interventions for learners and strengthens administrative oversight.

2. **Professional Growth and ICT Competency**

The adoption of automated templates and cloud-based systems demonstrates that structured training and firsthand use of digital tools can enhance the professional competence of school personnel. Staff members develop confidence in using technology for data management, preparing them for future digital initiatives.

3. **Operational Efficiency**

By automating routine tasks, Project CSDM reduces clerical workload and minimizes human errors, enabling staff to dedicate more time to instructional support and learner-centered activities. The structured workflow also fosters a culture of organization, collaboration, and accountability.

4. **Sustainability and Scalability**

The success of Project CSDM indicates that digital, template-based data management systems can sustained and replicated across other grade levels or schools. Centralized, cloud-based storage ensures long-term accessibility and facilitates coordination among staff.

Recommendations

1.**Continuous Training and Technical Support**

To maintain high efficiency and accuracy it is recommended, that staff receive periodic refresher training on using MS Excel, OneDrive, and related digital tools. A dedicated technical support system should be in place to address any emerging issues.

2.**Expansion Across Grades and Departments**

Project CSDM scaled to other grade levels and administrative departments, creating a school-wide standardized data management system. This would promote consistency and efficiency across the entire institution.

3.Periodic System Evaluation

Regular monitoring and evaluation of the system should conduct to assess user satisfaction, template effectiveness, and emerging needs. Feedback mechanisms, such as Google Forms, should continue to inform template refinement and process improvements.

4. Policy Integration and Documentation

The school administration should consider formalizing Project CSDM as part of standard operating procedures for data management. Clear documentation and access protocols will ensure compliance with the Data Privacy Act and institutional policies.

5.Research and Development for Advanced Features

Future iterations of Project CSDM could integrate automated dashboards, graphical reports, and data analytics features, providing more sophisticated insights for teaching and administrative decision-making.

Summary:

The implementation of Project CSDM demonstrates that digital, automated, and cloud-based solutions can effectively improve school data management practices. By addressing challenges in accuracy, efficiency, and accessibility, the system not only enhances operational performance but also empowers staff professionally. The above recommendations provide actionable steps to sustain, expand, and further optimize the use of Project CSDM in South City Central School and potentially across other educational institutions. Action Plan

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Based on the findings and reflections from the implementation of Project CSDM, several implications and recommendations emerge for school administration, teaching staff, and future research:

Implications

1. Enhanced Data-Driven Decision Making

The significant improvement in accuracy, efficiency, and accessibility implies that school staff can make more informed decisions regarding learner performance, instructional planning, and resource allocation. Reliable and timely data supports proactive interventions for learners and strengthens administrative oversight.

2. Professional Growth and ICT Competency

The use of automated templates and cloud-based technologies shows that through proper training and the practical use of the software, the competence of staff members can be improved. The staff members will become competent in handling the technological aspects of data handling for future applications of technology.

3. Operational Efficiency

By automating routine tasks, Project CSDM reduces clerical workload and minimizes human errors, enabling staff to dedicate more time to instructional support and learner-centered activities. The structured workflow also fosters a culture of organization, collaboration, and accountability.

4. Sustainability and Scalability

The success of Project CSDM indicates that digital, template-based data management systems can be sustained and replicated across other grade levels or schools. Centralized, cloud-based storage ensures long-term accessibility and facilitates coordination among staff.

Recommendations

1. Continuous Training and Technical Support

To maintain high efficiency and accuracy, it is recommended that staff receive periodic refresher training on using MS Excel, OneDrive, and related digital tools. A dedicated technical support system should be in place to address any emerging issues.

2. Expansion Across Grades and Departments

Project CSDM can be scaled to other grade levels and administrative departments, creating a school-wide standardized data management system. This would promote consistency and efficiency across the entire institution.

3. Periodic System Evaluation

Regular monitoring and evaluation of the system should be conducted to assess user satisfaction, template effectiveness, and emerging needs. Feedback mechanisms, such as Google Forms, should continue to inform template refinement and process improvements.

4. Policy Integration and Documentation

The school administration should consider formalizing Project CSDM as part of standard operating procedures for data management. Clear documentation and access protocols will ensure compliance with the Data Privacy Act and institutional policies.

5. Research & Development for Future Advancements

Next versions of Project CSDM could have automation dashboards, visual reports, and data analytics capabilities that would give more advanced insights into education and administration management.

The introduction of Project CSDM proves that digital, automated, and cloud technologies can successfully be used to

improve data management at schools. By solving issues of

accuracy, efficiency, and access, this technology not only increases the operational efficiency but also develops staff professionally. The suggestions mentioned above will be useful for continuing, improving, and expanding the use of Project CSDM in South City Central School

RESEARCH DOCUMENTATION

DISSEMINATION AND UTILIZATION ADVOCACIES

The results of the study entitled Enhancing Accuracy, Efficiency, and Accessibility in School Reporting Through Project CSDM (Comprehensive School Data Management) were communicated through faculty meetings, Learning Action Cell (LAC) sessions, and school-level conferences. The research team discussed the advantages of the system, especially the capability to enhance QAR and Form 14 preparation by automating the process of data compilation and centralizing storage.

In order to promote the use of CSDM, orientation and training sessions were conducted among the teachers and school personnel. The sessions served as practice among the participants on how to effectively use the CSDM templates and OneDrive file repository. This way, they were able to realize the significance of digital systems in error minimization and time savings.

CSDM was successfully used in South City Central School and other schools in the district. CSDM became a very useful tool in data compilation, report writing, and document management leading to better accuracy, more efficient reporting, and greater accessibility of school data.

PHOTO DOCUMENTATION

Before:

The above photo illustrates the first implementation of the automated Form 14 template for Project CSDM. Through collaboration with the teacher-respondent, the researchers have been able to demonstrate how the process works, as well as answer any queries raised during the process. This has facilitated the ability of the teachers to be acquainted with the template.

During:

CSDM Project is an effort to provide an organized and user-friendly interface for handling school data. The project has been launched through LAC session that is dedicated to using data for better decision making as well as for enhancing the process of school record keeping.

REFERENCES

McGhee, M. W., & Stark, M. D. (2023). Streamlining data and enhancing efficiency: Technology-driven solutions for educational leadership. Journal of Educational Supervision, 6(1), 45–62.

Salva, R. A., Cadavedo, L. O., & Patinga, K. T. (2023). Technology-assisted data systems in Philippine public schools: Operationalizing accuracy, efficiency, and accessibility. The New Educational Review, 72(2), 148–158.

Singzon, M. C. (2024). Integrating technology in school reporting, administrative practices, and organizational efficiency: Basis for an institutional data management plan. International Journal of Advanced Multidisciplinary Studies, 4(11), 89–104.

The picture shows the oral validation and presentation of Project CSDM before the Regional Office members. In the process of discussion, the researchers gave insights into the process of project development and implementation, as well as into its main results and effects on the process of school reporting. Feedback provided by the validators was very helpful and served as an affirmation of the efficiency of the project.

After:

The above picture showcases the official dashboard of the West District developed using the CSDM project. The dashboard has been implemented by all the schools within the district. It provides a centralized platform where the important information about the schools is updated and accessed. The fact that the dashboard has been used in all the schools of the district goes to show that even a school innovation can become an important tool.

Project CSDM (Comprehensive School Data Management) was presented and defended during the Division Research Congress Oral Validation, in which the contributions, innovations, and impacts of the research findings, as well as the dashboard itself in managing school data, were assessed by the experts.

ENHANCING SCHOOL CLIMATE AND TEACHER PARTICIPATION IN SELECTED DISTRICT 1 SCHOOLS THROUGH DISTRIBUTED LEADERSHIP (DL) APPROACH

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INTRODUCTION

Effective schools are characterized by a strong link between teachers' participations, school budget allocation, and school climate collaboration. However, a significant challenge facing many schools is the disconnection among these factors. The current situation in District 1 of the Division of Lapu-Lapu-City show poor connection between teacher communication and school climate collaboration that leads to the decreased of teacher motivation, reduced instructional effectiveness and compromised student learning outcomes. In recent DMEA 2024 report, schools in district 1 presented low percentage of school head-teacher collaboration on school academic activities. In addition, during the first Executive Conference in the Division, the SGOD office discussed the area of improvement on transparency, teacher participation and motivation, and school effectiveness in budget allocation. Thus, there is a clear evidence of poor school climate and teacher participation among schools in district 1.

Bound by these situations, Distributed Leadership (DL) is a popular approach in Educational Leadership, Management and Administration (ELMA) field (Mifsud, 2022) shows positive change in schools (Liu, J., Qiang, F., & Kang, H , 2023). Studies on Distributed Leadership shows a promising result in improving school climate such as the rising effect of Distributed Leadership in schools (Mifsud, 2022) and professional development (Galdames-Calderón, M, 2023). This approach becomes a suggestion in the field to promote positive school climate and enhances teacher collaboration and participation however, Baștea, A.-R., Catalano, H., & Dohotaru, A. I. (2023) presented that distributed leadership also presents shortcomings such as unclear roles, competing priorities, and power dynamics emerge. Thus, there is a contradictory finding gaps whether distributed leadership resulted morely on shortcomings rather than benefits or vice versa.

In this study, the researchers identified three important gaps to address. First there is evident for contextual gap because there is a limited study on distributed leadership (DL) practice that enhances school climate and teacher participation where studies in this field focuses on awareness of DL and relationship to practice (Yulo, 2020), teachers' commitment to work and DL (Mercado and Zamora, 2024). Second, there is no study with public local setting on distributed leadership (DL) that deals on school climate enhancement and teachers' participation respectively. Lastly, there is a gap on studies between positive and negative views of distributed leadership in public schools.

This paper investigated the significant contribution of distributed leadership to the public school's climate and teachers' participation in the District 1, Division of Lapu-Lapu City. Specifically, this seeks to determine the influence of distributed leadership to the overall atmosphere of the school environment and enhances the involvement of teachers in the planning, decision-making process, implementation and monitoring of school programs, projects and activities. This study is highly important because it addresses the identified gaps and situational problems of the district. This study benefited the school administrators, and division personnel by providing evidence-based strategy in school improvement and teacher engagement. Above all, this study hopes to contribute a viable strategy in the educational administration educational field.

DISCUSSION OF RESULTS

The research employed a pre-intervention and post-intervention assessment to evaluate changes in teacher's participation and school climate. The data collected from the participants before and after the intervention is summarized in the following tables.

Table 1

School Climate Before the Intervention

Statements	Mean	SD	Verbal Description
1.Distributed Leadership encourages teachers to take leadership roles in school programs, projects and activities.	2.20	0.44	Disagree
2. I am more involved in decision making process compared before.	2.30	0.64	Disagree
3. Distributed Leadership promotes strong evidence of collaboration among teachers.	2.65	0.56	Agree
4. My voice and ideas are welcomed now in school planning, implementation and evaluation.	2.39	0.34	Disagree
5. I have more opportunities to lead a certain teaching group.	2.56	0.43	Agree
6. I feel more respected among colleagues and school leader today.	2.65	0.53	Agree
7. Distributed leadership creates more positive school atmosphere	2.21	0.51	Disagree
8. There is clear picture of open communication between principal and teachers.	1.92	0.50	Disagree
9. Distributed leadership develop trust and confidence among teachers.	2.20	0.41	Disagree
10. Teachers are more encouraged to work together in solving school problems.	1.75	0.52	Strongly Disagree
Composite Mean	2.28	0.57	Disagree

Legend : 1.00-1.75 -Strongly Disagree ; 1.76-2.50 Disagree; 2.51 -3.25 Agree; 3.26 – 4.00 – Strongly Agree

Table 1 showed the teachers' perception of the school climate before the intervention on distributed leadership. The overall composite mean of 2.28 indicated that teachers disagreed that distributed leadership was effectively practiced in their school. This means that before the program, teachers felt that leadership roles, decision-making, and collaboration were still limited. Although some items like collaboration among teachers (Mean = 2.65) and respect among colleagues (Mean = 2.65) were rated "Agree," most indicators such as open communication (Mean = 1.92) and teamwork in solving problems (Mean = 1.75) received low ratings.

This finding suggested that the school climate needed improvement, especially in building trust, communication, and shared decision-making. In the field of school leadership, this showed that distributed leadership was not yet strongly established before the intervention. Teachers were not fully empowered to lead or share responsibility.

Therefore, introducing strategies that promote shared leadership and teacher participation could help create a more positive and collaborative school environment.

Table 2

Teacher Participation Before the Intervention

Statement	Mean	SD	Verbal Description
1.I am actively involved in decision-making processes at my school.	2.67	0.52	Agree
2.I frequently contribute ideas in school meetings and discussions.	2.17	0.50	Disagree
3.I participate in the development and implementation of school policies.	2.60	0.55	Agree
4.I am often asked to lead school projects or initiatives.	2.13	0.48	Disagree
5.I am encouraged to participate in leadership activities at the school.	2.57	0.53	Agree
6.I believe that distributed leadership improves teacher engagement in the school.	2.80	0.50	Agree
7.The leadership practices at our school motivate me to take on more responsibilities.	2.60	0.54	Agree
8.Teachers' participation in leadership activities positively impacts the school environment.	2.87	0.49	Agree
9.The school leadership's approach empowers me to influence school decisions.	2.10	0.51	Disagree
10.Distributed leadership helps foster a culture of collaboration and shared responsibility among teachers.	2.93	0.50	Agree
Composite Mean	2.54	0.51	Agree

Legend : 1.00-1.75 -Strongly Disagree; 1.76-2.50 Disagree; 2.51 -3.25 Agree; 3.26 – 4.00 – Strongly Agree

Table 2 displayed the level of teacher participation in school leadership before the intervention. The overall composite mean of 2.54, described as Agree, means that teachers had a moderate level of participation before the program. They were somewhat involved in decision-making, policy development, and leadership activities. However, not all teachers felt empowered or frequently asked to lead, as seen in lower ratings on statements about being asked to lead projects (Mean = 2.13) and influencing school decisions (Mean = 2.10).

This finding suggested that while teachers recognized some efforts to involve them, participation in leadership was still limited. The results implied that distributed leadership was present but not fully practiced. School leaders may need to strengthen strategies that encourage more active participation and shared decision-making among teachers. When teachers are given more opportunities to lead and contribute ideas, it can build a stronger sense of ownership, teamwork, and positive school culture.

Table 3
School Climate After the Intervention

Statements	Mean	SD	Verbal Description
1.Distributed Leadership encourages teachers to take leadership roles in school programs, projects and activities.	3.34	0.62	Strongly Agree
2. I am more involved in decision making process compared before.	3.54	0.64	Strongly Agree
3. Distributed Leadership promotes strong evidence of collaboration among teachers.	3.80	0.41	Strongly Agree
4. My voice and ideas are welcomed now in school planning, implementation and evaluation.	3.67	0.49	Strongly Agree
5. I have more opportunities to lead a certain teaching group.	3.40	0.63	Strongly Agree
6. I feel more respected among colleagues and school leader today.	3.53	0.64	Strongly Agree
7. Distributed leadership creates more positive school atmosphere	3.80	0.41	Strongly Agree
8. There is clear picture of open communication between principal and teachers.	3.60	0.51	Strongly Agree
9. Distributed leadership develop trust and confidence among teachers.	3.73	0.46	Strongly Agree
10. Teachers are more encouraged to work together in solving school problems.	3.80	0.41	Strongly Agree
Composite Mean	3.62	0.52	Strongly Agree

Table 3 presented that teachers strongly agree that distributed leadership improved the school climate. The highest means (3.80) showed that collaboration, positive atmosphere, and teamwork among teachers were strongly promoted. This means teachers now feel more connected, trusted, and open to share ideas. The overall composite mean of 3.62 indicates that the intervention had a very positive effect on how teachers view leadership and participation in school activities.

The results suggested that using distributed leadership helped create a better school climate. Teachers now feel more involved in decision-making and respected by their school leaders. It encouraged open communication, teamwork, and shared responsibility. In simple terms, when leadership is shared, teachers become more active and confident, and the school becomes a more positive place for everyone.

Table 4
Teacher's Participation After the Intervention

Statement	Mean	SD	Verbal Description
1. I am actively involved in decision-making processes at my school.	3.47	0.64	Strongly Agree
2.I frequently contribute ideas in school meetings and discussions.	3.07	0.46	Agree
3.I participate in the development and implementation of school policies.	3.40	0.63	Strongly Agree
4.I am often asked to lead school projects or initiatives.	2.93	0.70	Agree
5.I am encouraged to participate in leadership activities at the school.	3.47	0.83	Strongly Agree
6.I believe that distributed leadership improves teacher engagement in the school.	3.60	0.51	Strongly Agree
7.The leadership practices at our school motivate me to take on more responsibilities.	3.40	0.63	Strongly Agree
8.Teachers' participation in leadership activities positively impacts the school environment.	3.67	0.62	Strongly Agree
9.The school leadership's approach empowers me to influence school decisions.	3.00	0.76	Agree
10.Distributed leadership helps foster a culture of collaboration and shared responsibility among teachers.	3.73	0.46	Strongly Agree
Composite Mean	3.37	0.62	Strongly Agree

Table 4 revealed that after the intervention, teachers strongly agreed that distributed leadership increased their participation in school activities and decision-making. Most of the statements received high mean scores ranging from 3.40 to 3.73, indicating strong agreement. The highest mean (3.73) was on the statement that distributed leadership helps build collaboration and shared responsibility among teachers. This means that teachers felt more united and cooperative after the leadership program. Meanwhile, the lowest mean (2.93) was on being asked to lead projects, showing that while teachers are more engaged, some still need more opportunities to take leadership roles.

The overall result, with a composite mean of 3.38 (Strongly Agree), shows that the intervention successfully enhanced teacher participation through distributed leadership. Teachers now feel more involved, empowered, and motivated to contribute to school improvement. This suggests that when school leaders share leadership roles and decision-making, it creates a more positive and participative school climate. Distributed leadership, therefore, helps build teamwork and strengthens the commitment of teachers toward school goals.

Table 5

Comparative Analysis of School Climate Before and After the Intervention

Table 5. Comparative Analysis of School Climate before and after the intervention

Statements	Before the intervention	After the intervention
1.Distributed Leadership encourages teachers to take leadership roles in school programs, projects and activities.	Disagree	Strongly Agree
2. I am more involved in decision making process compared before.	Disagree	Strongly Agree
3. Distributed Leadership promotes strong evidence of collaboration among teachers.	Agree	Strongly Agree
4. My voice and ideas are welcomed now in school planning, implementation and evaluation.	Disagree	Strongly Agree
5. I have more opportunities to lead a certain teaching group.	Agree	Strongly Agree
6. I feel more respected among colleagues and school leader today.	Agree	Strongly Agree
7. Distributed leadership creates more positive school atmosphere	Disagree	Strongly Agree
8. There is clear picture of open communication between principal and teachers.	Disagree	Strongly Agree
9. Distributed leadership develop trust and confidence among teachers.	Disagree	Strongly Agree
10. Teachers are more encouraged to work together in solving school problems.	Strongly Disagree	Strongly Agree
Composite Mean	Disagree	Strongly Agree

The table showed a big improvement in the school climate after the intervention on distributed leadership. Before the intervention, most teachers disagreed that they were involved in leadership, decision-making, and communication. After the intervention, all statements shifted to "Strongly Agree," showing a very positive change. This means teachers now feel more valued, trusted, and involved in school leadership and decision-making processes. The results also reveal that collaboration, open communication, and respect among teachers and school leaders greatly improved.

The findings indicated that distributed leadership successfully transformed the school climate into a more positive, open, and participative environment. Teachers now feel empowered to take leadership roles, share ideas, and work together toward school goals. The strong sense of teamwork and respect shows that when leadership is shared, everyone in the school feels responsible and motivated to contribute. This proves that distributed leadership is an effective approach to building a supportive and collaborative school community.

Table 6

Comparative Analysis of Participation Scale Before and After the Intervention

Table 6. Comparative Analysis of Participation Scale before and after the intervention

Statement	Before the Intervention	After the intervention
1.I am actively involved in decision-making processes at my school.	Agree	Strongly Agree
2.I frequently contribute ideas in school meetings and discussions.	Disagree	Strongly Agree
3.I participate in the development and implementation of school policies.	Agree	Strongly Agree
4.I am often asked to lead school projects or initiatives.	Disagree	Strongly Agree
5.I am encouraged to participate in leadership activities at the school.	Agree	Strongly Agree
6.I believe that distributed leadership improves teacher engagement in the school.	Agree	Strongly Agree
7.The leadership practices at our school motivate me to take on more responsibilities.	Agree	Strongly Agree
8.Teachers' participation in leadership activities positively impacts the school environment.	Agree	Strongly Agree
9.The school leadership's approach empowers me to influence school decisions.	Disagree	Strongly Agree
10.Distributed leadership helps foster a culture of collaboration and shared responsibility among teachers.	Agree	Strongly Agree

The table showed that all areas of teacher participation improved after the intervention on distributed leadership. Before the intervention, some teachers only "agreed" or even "disagreed" that they were involved in leadership and decision-making. After the intervention, all statements were rated "Strongly Agree." This means teachers felt a stronger sense of involvement, encouragement, and empowerment. They also reported that they now have more chances to lead projects, share ideas, and work with others in school leadership activities.

The results clearly showed that distributed leadership greatly increased teacher participation in school activities and decision-making. Teachers became more confident, active, and motivated to take part in school improvement. This approach also built stronger teamwork and shared responsibility among teachers. In short, by sharing leadership roles, the school was able to create a more inclusive and participative environment where every teacher's voice matters.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Distributed leadership helps build a stronger and more positive school community. When leadership is shared among teachers, everyone feels that their ideas and efforts matter. Teachers become more confident in expressing their thoughts and more active in school activities. This approach allows them to take part in important decisions, lead small projects, and support their fellow teachers. As a result, the school becomes more inclusive, and teachers develop a sense of belonging and teamwork.

It is also clear that distributed leadership creates a culture of trust and shared responsibility. Teachers no longer depend only on the principal for direction; instead, they work together to achieve common goals. This shared effort strengthens relationships and improves the overall school climate. The study proves that when leadership is distributed fairly, teachers feel more motivated, respected, and united in helping the school succeed.

For the school leaders in the Division of Lapu-Lapu, it is recommended to strengthen support systems that promote distributed leadership in all schools. Division leaders can organize capacity-building programs, leadership forums, and mentoring sessions where principals and teachers share best practices in shared governance. Encouraging collaboration across schools will help build a culture of trust, participation, and innovation. By modeling distributed leadership at the division level, school heads and teachers will be inspired to apply the same inclusive leadership practices in their own schools, leading to stronger teamwork and improved school performance across the division.

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DISSEMINATION AND UTILIZATION ADVOCACIES

IBO ELEMENTARY SCHOOL

After completing the study, Principal II of Ibo Elementary School shared the research findings with the teachers and school leaders of Ibo Elementary School during a faculty meeting. She discussed the results of the study and explained how the Distributed Leadership (DL) Approach can help improve school climate and increase teacher participation in school activities and decision-making.

BUAYA ELEMENTARY SCHOOL

School Principal II of Buaya Elementary School discussed the research findings with the teachers and school leaders in her school. She explained the results in a clear and practical way, highlighting both the strengths and areas that need improvement. During the discussion, she encouraged teachers to share their insights and ideas on how the school can address the lower-rated indicators. She also shared possible steps and strategies to improve these areas while continuing the practices that were already working well.

MACTAN SENIOR HIGH SCHOOL

After completing the study, School Principal 1 presented the research findings with the teachers and school leaders of Mactan Senior High School during a faculty meeting. He presented and discussed the results, highlighting the strengths and areas that need improvement in relation to school climate and teacher participation under the Distributed Leadership (DL) Approach. Particular attention was given to the indicators that obtained lower ratings, and the faculty collaboratively identified possible interventions and strategies to address these concerns. Plans were also discussed to sustain and further strengthen the indicators that received favorable ratings through continuous collaboration, shared decision-making, and active teacher involvement.

RESEARCH DOCUMENTATION

DISTRICT LEVEL

At the district level, the research findings were presented and discussed during a District 1 meeting attended by school heads. The researcher shared the overal results of the study on enhancing school climate and teacher participation throug the Distributed Leadership (DL) Approach. The presentation highlighted commo strengths across schools as well as areas that needed further improvement particularly the indicators that consistently obtained lower ratings. Other schools c the district are provided insights on how DL can be implemented in their schools.

ENHANCING M&E PRACTICES THROUGH MONITORING AND EVALUATION PRACTICE SUPPORT PROGRAM (MEPSP)

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INTRODUCTION

Monitoring and Evaluation (M&E) systems play a vital role in improving governance, planning, and decision-making in education. In the Schools Division of Tagbilaran City, fragmented reporting templates, inconsistent monitoring practices, and limited alignment with the Basic Education Monitoring and Evaluation Framework (BEMEF) made data consolidation and utilization difficult. To address these challenges, the Monitoring and Evaluation Practice Support Program (MEPSP) was developed. The program introduced standardized M&E tools, the School Data Reflection Form (SDRF), digital reporting processes, and structured feedback mechanisms to improve reporting quality and evidence-based decision-making. The study sought to determine whether MEPSP could serve as a practical and adaptable solution for strengthening performance monitoring within the division.

DISCUSSION OF RESULTS

Using a qualitative participatory action research approach, data were gathered through focus group discussions, interviews, observations, document reviews, and surveys involving school heads, Education Program Supervisors, and other M&E stakeholders. Thematic analysis revealed three major findings.

Theme 1: *High Perceived Value and Practicality of MEPSP Tools*

Participants described the MEPSP tools as practical, clear, and helpful in improving data interpretation and BLICs analysis. The School Data Reflection Form (SDRF) enabled schools to reflect more systematically on their performance data and prepare more meaningful SMEA reports. Stakeholders noted improved consistency and clarity in school reporting.

Theme 2: *Digital Template Issues Require Refinement*

While users appreciated the standardized framework, they identified technical concerns such as automation errors, inconsistent color coding, and formula-related issues in the digital templates. These challenges affected efficiency but did not diminish the overall usefulness of the MEPSP system.

Theme 3: *Need for Stronger Instructional and Learner Outcome Alignment*

Participants emphasized the need to connect MEPSP outputs with learner performance indicators such as Mean Percentage Scores (MPS), ELLNA results, and classroom assessment data. They believed that linking monitoring outputs to instructional practices would make the system more meaningful and responsive to learner needs.

The findings indicate that MEPSP significantly improved the clarity, consistency, and usability of school-level M&E data. It strengthened evidence-based planning, technical assistance, and reporting processes while providing a foundation for a more standardized and sustainable monitoring system.

Table 1. *Synthesis of Triangulated Findings*

Strengths	Areas for Improvement
✓ Clear and practical tools	✓ Technical glitches in the templates.
✓ Better data Interpretation	✓ Need to integrate into learner's outcomes.
✓ Enhanced planning and Technical Assistance	✓ Inconsistent digital automation.
✓ Positive user acceptance	✓ Need a stronger instructional alignment.

CONCLUSION, RECOMMENDATION, AND REFLECTIONS

The study concludes that the Monitoring and Evaluation Practice Support Program (MEPSP) is a practical and effective intervention for improving monitoring and evaluation practices in the Schools Division of Tagbilaran City. The introduction of standardized tools and the School Data Reflection Form (SDRF) enhanced stakeholders' ability to analyze data, identify priority concerns, and utilize information for planning and decision-making. The results demonstrate that simplified and contextualized tools can strengthen governance and promote a culture of evidence-based management.

To sustain and strengthen the gains of the program, the study recommends refining the digital templates, conducting continuous capacity-building activities for school implementers, integrating learner outcome indicators into the monitoring system, and institutionalizing MEPSP within the regular SMEA–DMEA cycle. Establishing continuous feedback mechanisms and scaling up the program across other divisions are likewise recommended.

The implementation of MEPSP reinforces the principle that effective monitoring is not merely a compliance activity but a tool for reflection, continuous improvement, and informed decision-making. Through standardized and user-friendly processes, schools can better translate data into meaningful actions that improve educational outcomes.

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RESEARCH DOCUMENTATION





IMPROVING GRADE 4 LEARNERS' READING FLUENCY AND COMPREHENSION THROUGH AUDIOBOOK INTEGRATION

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INTRODUCTION

Reading proficiency is a foundational skill crucial for learners' academic achievement and lifelong learning, yet assessment results from Mulao Elementary School showed that several Grade Four learners continued to struggle with reading fluency and comprehension despite existing interventions, as evidenced by diagnostic tools such as the Oral Reading Verification Test and the Philippine Informal Reading Inventory, which classified them at the Frustration Level and performing below grade expectations. To address this persistent concern, this action research examined the use of audiobooks as a supplementary reading intervention, recognizing their potential to provide consistent exposure to fluent reading models, accurate pronunciation, appropriate pacing, and expressive intonation that help learners shift their cognitive effort from decoding to meaning-making. Guided by this rationale, the study aimed to determine the effectiveness of audiobook integration in improving the reading fluency and comprehension of five identified Grade Four learners at Mulao Elementary School during the School Year 2025–2026.

DISCUSSION OF RESULTS

The study utilized a pretest-posttest action research design to determine the impact of audiobook integration on learners' reading performance. Data were gathered using the Oral Reading Verification Test to measure fluency and accuracy, and the Philippine Informal Reading Inventory to assess reading comprehension.

Table 1

Overall Performance of Participants Before the Intervention.

Learner Code	ORV WPM	Accuracy (%)	Phil-IRI Comprehension Raw	Phil-IRI Comprehension (%)	Screening Level
L1	38	82	3 / 10	30	*Frustration*
L2	42	78	4 / 10	40	*Frustration*
L3	35	80	2 / 10	20	*Frustration*
L4	46	84	4 / 10	40	*Frustration*
L5	40	79	3 / 10	30	*Frustration*

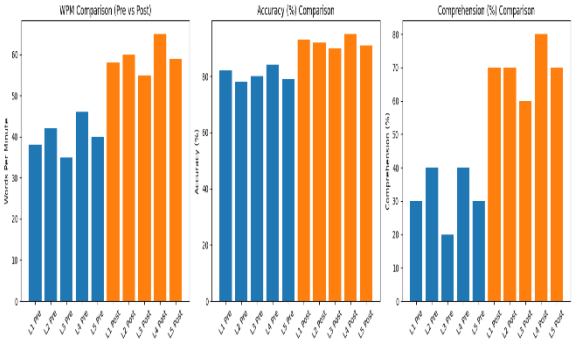
Table 2

Overall Performance of Participants After the Intervention.

Learner Code	ORV WPM	Accuracy (%)	Phil-IRI Comprehension Raw	Phil-IRI Comprehension (%)	Screening Level
L1	58	93	7 / 10	70	*Instructional*
L2	60	92	7 / 10	70	*Instructional*
L3	55	90	6 / 10	60	*Instructional*
L4	65	95	8 / 10	80	*Independent*
L5	59	91	7 / 10	70	*Instructional*

The pretest results showed that all five learners were classified at the Frustration Level. The group average reading fluency was 40.2 words per minute, with an average accuracy rate of 80.6 percent and a comprehension score of 30 percent. These results indicate slow reading pace, frequent decoding errors, and limited understanding of the text, confirming the need for an alternative and supportive reading intervention.

After six weeks of daily 30-minute audiobook sessions, posttest results revealed a marked improvement in all reading indicators. The group average increased to 59.4 words per minute in fluency, 92.2 percent in accuracy, and 70 percent in comprehension. Learners progressed from the Frustration Level to the Instructional and Independent Levels, demonstrating improved pacing, word recognition, and text understanding.



The comparison of pre-intervention and post intervention data shows that audiobook integration significantly improved learners' reading fluency, accuracy, and comprehension. Exposure to fluent oral reading models supported better word recognition, pronunciation, and smoother reading, especially when learners followed the printed text while listening.

Guided pre-listening and post listening activities further strengthened comprehension and vocabulary development. These activities reduced decoding difficulty and allowed learners to focus on understanding the text through structured practice and feedback.

Overall, the findings confirm that audiobook integration is an effective and inclusive strategy for struggling readers, promoting both reading skill development and increased learner motivation and engagement.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Based on the findings of the study, audiobook integration proved to be an effective intervention in improving the reading fluency and comprehension of Grade Four learners. The structured use of audiobooks enabled learners to develop better reading pace, pronunciation, and understanding of texts, allowing them to advance beyond the Frustration Level.

It is recommended that teachers integrate audiobooks into remedial and regular reading instruction, particularly for learners with reading difficulties. School administrators may consider supporting the acquisition of audiobook resources and providing professional development on audiobook assisted literacy strategies. Future studies may replicate this intervention with a larger sample size or across different grade levels to further validate its effectiveness.

Reflecting on the implementation of this action research, the use of audiobooks not only improved learners' reading skills but also increased their confidence and engagement in reading activities. This experience underscores the importance of adopting innovative and learner centered approaches to address persistent literacy challenges in elementary education.

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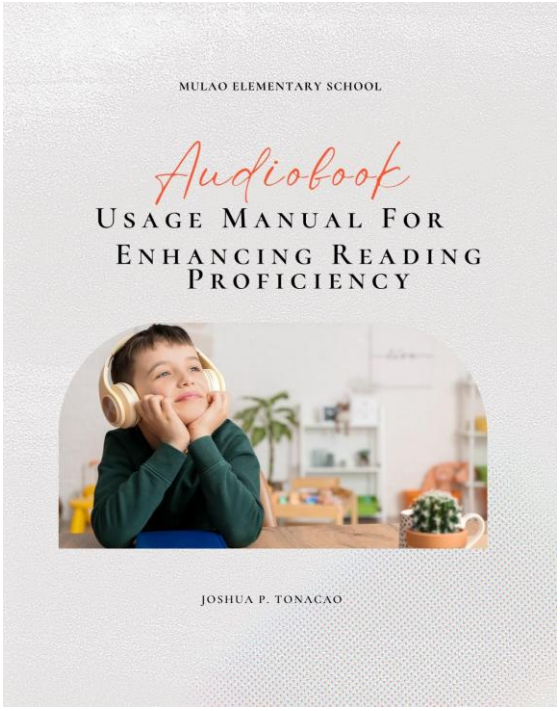

Sharing the results of my action research during a Learning Action Cell (LAC) session, where I presented the objectives, methodology, findings, and implications of audiobook integration.

RESEARCH BULLETIN

ENHANCING GRADE 5 LEARNERS' READING COMPREHENSION SKILLS IN ENGLISH THROUGH THE ReaCAP LEARNING PACKAGE

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INTRODUCTION

Reading comprehension skills are vital in achieving success of the learners' development toward literacy. This study aimed to improve the learners' reading level including the reading comprehension skills in English of Grade Five learners of Limokon Elementary School, Valencia District, Division of Bohol for SY 2024- 2025 by utilizing the ReaCAP Learning Package for the New Gen. The researchers employed action research design utilizing single group pretest-posttest approach with descriptive analysis. Purposive sampling technique was used in determining the eight participants who failed in the Phil-IRI pre-test in the school year 2024-2025 (Department of Education, 2018). Notable improvements were observed across all fundamental academic skills, with high-performing learners further solidified their strengths, and learners with lower scores exhibited significant progress. It can be concluded that the intervention ReaCAP Learning Package for the New Gen proved effective in addressing specific learner needs, particularly for those with significant learning gaps.

DISCUSSION OF RESULTS

The results of the Phil-IRI pre-test were used to identify the learners who needs intervention. Learners who failed the said assessment serve as the basis in determining the participants of the study. The implementation of the intervention happened. Pretest and posttest were conducted using the assessment tool parallel to Phil-IRI.

The data collected from the participants before and after the intervention is summarized in the following tables.

Table 1
Performance of Learners Before the Intervention

Learners	Score (Pretest = 28)				Overall Score	Proficiency Level
	Set A N = 7 (Pretest)	Set B N = 7 (Pretest)	Set C N = 7 (Pretest)	Set D N= 7 (Pretest)		
Justine	3	4	4	2	13	Needs Improvement
Jhon Paul	6	4	6	3	19	Needs Improvement
Clarence	7	3	6	4	20	Needs Improvement
Kent James	5	6	7	6	24	Satisfactory
Jezelyn	4	3	6	1	14	Needs Improvement
Rhea Jane	5	5	3	0	13	Needs Improvement
Rebekah	6	5	5	1	17	Needs Improvement
April Joy	6	4	3	2	15	Needs Improvement

Table 1 showed the learners' reading comprehension skills prior to the intervention. It can be forgathered that only Kent James consistently demonstrated strong comprehension skills across all tested short stories, with a total score of 24, respectively. His proficiency reflected a strong grasp of fluency, word recognition and vocabulary skills. On the other hand, Justine and Rhea Jane struggled significantly, with scores of 13, respectively. Rhea Jane showed moderate success in Set A and B but performed poorly in Set C and D. Justine also showed moderate success in Set B and C but showed poor performance in Set A and Set D.

Jhon Paul demonstrated strong comprehension skills in almost all sets, particularly in Set A and C, where he achieved near-perfect scores. His balanced performance suggests a solid ability in fluency and word recognition before the intervention, making him one of the higher-performing learners in this group. On the other hand, Rebekah displayed strong performance across all sets of stories, particularly in Set A and B, where her scores

showed high next to Jhon Paul in the group. Her balanced skills suggest she had some prior understanding of fluency, word recognition as well as vocabulary before the intervention.

Table 2

Performance of Learners After the Intervention

Learners	Score (Posttest = 28)				Overall Score	Proficiency Level
	Set A N = 7 (Posttest)	Set B N = 7 (Posttest)	Set C N = 7 (Posttest)	Set D N= 7 (Posttest)		
Justine	6	5	7	6	24	Satisfactory
Jhon Paul	7	7	7	7	28	Outstanding
Clarence	6	6	7	3	22	Fairly Satisfactory
Kent James	7	7	7	7	28	Outstanding
Jezelyn	5	2	5	4	16	Needs Improvement
Rhea Jane	7	4	3	3	17	Needs Improvement
Rebekah	7	7	7	7	28	Outstanding
April Joy	7	7	7	7	28	Outstanding

The results showed that designing intervention to low performing learners can really make difference. When learners in the class are assessed as to their mastery of the competencies, teachers can be able to point out the skills that learners need to work on. Implementing classroom-based interventions would enable learners to be at par with other learners.

Table 3

Comparative Analysis of Learners' Performance Before and After the Intervention

Learners	Score (Pretest = 28)				Overall Score	Proficiency Level
	Set A N = 7 (Pretest)	Set B N = 7 (Pretest)	Set C N = 7 (Pretest)	Set D N= 7 (Pretest)		
Justine	3/6	4/5	4/7	2/6	13/24	Satisfactory
Jhon Paul	6/7	4/7	6/7	3/7	19/28	Outstanding
Clarence	7/6	3/6	6/7	4/3	20/22	Fairly Satisfactory
Kent James	5/7	6/7	7/7	6/7	24/28	Outstanding
Jezelyn	4/5	3/2	6/5	1/4	14/16	Needs Improvement
Rhea Jane	5/7	5/4	3/3	0/3	13/17	Needs Improvement
Rebekah	6/7	5/7	5/7	1/7	17/28	Outstanding
April Joy	6/7	4/7	3/7	2/7	15/28	Outstanding

The ReaCAP Learning Package yielded substantial improvement across all learners. Justine, who started with the lowest scores, benefited the most, with a variance of 24, highlighting the intervention's success in addressing large learning gaps.

These results indicated that the intervention was effective for learners across varying levels of proficiency.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The study found that students who had strong reading comprehension skills were more likely to be successful in their careers and earn higher salaries (Cunningham & Stanovich, 1998; Smith et al., 2000). Strengthening foundational literacy through remediation and enrichment is critical.

There were various contributory factors to the success of the intervention. First, the intervention focused on specific skills to be developed (fluency, word recognition, vocabulary, reading comprehension), allowing for targeted support based on learners' initial weaknesses. Regular and consistent remedial sessions using the ReaCAP Learning Package helped learners improved their reading comprehension skills. Spelling drills were also effective. There were at least 20 items for spelling in every session. The learners had to retake the activities at least three to four times until they get high or perfect scores. The words used in the spelling drills served as the basis for their vocabulary notebooks to be filled in. Research showed that the drill and practice strategy is beneficial. These strategies facilitate significant improvement in reading literacy proficiency (Almutairi, 2018; Foorman et al., 2020).

However, the implementation of the ReaCAP Learning Package intervention went through challenges also. Two of the learners struggled more compared with other learners. One of the reasons could be the problem in fluency and decoding skills. Hence, the researchers had to give ample time and supervision of the said learners in every step of the intervention.

Overall, Wh - questions, particularly why or how was the most challenging for the participants. Given comprehension questions without given choices was most challenging to the learners. In this matter, the researchers carefully and thoughtfully taught step by step as well as employed video materials to give more support and emphasis on the hard competencies. The more struggling learners took longer time in completing activities in the activity sheets. The researchers guided them towards the completion of these activities. Learners who answered ahead all the activities in the learning package were given feedback right away and were allowed to continue answering another given activity sheets.

While the intervention was effective, adding more differentiation for high - performing learners could challenge them further and prevent stagnation. Lastly, leveraging technology tools such as educational apps useful to them or interactive simulations could be applied to make learning fun and engaging.

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RESEARCH DOCUMENTATION

DISSEMINATION AND UTILIZATION ADVOCACIES

Pre-Implementation Phase (Before)

The researchers conducted the Phil – IRI pre-test to assess the baseline status of the participants regarding the level of comprehension before the intervention. In this phase, the researchers also asked permission from the school head and the Schools Division Superintendent to conduct this study. Learners who failed the said assessment serve as the basis in determining the participants of the study.

When the conduct of the pre-test was done, the researcher created and carefully crafted the contextualized intervention material, ReaCAP Learning Package.

Once the pre-test was conducted, as well as the conduct of the orientation for the parents and participants and the LAC session for teachers were done, the researcher proceeded to craft and print the ReaCAP Learning Package for the implementation of the said intervention.

Pictures taken during the orientation with the parents and the LAC session with the teachers to disseminate the implementation of the Action Research for the School Year 2025 – 2026.

Implementation Phase *(During)*

After securing the consent from the learners, parents/guardians, school head, and SDS, then the researcher assessed the participants' current performance levels in oral reading, word recognition and vocabulary to establish the baseline knowledge of the participants' reading comprehension skills.

Next, the ReaCAP Learning Package was introduced to the participants within a six-week intervention tool designed to improve the said skill.

The reading sessions were scheduled every day for 30 minutes during the Sustained Reading Program. Each session provided learners with a lecturette and follow-up activities as well as way back home activities that learners have done with the supervision of the parents at home. Reading agreements were given and duly signed by the participants parents/ guardians making sure they studied at home.

Pictures taken with the materials used during the implementation of the Action Research for the School Year 2025 – 2026.

Post-Implementation Phase *(After)*

Pictures taken during the dissemination of results of the Action Research for the School Year 2025 – 2026.

ENHANCING ENGLISH LISTENING COMPREHENSION AMONG GRADE 6 PUPILS THROUGH VIRTUAL STORYTELLING MEDIA(ViStoM)

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INTRODUCTION

In the Grade Six classes at Dumlog Elementary School, Division of Talisay City, classroom observations and assessment results reveal that many pupils experience persistent difficulties in listening comprehension, particularly in identifying main ideas, recalling details, and making inferences from spoken English texts. These challenges negatively affect their participation in classroom activities and overall academic performance, especially in English where effective listening is essential for following instructions, engaging in discussions, and understanding lessons. The limited emphasis on listening skills in traditional English instruction has further contributed to learners' weak comprehension, limited vocabulary, and difficulty in understanding spoken English at a natural pace. This concern calls for immediate and appropriate intervention to enhance pupils' listening comprehension and support their holistic language development.

To address these challenges and bridge the gap in English listening skills among Grade Six learners, the Virtual Storytelling Multimedia (ViStoM) was introduced as an innovative instructional intervention. ViStoM integrates storytelling with multimedia elements such as audio, visuals, and animations to provide an engaging, interactive, and meaningful listening experience. Through multimedia-based activities complemented by pair and group tasks that encourage collaboration and active participation, ViStoM aims to improve pupils' listening comprehension while enhancing their motivation, confidence, and overall language proficiency. Ultimately, this intervention seeks to develop stronger listening skills and contribute to improved academic performance among Grade Six pupils at Dumlog Elementary School.

DISCUSSION OF RESULTS

The study utilized a pre-test and post-test design to determine the effectiveness of the Virtual Storytelling Multimedia (ViStoM) intervention in improving the listening comprehension skills of Grade Six pupils at Dumlog Elementary School. This approach enabled a clear comparison of pupils' performance before and after the intervention and allowed the measurement of learning gains attributable to the multimedia-based strategy.

Table 1
Pre-Test Results in Listening Comprehension (Summary)

Category	Number of Pupils	Percentage	Remarks
Passed	8	21%	Satisfactory
Needs Improvement	30	79%	Below Satisfactory
Total	38	100%	

Table 1 shows that only 8 out of 38 pupils (21%) passed the listening comprehension pre-test, while the majority, 30 pupils (79%), fell under the Needs Improvement category. The class mean score of 12.13 out of 20 (60.7%) indicates that listening comprehension was a major area of difficulty prior to the intervention.

Table 2
Post-Test Results in Listening Comprehension (Summary)

Category	Number of Pupils	Percentage	Remarks
Passed	30	79%	Satisfactory to Good
Needs Improvement	8	21%	Requires Support
Total	38	100%	

Table 2 presents the post-test results after the ViStoM intervention. A total of 30 pupils (79%) achieved passing scores, while only 8 pupils (21%) still required improvement. The post-test mean increased to approximately 15.3 out of 20 (76.5%), showing a marked improvement in listening comprehension.

Table 3

Comparison of Pre-Test and Post-Test Results

Test	Mean	SD (Standard Deviation)	Alpha value (α)	t-computed	p-value	Statistical significance
Pre-test	11.84	3.37	0.05	-	-	statistically significant
Post-test	15.00	2.50	-	-	-	statistically significant
Difference	+3.16	1.74	-	11.23	<0.0001	

Table 3 presents the comparison of the Pre-Test and Post-Test results in listening comprehension of the Grade Six pupils after the implementation of the Virtual Storytelling Multimedia (ViStoM) intervention. The table shows that the **mean score increased from 11.84 in the pre-test to 15.00 in the post-test**, indicating an improvement of **3.16 points** in pupils' listening comprehension performance. The **standard deviation decreased** from **3.37 in the pre-test** to **2.50 in the post-test**, suggesting that pupils' scores became more consistent after the intervention. This reduction in variability indicates that ViStoM helped narrow the performance gap among learners, particularly benefiting those who initially struggled with listening comprehension.

The computed **t-value of 11.23** with a **p-value of < 0.0001**, which is significantly lower than the **alpha value of 0.05**, confirms that the difference between the pre-test and post-test results is **statistically significant (Field, 2018)**. This means that the observed improvement in listening comprehension is **not due to chance**, but rather a direct result of the intervention implemented.

Overall, the statistical results provide strong evidence that the **Virtual Storytelling Multimedia (ViStoM) intervention was highly effective** in improving the listening comprehension skills of Grade Six pupils. The significant increase in mean scores, coupled with reduced score variability, demonstrates that multimedia-supported instruction can lead to meaningful and measurable learning gains in English listening comprehension.

Qualitative feedback from pupils further supported the quantitative findings. Most learners reported that the use of videos, images, and sounds made lessons more engaging and easier to understand. Pupils also expressed greater motivation, improved attention, and increased confidence during listening activities (Mayer, 2014).

In conclusion, the inclusion of tables and analysis clearly demonstrates that the Virtual Storytelling Multimedia (ViStoM) intervention was effective in improving the listening comprehension skills of Grade Six pupils. The significant gains in post-test performance and positive learner feedback validate ViStoM as a meaningful and effective instructional strategy in English listening instruction.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The findings of this study clearly demonstrate that the Virtual Storytelling Multimedia (ViStoM) intervention was effective in improving the listening comprehension skills of Grade Six learners. The pre-test results revealed substantial learning gaps, with the majority of pupils performing below the satisfactory level, indicating that existing instructional approaches were insufficient in addressing learners' needs in listening comprehension. These gaps highlighted the necessity for an instructional strategy that could better support learners in processing, interpreting, and recalling spoken information.

Following the implementation of ViStoM, significant improvement in pupils' listening comprehension was observed, as reflected in the increased mean post-test scores and supported by statistical analysis indicating highly significant results. The reduction in score variability further suggests that the intervention not only improved overall performance but also promoted more consistent comprehension among learners. These results affirm that multimedia-based instruction, when thoughtfully designed and implemented, can effectively address listening comprehension difficulties and enhance learning outcomes.

Based on the results of the study, it is recommended that multimedia-based interventions such as ViStoM be continuously integrated into English language instruction, particularly in developing listening comprehension skills. Teachers are encouraged

to utilize storytelling supported by multimedia elements to create engaging, context-rich listening experiences for learners.

For pupils who remained in the "Needs Improvement" category, differentiated instructional strategies should be implemented. These may include extended listening practice, simplified audio materials, repeated exposure to listening texts, and scaffolded activities tailored to learners' needs. School administrators may support teachers by providing access to multimedia resources and professional development opportunities. Future research may explore the application of ViStoM across different grade levels and learning contexts.

The results of the study provide a clear depiction of the learners' initial challenges in listening comprehension and the meaningful improvements that occurred following the ViStoM multimedia intervention. The baseline data revealed that traditional instructional practices were not adequately addressing diverse learning needs, thereby necessitating a more engaging and adaptive approach.

The implementation of ViStoM resulted in a noticeable shift in learner performance and classroom engagement. The statistical significance of the post-test results, coupled with positive learner feedback, demonstrated that multimedia-based instruction effectively enhanced comprehension through varied sensory inputs and contextual support.

Learners' reflections further emphasized increased motivation, improved focus, and greater enjoyment during listening activities. Despite these gains, the presence of learners who continued to struggle highlights the importance of sustained and differentiated instructional support. Overall, the study affirms the strong potential of multimedia-based instruction in bridging listening comprehension gaps and promoting meaningful academic growth.

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RESEARCH DOCUMENTATION

IMPROVING READING PERFORMANCE OF GRADE 6 LEARNERS WITH SPECIAL EDUCATIONAL NEEDS THROUGH INTENSIFIED DIFFERENTIATED INSTRUCTION

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INTRODUCTION

This action research examined the effectiveness of intensified differentiated instruction in enhancing the reading performance of Grade 6 learners with Special Educational Needs (LSENs) at Cogon Elementary School, Tagbilaran City Division for School Year 2025–2026. Recognizing that LSENs continue to struggle with reading in public school environments due to diverse learning styles, slower pace of learning, and a limited support for individual needs, the researchers applied targeted differentiated strategies that were tailored to each pupil's individual skills, interests, and readiness levels. PHIL-IRI was the primary measurement tool to check the reading levels of the learners before the support activity against the result after the intervention. The results revealed a significant increase in overall performance: non-readers and frustration-level readers displayed improvement toward instructional and independent reading levels, while those who began at lower proficiency showed growth in decoding, comprehension, and fluency skills. Qualitative assessments also boosted contribution, greater self- assurance, and collaboration among LSENs during reading period. The findings confirm that increased instruction is an advantageous and productive strategy for helping pupils with special needs who struggle with reading. In order to uphold inclusive and reading instruction that focus on the pupils in all Tagbilaran City schools, the study proposes division-wide adoption, capacity building for teachers, and continuing implementation.

DISCUSSION OF RESULTS

The discussion is both quantitative results from pre-tests and post-tests, and qualitative data from classroom observations, reflections of teachers, and pupils' feedback. It revolves around on how the application of differentiated instruction strategies contributed to the improvement of pupils' reading skills, while responding to the challenges LSENs face in public schools.

Table 1: *Reading Performance of Grade 6 LSENs Before Intensified Differentiated Instruction (Based on Phil-IRI)*

Learner	Pre-Test Fluency (Words/Min)	Pre-Test Comprehension (%)	Overall Reading Performance (Pre-Test)
Pupil 1	49	50	Frustration Level
Pupil 2	39	39	Non-Reader
Pupil 3	48	45	Frustration Level
Pupil 4	46	45	Frustration Level
Pupil 5	50	50	Frustration Level
Pupil 6	38	39	Non-Reader
Mean	45.00	44.67	Frustration Level

Table 2: *Reading Performance of Grade 6 LSENs After Intensified Differentiated Instruction (Based on Phil-IRI)*

Learner	Post-Test Fluency (Words/Min)	Post-Test Comprehension (%)	Overall Reading Performance (Post-Test)
Pupil 1	72	78	Independent Level
Pupil 2	54	55	Frustration Level
Pupil 3	72	79	Independent Level
Pupil 4	68	65	Instructional Level
Pupil 5	72	78	Independent Level
Pupil 6	60	62	Instructional Level
Mean	66.33	69.50	Instructional Level

Table 3: *Reading Performance of Grade 6 LSENs Before and After Intensified Differentiated Instruction (Based on Phil-IRI)*

Learner	Pre-Test Fluency (Words/ Min)	Post-Test Fluency (Words/Min)	Pre-Test Comprehension (%)	Post-Test Comprehension (%)	Overall Reading Performance (Pre-Test)	Overall Reading Performance (Post-Test)
Pupil 1	49	72	50	78	Frustration Level	Independent Level
Pupil 2	39	54	39	55	Non-Reader	Frustration Level
Pupil 3	48	72	45	79	Frustration Level	Independent Level
Pupil 4	46	68	45	65	Frustration Level	Instructional Level
Pupil 5	50	72	50	78	Frustration Level	Independent Level
Pupil 6	38	60	39	62	Non-Reader	Instructional Level
Mean	**45.00**	**66.33**	**44.67**	**69.50**	**Frustration Level**	**Instructional Level**

The results of the study showed that when there is an intensification of the differentiated instruction, Grade 6 LSENs' reading ability will be supported and will be significantly improved. Based on the pre-test findings, many pupils had challenge with comprehension, word identification, and reading fluency. Post-test results after the intervention proved measurable progress in these domains.

This improvement can be linked to the flexible and personalized instructional strategies employed through differentiated instruction. The intervention empowered pupils to interact with reading materials at their own pace through personalized lessons to pupil's unique skills and learning preferences. For instance, pupils who performed well in kinesthetic or interactive activities displayed improved comprehension through performance tasks or group reading activities, while those who were inclined in visual aids and graphic organizers were better able to understand the meaning and context of the texts.

These findings support the ideas with the studies of Tomlinson (2014) and Hall, Strangman, & Meyer (2003), which stress that differentiated instruction provides pupils with appropriate levels of challenge, framework, and support according to their unique learning needs. For LSENs, this tactic helps build confidence, motivation, and active involvement in reading activities.

The study applied several differentiated instruction strategies, including Content Differentiation – adjusting reading resources based on learners' levels of skill and interest; Process Differentiation – applying different instructional methods such as small group reading, peer-assisted learning, and individualized teaching; and Product Differentiation – allowing learners to show understanding through oral recitation, written outputs, or creative performance tasks.

Some learnings from teacher's journal further presented that pupils responded positively to multi-sensory methods, including audio-assisted reading, interactive storytelling, and the use of visual aids. Data from the classroom observation presented helped in the increase of learner engagement, reducing frustration, and better involvement during sessions. Pupils who previously hesitated to read aloud showed higher confidence in reading when supported by strategies suited to their capacity.

The reflective notebooks of the teachers underscored the significance of continuously monitoring and adapting techniques in order to fulfill the needs of pupils. Teachers were able to enhance their strategies by checking how pupils responded to the various teaching strategies, making sure that each pupil got the help they needed.

This revealed how customized instruction cultivates affective results including motivation, self-efficacy, and willingness to be involved in learning activities in addition to solving academic struggles. Differentiated instruction offered workable recommendations for inclusive and successful teaching in public school environments like Cogon Elementary School, where big class numbers and limited resources present serious difficulties.

REFLECTION

The results of this research have given valuable insights into the teaching and learning process especially for pupils with special educational needs (LSENs). Through the use of intensified differentiated instruction, the researchers were able to personally see the effects of customizing lessons to each pupil's own capabilities, interests, and learning styles. Even in public school environments with very limited resources, prudent, child-centered approaches can greatly help improve academic achievement, as seen by the Grade 6 LSENs' significant improvements in reading fluency and comprehension.

After discernment, it became clear that differentiated instruction is a mentality that calls for flexibility, patience, and responsiveness rather than just a set of tactics. Each pupil has a unique set of strengths, difficulties, and learning preferences as each has individual differences; recognizing this diversity and adjusting instruction correctly encourages academic development as well as

self-assurance, drive to learn, and engagement. It was especially fulfilling to see pupils who had previously been shy and hesitant to read aloud gradually and eager to collaborate, as this reflected the social and emotional advantages of inclusive teaching practices.

The importance of the ongoing evaluation, assessment and introspection was highlighted during the research process. By using the pre-tests, post-tests, and observation, the researchers were able to monitor pupils' progress and make considerable changes to their teaching methods. The vitality of this action research as an instrument for professional growth was reaffirmed by this approach, which allowed teachers to improve their methods and make data-driven decisions.

Additionally, the study showed that it is possible to give an inclusive and productive learning environment despite challenges like big class sizes, limited of teaching materials, and varied learner needs. Reading performance improved significantly as a result of few changes including offering leveled reading passages, incorporating multisensory exercises, and giving pupils several methods to show comprehension.

This action research confirms the idea that every pupil may improve and advance if instruction is carefully personalized to their needs. The experience has armored the researchers' interest and passion to inclusive education and brought attention to the transformational potential of individualized instruction. The study's conclusions will update future instructional strategies that will not only improve reading proficiency but also produce a classroom environment where all pupils feel valued, competent, and motivated to achieve.

CONCLUSION AND RECOMMENDATIONS

Conclusion

In reference to the findings of this study, the reading performance of Grade 6 pupils with special educational needs (LSENs) in Cogon Elementary School improved significantly after implementing the intensified differentiated instruction and individualized learning. The pre-test and post-test results showed significant progress in both reading fluency and comprehension, with few learners moving forward from Frustration or Non-Reader levels to Instructional or Independent levels. This indicates that personalizing reading materials and strategies to the needs, abilities, and pace of the pupils effectively helps their reading advancement. The study shows that LSENs' reading capabilities can be improved by intensive and systematically implemented differentiated education, which allows increased engagement, mastery and confidence in reading. Overall, the intervention highlights how critical responsive teaching techniques are to producing relevant learning outcomes for pupils with a range of educational needs.

Recommendations

Based on this conclusion, the researchers recommend the following actions:

1. **Strengthen and Intensify Differentiated Instruction:** To maintain and further increase the reading abilities of pupils with special educational needs, teachers have to regularly integrate intensified differentiated instruction in reading sessions, individualized activities to their particular needs, abilities, and learning preferences.

2. **Regular Close Monitoring and Assessment**: In order to have continued progress in fluency and understanding, consistent monitoring has to be performed using instruments like PHIL-IRI to track pupils' progress, recognize areas that require strengthening, and change instructional schemes accordingly.

3.**Capability Building for Teachers:** To increase teachers' ability to achieve a variety of reading needs, schools have to provide trainings and workshops on inclusive education methods, different instruction strategies, and effective interventions for LSENs.

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RESEARCH DOCUMENTATION

ONE WEEK, ONE STORY: A MENTORSHIP GUIDE FOR ENHANCING READING FLUENCY AND CONFIDENCE AMONG GRADE 6 HALTING READERS

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INTRODUCTION

Reading fluency-the ability to read texts accurately, smoothly, and with appropriate expression-is a critical skill that directly supports comprehension and overall academic success (Kim, Quinn, & Petscher, 2021). Fluent reading enables students to focus on understanding the text rather than decoding individual words, creating a strong foundation for learning across subjects (Duke, Ward, & Pearson, 2021).

At Manghupi Elementary School, a recent reading fluency assessment revealed that 83% of sixth-grade students fall below the expected fluency level, with 67% classified as halting readers despite existing interventions. One key factor contributing to this challenge is the lack of a structured reading guide, especially for newly hired teachers who may struggle with implementing effective reading instruction. Without a systematic approach, efforts to support halting readers often become inconsistent and unsustainable.

To address this gap, this study introduces the One Week, One Story Mentorship Guide, a structured and step-by-step intervention designed to enhance reading fluency through peer-assisted learning and teacher-facilitated support. This guide engages selected fluent readers as mentors alongside teacher facilitators to provide daily, progressive reading activities aimed at improving fluency, comprehension, and confidence among struggling readers. Unlike temporary interventions, this mentorship model institutionalizes a consistent and sustainable reading support system that benefits both learners and educators. Prioritizing this intervention ensures that reading fluency remains a long-term focus, unaffected by changes in teaching personnel.

The One Week, One Story Mentorship Guide not only bridges learning gaps but also fosters a literacy-rich culture by promoting confidence-building, continuous practice, and guided instruction. Its structured nature provides halting readers with personalized, scaffolded support, enables fluent readers to strengthen their skills through mentorship, and equips teachers with a practical, reliable framework for effective reading instruction.

Through this study, the intervention will be implemented, refined, and assessed to ensure that it becomes an integral and sustainable part of the school's reading program, ultimately leading to improved academic performance and lifelong literacy success

DISCUSSION OF RESULTS

This section employed a comparison of pre-test and post-test reading fluency scores in terms of accuracy, reading speed, and expression, as well as qualitative thematic insights gathered from teacher facilitators and student mentors. The findings highlight the effectiveness of the mentorship guide in improving reading fluency, learner confidence, and engagement during reading sessions. Moreover, this section discussed observed challenges encountered during the implementation and identifies best practices that contributed to the successful delivery of the intervention.

Mean Pre-Test and Post-Test Accuracy Scores of Grade 6 Halting Readers

This table presents a comparison of the mean pre-test and post-test accuracy scores of Grade 6 halting readers following the implementation of the One Week, One Story Mentorship Guide. The data illustrate changes in learners' ability to read words correctly before and after the intervention. The table

further highlights the overall improvement in reading accuracy, as shown by the increase in the computed mean and the resulting mean difference, indicating positive progress in learners' reading performance after participating in the structured mentorship sessions.

Table 1 presents the mean pre-test and post-test accuracy scores of the twelve Grade 6 halting readers who participated in the One Week, One Story Mentorship Guide. Results show that the learners' mean accuracy score increased from 90.11% in the pre-test to 95.14% in the post-test, resulting in a mean gain of 5.03 percentage points. This indicates an overall improvement in reading accuracy after the implementation of the intervention.

Table 1

Mean Pre-Test and Post-Test Accuracy Scores of Grade 6 Halting Readers

Test	Mean Accuracy (%)
Pre-test	90.11
Post-test	95.14
Mean difference	+5.03

Note. n = 12. Accuracy scores are expressed in percentages (%) and represent the proportion of words read correctly during the reading assessment

The increase in the mean accuracy score suggests that the One Week, One Story Mentorship Guide had a positive effect on the reading performance of Grade 6 halting readers. The consistent use of one story per week allowed learners to become more familiar with the text, which helped reduce mispronunciations and unnecessary pauses during reading. Daily guided activities such as modeled reading, peer reading, and "spot and fix" provided repeated practice and immediate feedback, contributing to improved accuracy. Furthermore, the structured and predictable routine of the mentorship guide may have helped learners feel more confident and less anxious during reading sessions. This finding supports the idea that repeated exposure to appropriate reading materials and consistent mentoring can enhance reading accuracy among struggling readers.

Mean Pre-Test and Post-Test Reading Speed (WPM) of Grade 6 Halting Readers

This presents the comparison of the mean pre-test and post-test reading speed of Grade 6 halting readers measured in words per minute (wpm). The table highlights the overall improvement in reading speed after the implementation of the One Week, One Story Mentorship Guide.

Table 2

Mean Pre-Test and Post-Test Reading Speed (WPM) of Grade 6 Halting Readers

Test	Mean Reading Speed (wpm)
Pre-test	67.50
Post-test	94.08
Mean difference	+26.58

Note. n = 12. Reading speed was measured in words per minute (wpm), indicating the number of words read correctly within one minute.

The results in Table 2 show a clear improvement in the reading speed of Grade 6 halting readers after the implementation of the One Week, One Story Mentorship Guide. The mean reading speed increased from 67.50 words per minute (wpm) in the pre-test to 94.08 wpm in the post-test, resulting in a mean gain of 26.58 wpm. This improvement indicates that learners were able to read with better pacing and fewer pauses after participating in the intervention.

The increase in reading speed may be attributed to the structured and repetitive nature of the mentorship guide, which allowed learners to become familiar with the text through repeated reading across the week. Overall, the findings suggest that consistent and structured reading sessions contributed significantly to the improvement of learners' reading speed.

Mean Pre-Test and Post-Test Expression Scores of Grade 6 Halting Readers

This shows the comparison of the mean pre-test and post-test expression scores of Grade 6 halting readers, highlighting changes in learners' reading expression after the implementation of the One Week, One Story Mentorship Guide.

Table 3

Mean Pre-Test and Post-Test Expression Scores of Grade 6 Halting Readers

Test	Mean Expression Score
Pre-test	3.00
Post-test	3.33
Mean difference	+0.33

Note. n = 12. Expression scores were based on a 5-point reading expression rubric, with higher scores indicating better intonation, phrasing, and overall expressiveness during oral reading.

The results in Table 3 indicate a slight improvement in the learners' reading expression after the intervention. The mean expression score increased from 3.00 in the pre-test to 3.33 in the post-test, reflecting a mean gain of 0.33. Although some learners showed no change or slight decline in expression, several participants demonstrated noticeable improvement, particularly in their use of intonation and overall expressiveness during oral reading.

The modest increase in the mean expression score suggests that improvements in reading expression tend to develop more gradually compared to gains in accuracy and reading speed. Consistent exposure to the same story and participation in guided reading activities helped learners become more familiar with the text, allowing them to focus more on phrasing and intonation.

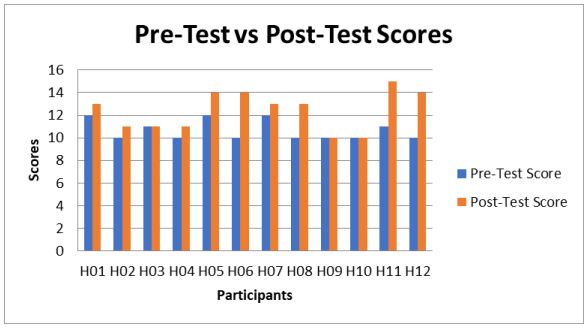
Reading Score Progress of Participants from Pre-Test to Post-Test

Figure 1 illustrates the comparison between the participants' pre-test and post-test reading scores. Overall, the post-test scores are noticeably higher than the pre-test scores across almost all participants. This upward shift shows that the learners experienced measurable improvement after the intervention.

While some participants showed slight increases, many demonstrated significant gains, such as H05, H06, H11, and H12, whose scores jumped by several points. Only a few participants (H03, H09, and H10) showed little to no change. The general pattern of higher post-test scores indicates that the reading intervention had a positive effect on improving students' reading performance.

Figure 1

Reading Score Progress of Participants from Pre-Test to Post-Test



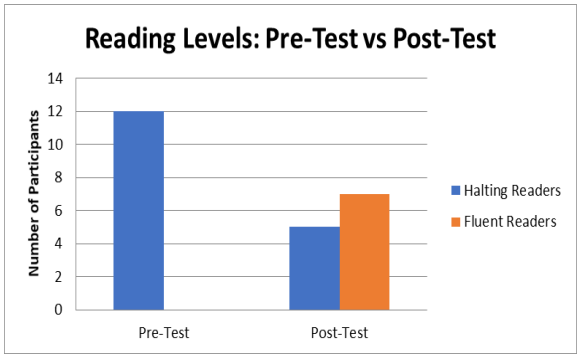
Comparison of Pre-Test and Post-Test Reading Levels

This graph compares the students' reading levels in the pre-test and post-test. It shows how many learners were classified as Halting or Fluent before the intervention and how these numbers changed after the intervention. The graph highlights a significant decrease in Halting Readers and a clear increase in Fluent Readers, indicating improvement in students' reading performance.

Figure 2 shows a clear shift in the students' reading levels from the pre-test to the post-test. Before the intervention, all twelve participants were classified as *Halting Readers*. After the intervention, the number of Halting Readers significantly decreased from twelve to five, while seven students progressed to the Fluent Reader category. This notable movement from Halting to Fluent indicates that more than half of the participants demonstrated substantial improvement in their reading proficiency.

Figure 2

Comparison of Pre-Test and Post-Test Reading Levels



Comparison of Reading Program Implementation Before and After Mentorship Guide: Qualitative Thematic Analysis

The comparison highlights significant improvements in the reading program after the implementation of the mentorship guide. Before implementation, activities were unstructured, strategies lacked consistency, home involvement was minimal, and challenges such as scheduling conflicts and limited support hindered progress. After implementation, the program became more systematic and goal-oriented, using consistent strategies like vocabulary exploration and modeled reading. Home and peer involvement also strengthened, while challenges were addressed through flexible scheduling and differentiated instruction. Overall, the observed outcomes improved, with learners showing greater confidence, teachers becoming more efficient, and reading mentors demonstrating stronger leadership.

Structure of Activities

This refers to the clear and organized sequencing of reading tasks implemented through the One Week, One Story Mentorship Guide.

This theme is supported by the following statements from Teacher Facilitators (TF):

Before the mentorship guide, wala juy guide ang teachers. Kung unsa lay makuha nga reading materials available mao ray ipabasa. Next day, lain napod among buhaton.—TF1

Random story books, random activities, no assessment dili makita kung ning improve ba ang bata within the week. Walay modeled reading, walay vocabulary exploration.— TF2

With the help of the mentorship guide, guided na mi unsay buhaton kada adlaw. Structured na ang among instructions sa mga student mentors, mas dali na lang ang trabaho, ug connected ang activities from Monday to Friday so ma routine gyud sa mga bata ang mga tasks nga ilang buhaton daily. —TF 1

With the guide, ma spot na ang errors sa bata kay naa may activity nga spot and fix. So makita jud weekly kinsay ning improve. —TF 2

Teacher facilitators found that before the mentorship guide, reading sessions lacked structure and consistency, with activities depending only on whatever materials were available. This made it difficult for them to monitor learner progress and maintain continuity from day to day. After the mentorship guide was introduced, they observed significant improvements in the flow of instruction. The guide provided clear daily routines, connected activities from Monday to Friday, and offered strategies such as modeled reading and "spot and fix," which helped them easily identify errors and track weekly improvement. Overall, the teachers recognized that the mentorship guide made their work more organized, efficient, and effective in supporting learner growth.

Instructional Strategies

These refer to the specific teaching approaches and techniques used during the reading sessions to support learners' fluency development. These strategies included modeled reading, vocabulary exploration, guided practice, and corrective feedback, which helped make instruction more focused, consistent, and responsive to learners' reading needs.

This theme is supported by the following statements from Student Mentors (SM):

Sa wala pa ang guide kay maglisod jud mi. Maglibog mi unsay among ipabasa sa mga bata. Usahay di sila ganahan mobasa kay murag lisoran ra sila sa among gipabasa. Unya kami pod maglisod pod mig pabasa nila.—SM1

Pag-abot sa mentorship guide kay smooth na kaayo ang process. Kabalo nami unsay buhaton sa Lunes, unsay buhaton sa Martes hangtud Bernes. Unya daghan pod activities, malingaw ra sila. Di napod ko maglisod ug pabasa nila kay same raman ang story sa tibuok semana, ma-master jud nila ang mga words.—SM2

Student mentors observed that reading sessions were difficult and confusing before the mentorship guide because materials were not appropriate and learners often struggled or refused to read. After the guide was introduced, the process became smoother and more organized, with clear daily activities and consistent stories used throughout the week. This helped learners enjoy the sessions more and master the words, making reading easier for both the students and the mentors.

Home Involvement

This refers to the participation and support of parents or guardians in reinforcing reading activities beyond the classroom. This included encouraging learners to practice reading at home, monitoring their progress, and providing assistance that helped strengthen reading habits and sustain improvements gained during the mentorship sessions.

This theme is supported by the statement from a teacher facilitator:

Sa wala pa ning mentorship guide, wala ra juy involvement ang mga parents kay ang reading sessions dire raman sa school. Wala gani kahibaw ang mga parents ug nag-unsa mi dire. Pero pag-abot aning mentorship guide, involved na gyud sila kay naa may activities nga adto nila buhaton sa balay. Ang parent man jud ang mo-record sa ilang pagbasa. So, ang parent pod makakita sa progress sa ilang mga anak.—TF1

Teacher facilitator noted that parent involvement was minimal before the mentorship guide since reading activities happened only in school. With the introduction of the guide, parents became actively engaged through home-based tasks and reading logs. This allowed them to participate in their children's learning and observe their reading progress firsthand.

Challenges Encountered

These refer to the difficulties experienced during the implementation of the reading intervention. These included scheduling constraints, limited time for sessions, varying learner abilities, and the need for continuous support, which affected the smooth delivery of some activities and required adjustments from teachers and mentors.

This theme is supported by the statements from teacher facilitators:

For me kay ang overlapping teacher schedules labi nag naa tay upcoming school activities, dili mi maka-attend sa mga bata during reading session kay need pod among time and effort sa pag-prepare for the activities. Then, kani pong lates and absences sa mga bata. Naay usa ka participant nga sige ug absent, siguro tungod pod sa kalayo sa ilaha unya sigeg uwan-uwan dangog kaayo ilang agianan.—TF2

Aron ma. addressed ni nga challenge, need gyud ming mo extend sa number of weeks kay ang mga adlaw nga wala namo masudli, amoa man jud tong gi-cover. Unya katong sigeg ka late ug sigeg absent, amoang gitagaan ug special time like inag ka udto or inag ka hapon para ma one-on-one ug tudlo sa among mentors.—TF1

Teacher facilitators explained that overlapping school activities, along with students' frequent absences and late arrivals, made it difficult to conduct consistent reading sessions. To address these challenges, they extended the implementation period and provided one-on-one sessions for learners who often missed classes. This allowed mentors to recover lost instructional time and ensure that every learner still received the support needed.

Observed Outcomes

These outcomes included improvements in learners' reading fluency and confidence, increased engagement during reading sessions, and more efficient facilitation and mentoring practices observed among teachers and student mentors.

This theme is supported by the statements from teacher facilitators and student mentors:

Before the mentorship guide kay limited kaayo ang progress and participation sa mga bata. Murag wa silay gana kay murag gipul-an na silage basa kada buntag.—SM3

After the mentorship guide kay confident na kaayo sila, kusog na mo participate, then mas makita najud namo ilang progress kay every week naa man mi lista kung kinsa ang ning progress nila.—SF24

Sa part pod namo as facilitators kay nahimo ming mas effective sa among pag tudlo nila kay organized naman ang among activities.—TF1

Sa part namo as mentors, mas na develop among leadership skill ug mas nahimo ming responsible sa among mga tasks. At the same time, mas na improve pod ang among communication reading and skills.—SM4

Participants shared that the learners showed limited progress and low engagement before the mentorship guide, often becoming uninterested in daily reading tasks. After the guide was implemented, students became more confident, participative, and showed visible improvement through weekly monitoring. Teacher facilitators also felt more effective due to organized activities, while student mentors

experienced growth in leadership, responsibility, and communication skills. Overall, the guide enhanced learner outcomes and strengthened the roles of both teachers and mentors.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The study concludes that the *One Week, One Story Mentorship Guide* is an effective intervention for improving the reading fluency and confidence of halting readers. The combined results of descriptive statistical analysis and thematic interpretation demonstrate that structured, peer-assisted reading sessions foster measurable academic improvement and stronger learner motivation. The guide also served as a sustainable framework for teachers, ensuring continuity of reading instruction regardless of staff changes.

Reflecting on the results of the One Week, One Story Mentorship Guide, we recognized how the combination of structured activities and consistent instructional strategies significantly influenced learners' reading development. The improvements reflected in the pre-test and post-test results-particularly in reading accuracy and speed, and the gradual gains in expression-validated what we observed during the implementation. These quantitative results confirmed that learners benefited from repeated exposure to the same story and guided practice, allowing them to read with better pacing, fewer errors, and increased confidence over time.

Beyond the numerical improvements, the qualitative findings deepened our understanding of why the intervention worked. We realized that having a clear structure of activities provided both teachers and student mentors with direction and confidence in facilitating reading sessions. Unlike before, when activities were random and inconsistent, the mentorship guide created a predictable routine that made learning less intimidating for learners. Instructional strategies such as modeled reading, vocabulary exploration, and "spot and fix" not only supported fluency development but also made it easier for us to monitor progress weekly and respond to learners' needs more effectively.

Along the way, we also observed that the use of **rewards and recognition** during the weekly Friday sessions had a positive impact on the learners' confidence and motivation. Recognizing learners who showed improvement and allowing them to see their names acknowledged motivated them to participate more actively in reading activities. Learners who were previously shy and hesitant to stand and read aloud gradually became more willing to participate, knowing that their efforts could be recognized. This simple yet meaningful strategy encouraged consistent participation, reduced fear of making mistakes, and helped build learners' confidence in reading.

We also reflected on the important role of **home involvement** in sustaining learners' progress. Engaging parents through home-based reading activities and reading logs helped extend learning beyond the classroom and strengthened learners' reading habits. Although challenges such as scheduling conflicts, absences, and limited time were encountered, we learned to adapt through flexible scheduling and individualized support.

Overall, this intervention allowed us to witness not only improvements in learners' reading fluency and confidence but also growth in our own practices as facilitators and mentors. As a team, we became more organized, reflective, and collaborative, reinforcing our belief that structured, learner-centered interventions can create meaningful and lasting change in reading instruction.

Based on the positive quantitative and qualitative findings of the study, the following recommendations are proposed to strengthen and sustain the implementation of the One Week, One Story Mentorship Guide:

1. Institutionalize the Mentorship Guide

The One Week, One Story Mentorship Guide may be formally adopted as a regular component of the school's reading program. Institutionalizing the guide will ensure continuity, consistency, and sustainability of

structured reading interventions across grade levels. This will also help establish a shared framework for reading instruction that teachers and mentors can consistently follow.

2. Provide Differentiated and Inclusive Support

Instructional strategies may be further tailored to address the diverse needs of learners, particularly those with special educational needs, frequent absences, or learning difficulties. Providing flexible schedules, one-on-one or small-group sessions, and adjusted pacing will help ensure that no learner is left behind and that all students can benefit from the intervention.

3. Conduct Regular Capacity-Building Activities

Continuous training and professional development for teachers and student mentors are recommended to strengthen their skills in reading facilitation. Workshops and coaching sessions focusing on effective use of the mentorship guide, reading strategies, learner motivation, and progress monitoring will help maintain quality implementation and enhance instructional effectiveness.

4. Develop and Integrate Digital Reading Resources

To support continuity and accessibility, digital or pre-recorded story resources for modeled reading may be developed. These materials can serve as supplementary tools for learners who are absent, for home-based practice, or for blended learning contexts. Digital resources will also help standardize modeled reading and support independent practice.

5. Strengthen Continuous Monitoring and Evaluation

Ongoing monitoring of learners' reading progress is recommended to assess long-term impact and guide further improvements. Collecting regular feedback from teachers, student mentors, learners, and parents will allow refinements to the mentorship guide and ensure that it remains responsive to learners' needs and classroom realities.

Through these actions, the One Week, One Story Mentorship Guide can continue to bridge reading gaps, build learner confidence, and sustain a literacy-rich and supportive learning environment for all learners.

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THE GUIDED SELF-SELECTED READING TOWARD ENHANCED READING COMPREHENSION

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INTRODUCTION

Reading comprehension is an essential component of science learning, as it enables learners to understand scientific vocabulary, explanations, and procedures necessary for concept development. Classroom observations revealed that many Grade 7 learners experience difficulty in comprehending science texts, which adversely affects their performance in learning activities, assessments, and classroom discussions. Research has consistently shown that reading comprehension significantly influences learners' achievement in science; however, limited classroom-based interventions have been implemented to address this concern at the junior high school level. In response, this action research implemented the Guided Self-Selected Reading strategy to provide structured and regular reading opportunities aimed at improving learners' reading comprehension. This study seeks to contribute practical, school-based evidence on strengthening reading comprehension to support science learning and overall academic performance.

DISCUSSION OF RESULTS

The research employed a pretest and post-assessment using Phil-IRI tool to evaluate the improvement in learners' reading comprehension levels. The data collected from the participants before and after the intervention is summarized in the following tables.

Table 1: Comprehension Score of Participants **Before the Intervention**

Student	Grade Level Passage	Pre-test Comprehension Score
1	4	33.3%
2	4	50%
3	4	50%
4	4	50%
5	4	50%
6	4	33.3%
7	5	57.14%
8	5	42.86%
9	5	42.86%
10	5	42.86%
11	5	42.86%
12	5	57.14%
13	6	25%
14	6	37.5%
15	6	37.5%
16	6	25%
17	6	12.5%
18	6	50%

Table 2: Comprehension Score of the Participants **After the Intervention**

Student	Grade Level Passage	Posttest Comprehension Score
1	4	83.33%
2	4	66.67%
3	4	50%
4	4	66.67%
5	4	50%
6	4	83%
7	5	57.14%
8	5	85.71%
9	5	50%
10	5	85.71%
11	5	71.43%
12	5	71.43%
13	6	75%
14	6	50%
15	6	75%
16	6	50%
17	6	50%
18	6	62.5%

The post test results showed a notable improvement in learners' reading comprehension across all grade levels.The post test scores increased to a range of 50% to 85.71%, with several learners achieving scores above 70%, particularly in Grade Levels 4 and 5. Even learners exposed to Grade 6 passages showed improved performance compared to their pretest results.

Student	Pre-test Comprehension Score	Post-test Comprehension Score	Comprehension Level based on Posttest Result
1	33.3%	83.33%	Independent
2	50%	66.67%	Instructional
3	50%	50%	Frustration
4	50%	66.67%	Instructional
5	50%	50%	Frustration
6	33.3%	83%	Independent
7	57.14%	57.14%	Frustration
8	42.86%	85.71%	Independent
9	42.86%	50%	Frustration
10	42.86%	85.71%	Independent
11	42.86%	71.43%	Instructional
12	57.14%	71.43%	Instructional
13	25%	75%	Instructional
14	37.5%	50%	Frustration
15	37.5%	75%	Instructional
16	25%	50%	Frustration
17	12.5%	50	Frustration
18	50%	62.5	Instructional

The comparison of pretest and post test data indicates that learners exhibited measurable gains in reading comprehension, suggesting that the implemented reading intervention o had a positive effect on learners' ability to understand grade-level texts.

The movement from Frustration to Instructional—and in some cases, toward Independent—reflects the positive impact of GSSR on learners' comprehension abilities. The opportunity to choose reading materials that aligned with their interests, combined with teacher guidance, likely increased their motivation, engagement, and comprehension. These results support the effectiveness of

GSSR in helping struggling readers improve their capacity to understand grade-level texts. It also affirmed the study of Issaczadeh, Tous, and Tahriri in 2016, that the use of guided self-selected reading materials significantly improved comprehension.

Overall, the findings indicate that Guided Self -Selected Reading (GSSR) is an effective approach in improving learners' reading comprehension, particularly among struggling readers. The structured support provided by teachers, coupled with learners' autonomy in selecting interest-based texts, fostered a more engaging and supportive reading environment. As evidenced by the shift in comprehension levels, GSSR not only enhanced learners' understanding of grade-level passages but also contributed to the development of more confident and independent readers, highlighting its potential for broader classroom application.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The study concludes that Guided Self-Selected Reading (GSSR) effectively improved learners' reading comprehension, as shown by higher post-test scores compared to pre-test results. The strategy enhanced learner motivation and engagement by allowing text selection based on interest and ability, supported by teacher guidance. It is recommended that GSSR be sustained as part of regular reading instruction, with the provision of leveled reading materials and targeted remediation for learners who need additional support. School administrators are encouraged to support its implementation through adequate resources and teacher capacity-building. This action research affirms the value of learner-centered reading strategies in addressing comprehension difficulties. The positive outcomes highlight the importance of combining learner choice with structured guidance to promote meaningful and sustained reading improvement. structured values education and its role in shaping well-rounded, morally grounded individuals.

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The dissemination of the research findings was conducted through a Learning Action Cell (LAC) session attended by teachers and school personnel. During the session, the researcher presented the objectives, methodology, findings, and implications of the study, particularly highlighting the effectiveness of the intervention in improving learners' reading performance. The LAC session also served as a venue for professional discussion, reflection, and sharing of possible strategies that may be adopted to further enhance reading instruction and learner development.

PROJECT READ (READING ENGAGEMENT AND DEVELOPMENT): IMPROVING GRADE 7 LEARNERS' READING PROFICIENCY USING A VALIDATED READING TOOLKIT

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INTRODUCTION

Reading is an important part of students' academic success. It gives students the ability to access, decode, and understand information across the curriculum. At Cantabaco National High School, incoming Grade 7 students are struggling with reading fluency and comprehension, hindering them from fully grasping material not just in English, but also in other subjects requiring reading skills. If not addressed, they can lead to decreased motivation, poorer measurements of success, and detrimental effects on the students' prospects for future schooling.

Reading difficulties of struggling grade 7 students adversely affect understanding as well as interest, confidence, and actively engaging in learning. Even though there are reading programs, most of them remain generic and untailored, lacking digital and local significance for Filipino readers. This study seeks to determine whether a validated Reading Toolkit, designed and tested within the local context, can effectively improve the reading fluency and comprehension of struggling students at Cantabaco National High School.

While there is existing research that highlights the power of structured reading interventions, very little research exists on the development of culturally relevant and technology-driven reading toolkits for struggling Grade 7 readers in Philippine secondary schools. This study presents the development and assessment of utilization of a validated Reading Toolkit to develop a reading fluency and comprehension intervention that also affords parental involvement in literacy.

DISCUSSION OF RESULTS

The study employed a one-group pretest–posttest design involving eight struggling Grade 7 learners who participated in an eight-week reading intervention. Results revealed substantial improvements in reading proficiency, with the mean pre-test score increasing from 1.38 out of 10 (13.75%) to a mean post-test score of 6.13 out of 10 (61.25%), reflecting a mean gain of 47.5 percentage points. All former non-readers progressed to the frustration level, while five learners advanced to the instructional level, indicating meaningful gains in decoding, comprehension, and reading confidence (Department of Education, 2018).

Table 1
Pre-Test Results of Participants

Learner	Pre-Test Score (10)	Pre-Test Level	Stories Behind the Data	Factors Contributing to Learning Loss
1	1	Frustration	Read word by word with frequent pauses; showed signs of guessing unfamiliar words.	Rarely practiced reading outside class; lacked home support and reading exposure.
2	2	Frustration	Could read short sentences but lost focus easily and failed to recall key details.	Limited vocabulary and weak comprehension skills due to minimal reading habits.
3	0	Non-Reader	Could not identify common sight words and refused to participate during reading tasks.	Early literacy skills were not developed; lacked motivation and encouragement.
4	0	Non-Reader	Recognized only a few familiar words and could not blend letter sounds correctly.	Home language differed from English; little or no reading reinforcement at home.
5	0	Non-Reader	Became easily tired during reading tasks and avoided eye contact when called to read.	Missed early literacy interventions; limited exposure to phonics and reading drills.

Table 2
Post-Test Results of Participants

Learner	Post-Test Score (10)	Post-Test Level	Stories Behind the Data	Factors Facilitating Learning Gains
1	7	Instructional	Became more confident during guided reading sessions and participated actively.	Step-by-step instruction, frequent feedback, and parental involvement boosted confidence.
2	6	Instructional	Reads short passages with better understanding and fewer errors.	Interactive drills and targeted vocabulary lessons improved comprehension.
3	5	Frustration	Can now read simple sentences and answer basic questions with support.	Repetitive reading and story-based exercises reinforced decoding skills.
4	5	Frustration	Shows steady engagement and reads with less hesitation.	Consistent guided practice and home follow-up enhanced reading stamina.
5	5	Frustration	Identifies most words correctly and begins to make sense of short paragraphs.	Phonics-focused sessions and use of visual aids supported word recognition.
6	6	Instructional	Reads aloud more smoothly and understands the main idea of short texts.	Vocabulary-building tasks and guided oral reading strengthened fluency.
7	8	Instructional	Handles longer passages with good comprehension and active participation.	Multi-skill approach integrating decoding, fluency, and comprehension activities.
8	7	Instructional	Participates willingly and reads with improved fluency and confidence.	Positive reinforcement, peer reading, and consistent monitoring encouraged progress.

Data show that all of the learners in this study made significant gains towards improving their reading skills. None of the individuals in this group were classified as non-readers once they completed the Reading

Toolkit intervention program. The results of this study support the conviction that the use of the Reading Toolkit is an effective, coherent and comprehensive model for improving reading performance.

Table 3.

Comparative Analysis: Pre-Test vs. Post-Test

Learner	Pre-Test Score	Pre-Test Level	Post-Test Score	Post-Test Level	% Gain	Interpretation
1	1	Frustration	7	Instructional	+60%	Major improvement; scaffolded practice enabled independent reading
2	2	Frustration	6	Instructional	+40%	Significant gain; vocabulary and fluency exercises effective
3	0	Non-Reader	5	Frustration	+50%	Substantial progress; intervention built foundational decoding skills
4	0	Non-Reader	5	Frustration	+50%	Improved reading stamina and comprehension; parental support critical
5	0	Non-Reader	5	Frustration	+50%	Gains achieved through interactive storytelling and repeated reading
6	2	Frustration	6	Instructional	+40%	Intervention fostered fluency, comprehension, and self confidence
7	5	Frustration	8	Instructional	+30%	Higher baseline accelerated mastery of comprehension tasks
8	1	Frustration	7	Instructional	+60%	Structured toolkit and reinforcement led to rapid skill acquisition

Qualitative findings from student surveys, parent feedback, focus group discussions, and teacher observations supported the quantitative results.

Fig. 1

Word Cloud of Students' Reading Experience Feedback

Learners reported enhanced motivation, enjoyment and confidence in reading assignments while teachers reported improved comprehension strategies, engagement and dedication during reading activities.

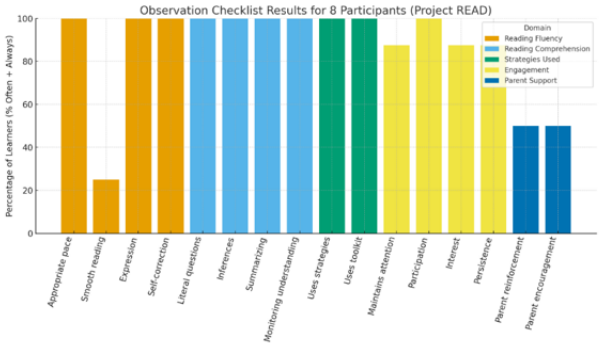
Table 4

Summary of Student Survey Responses on Toolkit Engagement, Usefulness, and Usability (N=8)

Survey Section & Item	Mean	Interpretation
A. Engagement		
1. I looked forward to our reading toolkit sessions.	3.25	Agree
2. I felt focused while using the toolkit activities.	3.25	Agree
3. The activities made me want to keep reading.	3.25	Agree
4. I enjoyed discussing my ideas with classmates.	3.25	Agree
Section A Mean	3.25	Agree
B. Perceived Usefulness		
5. The toolkit helped me understand the text better.	3.38	Agree
6. The toolkit showed me strategies I can use in other subjects.	3.50	Agree-Strongly Agree
7. I feel more confident answering comprehension questions.	3.13	Agree
8. The toolkit materials matched my reading level.	3.38	Agree
Section B Mean	3.35	Agree
C. Usability & Clarity		
9. The instructions were easy to follow.	3.25	Agree
10. I could complete most tasks without extra help.	3.25	Agree
11. The time for each activity was just right.	3.13	Agree
Section C Mean	3.21	Agree
D. Challenge & Support		
12. The activities were the right amount of challenge.	3.00	Agree*
13. Teacher feedback helped me improve.	3.25	Agree
14. I knew what to do when I got stuck.	3.13	Agree
Section D Mean	3.13	Agree
E. Overall		
15. Overall, the toolkit improved my reading experience.	3.88	Strongly Agree
Overall Survey Mean	**3.30**	**Agree**

Fig. 2

Teacher's Observation Notes



Parents also reported increased confidence in reading and more regular use of methods at home. However, fluency development and consistency of family support continued to be areas that needed reinforcement, indicating a need for continuous and varied instruction.

Table 5

Summary of Parent Survey Responses on Home Usability and Perceived Impact (N=6)

Survey Section & Item	Mean	Interpretation
A. Home Usability		
1. Tasks were simple to understand at home.	3.50	Agree-Strongly Agree
2. Time required was manageable.	3.43	Agree-Strongly Agree
3. We had what we needed.	3.33	Agree
4. My child could explain what to do.	3.50	Agree-Strongly Agree
Section A Mean	3.44	Agree-Strongly Agree
B. Parent Involvement		
5. Toolkit encouraged us to talk about reading.	3.50	Agree-Strongly Agree
6. We spent more time reading together.	3.17	Agree
7. Prompts helped me guide my child's thinking.	3.50	Agree-Strongly Agree
8. I often used the toolkit at home to help.	3.33	Agree
9. I had sufficient time/resources to support use.	3.33	Agree
10. The toolkit was simple and easy to use at home.	3.33	Agree
Section B Mean	3.36	Agree
C. Perceived Impact on Child		
11. My child is more confident with reading.	3.50	Agree-Strongly Agree
12. My child reads more often.	3.50	Agree-Strongly Agree
13. My child uses strategies independently.	3.50	Agree-Strongly Agree
Section C Mean	3.50	Agree-Strongly Agree
Overall Survey Mean	3.42	Agree-Strongly Agree

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Conclusions

- **Significant Reading Improvement:** The data present significant and substantial evidence of increased reading skills through increases in pre- to post-test score comparison, improvement of student overall reading level, and positive student feedback having resulted directly from the participants' use of the Reading Toolkit.

- **High Engagement and Motivation**: Students were motivated to participate, develop an interest in reading, and engage in interactive and culturally relevant materials/activities.

- **Transferable Learning Strategies**: The toolkit provided comprehension strategies that students could apply in other subjects, fostering general academic skills.

- **Role of Home Support:** The degree to which parents had supported their child's participation in the reading intervention directly impacted the students' success in the Reading Remediation Program; however, the difference in Grade 7 parental involvement supports the need for a planned and organized collaborative effort between home and school.

- **Need for Differentiation and Fluency Support:** Although students had made substantial progress in developing reading comprehension, there were significant differences in students' reading abilities whereby some will still require differentiated instruction and specific assistance for funding to develop reading fluency in the area of decoding for future Reading Toolkit applications.

Recommendations

- **Sustain and Scale the Toolkit:** The Reading Toolkit needs to be formally implemented into the literacy program, so that the Reading Toolkit's outcomes and gains may be extended to other Grade classes and/or to other grade levels.

- **Enhance Differentiation:** Appropriate scaffolded activities that are based on the student's reading abilities are required to provide students at all levels with appropriate levels of challenge.

- **Strengthen Home-School Partnerships**: Provide or facilitate educational sessions (ex: parent conference) that will help parents to understand how to continue their support of their children at home through consistent reading each night.

- **Develop Reading Fluency Through Strategies:** Systematic phonics/ decoding activities that support and enhance the comprehension strategies developed from the Reading Toolkit need to be included in the students' daily reading program to foster greater fluency in their reading ability.

- **Encourage Ongoing Monitoring and Reflection:** Develop and maintain observational log sheets, survey forms, and self-reflection activities for continual development and ongoing evolution of the Reading Toolkit and to meet the needs of the learners to ensure sustainability.

- **Encourage Collaboration:** Promote opportunities for students to collaborate with peers to have opportunities to improve their comprehension and motivation and to learn through social interactions.

Reflection

Reports on the use of the validated Reading Toolkit indicated that the implementation was both a positive and enlightening experience. During the implementation of the Reading Toolkit, an increase in student reading comprehension and reading grade levels was noted. Student learners who were previously classified as non-readers or at the frustration level prior to using the Reading Toolkit showed extensive progress in decoding, comprehension and overall involvement in their learning and achieving at the instructional level. Based upon a mean increase of 47.5% in post-test scores from pre-test performance, we can see the effectiveness

of a structured and multi-component approach that included the elements of reading fluency, vocabulary development and reading comprehension (Lovett et al., 2022).

The qualitative data from the implementation of the Reading Toolkit demonstrated the value of the qualitative data in further informing the process of students' learning. Students continuously expressed high levels of motivation and interest during reading sessions through the use of culturally relevant literature, interactive activities, and discussions with peers. Classroom observations also showed that students were persevering through sustained levels of participation, increasing the use of comprehension strategies and overall enthusiasm for reading. However, and not surprisingly, reading fluency will still require further development. Parents of the students participating in the Reading Toolkit project provided positive feedback. Many parents reported that they encouraged their children to read in the home; however, the frequency of home engagement varied considerably by student, i.e., time limitations to support reading activities, lack of confidence to facilitate reading at home (Guy-Evans, 2024).

Additionally, the implementation of the Reading Toolkit project reinforces the importance of using a differentiated and scaffolded approach to support student learning. Variances in student learning perceptions among the sample, implied a clear need for students to have additional support to meet their individual learning needs. This point supports the notion of providing effective literacy interventions based upon individual student learning within their respective zone of proximal development (Zhang, 2007). Finally, while comprehension skills improved significantly, the continued development of foundational literacy skills, i.e., word recognition and fluency, require systematic and ongoing reinforcement. Thus, the toolkit is designed to be embedded in a total literacy program with multiple opportunities to reinforce and develop literacy skills.

In summary, the collaboration and participatory action research involving students, parents and teachers during the implementation of the Reading Toolkit provides statistical and qualitative evidence that the Reading Toolkit was effective in improving students' reading skills, reading motivation, student reading confidence and student attitude toward reading. The data collected affirms that well-designed and context-sensitive literacy interventions can have a meaningful and sustained impact on the literacy development of students

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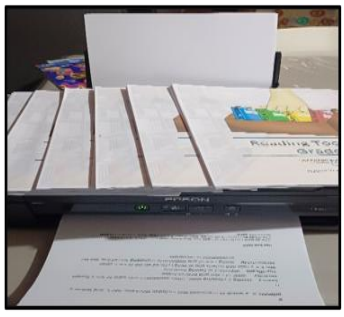

ENHANCING THE READING COMPREHENSION OF GRADE 7 STUDENTS WITH READING DIFFICULTIES THROUGH DIFFERENTIATED INSTRUCTION

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INTRODUCTION

Reading comprehension is a foundational skill that significantly influences learners' academic performance across all subject areas. In Luray II National High School, the Group Screening Test revealed that a considerable number of Grade 7 learners were performing at the struggling and frustration levels in reading comprehension. These learners exhibited difficulty in identifying main ideas, making inferences, and understanding vocabulary in context, which adversely affected their classroom participation and achievement.

To address this concern, the researcher implemented **Differentiated Instruction for Reading Enhancement (DIRE)** as an intervention strategy. DIRE was designed to provide varied reading tasks, guided activities, leveled texts, and scaffolded instruction suited to learners' individual reading levels and needs. This action research aimed to determine the effectiveness of DIRE in improving the reading comprehension skills of struggling Grade 7 learners and to provide practical insights for teachers handling heterogeneous reading abilities.

Specifically, the study sought to:

1. Determine the pretest reading comprehension level of the struggling Grade 7 learners.
2. Determine the posttest reading comprehension level after the implementation of DIRE.
3. Identify whether there is a significant improvement in learners' reading comprehension after the intervention.

DISCUSSION OF RESULTS

This action research employed a pre-intervention and post-intervention design to determine the effectiveness of differentiated instruction in enhancing the reading comprehension skills of Grade 7 struggling readers.

Participant Profile and Baseline Reading Data

Table 4 presents participants' demographic and baseline reading profiles. All 11 students were identified at the frustration level through the Phil-IRI assessment. The pretest **mean score of** 46.0% (SD = 16.9) underscores pervasive comprehension challenges. Using Phil-IRI descriptors, most students required guided reading support.

Note. *Phil-IRI reading-level criteria:* Independent *(97–100% WR; 80–100% Comp.),* Instructional *(90–96% WR; 59–79% Comp.),* Frustration *(≤89% WR; ≤58% Comp.).*

Table 4
Pretest Reading Comprehension Scores, Levels, and Observed Challenges (n = 11)

Participant ID	Age	Gender	Phil-IRI Classification	Pretest Score (%)	Reading Level	Descriptor
1	12	M	Frustration	66.7	Instructional	Reads with guidance; struggles with higher-order comprehension.
2	15	M	Frustration	64.6	Instructional	Understands main ideas with assistance; limited inference skills.
3	14	M	Frustration	60.4	Instructional	Needs scaffolding to analyze text structures.
4	14	M	Frustration	60.4	Instructional	Relies on visual aids and teacher prompts.
5	13	M	Frustration	50.0	Frustration	Requires continuous teacher support to decode meaning.
6	15	M	Frustration	47.9	Frustration	Limited vocabulary and fluency impede comprehension.
7	14	F	Frustration	33.3	Frustration	Avoids reading aloud; exhibits anxiety during comprehension tasks.
8	14	F	Frustration	29.2	Frustration	Struggles with multi-syllabic decoding and context clues.
9	13	F	Frustration	25.0	Frustration	Minimal comprehension; dependent on teacher mediation.
10	14	F	Frustration	20.8	Frustration	Easily distracted; requires scaffolded assistance.
11	13	F	Frustration	18.8	Frustration	Lacks foundational decoding and fluency skills.
M (SD)	—	—	—	**46.0 (16.9)**	—	—

The table confirms that although all participants were initially identified as frustration-level readers, their comprehension scores revealed a subset at the instructional threshold (Participants 1–4). This implies that the frustration category is not homogeneous, adding more support for DI as each student must be taught based on their readiness (Tomlinson, 2014). Over 50% scoring below 50% follow much more structured scaffolding and differentiation support is clearly indicated.

Posttest Reading Comprehension Performance

After the four-week differentiated instruction intervention, the students made moderate to strong improvements in all areas of comprehension. The results of the individual pretest and posttest, as well as their computed percentage gains are summarized in Table 5. IBM SPSS Statistics v29 was used for data analysis where raw scores were inserted into paired-sample datasets.

Table 5
Posttest Reading Comprehension Scores and Levels (n = 11)

Participant ID	Posttest Score (%)	Reading Level	Descriptor
1	75.0	Independent	Reads independently with high comprehension and fluency.
2	68.8	Instructional	Demonstrates improved comprehension and participation.
3	64.6	Instructional	Can summarize stories; shows consistent strategy use.
4	60.4	Instructional	Maintains comprehension level; needs refinement of higher-order skills.
5	54.2	Frustration	Displays greater confidence; still dependent on scaffolding.
6	43.8	Frustration	Minor regression; requires focused vocabulary intervention.
7	41.7	Frustration	Improved fluency; motivation increased.
8	37.5	Frustration	Better decoding; comprehension developing gradually.
9	39.6	Frustration	Substantial gain; employs strategies learned.
10	33.3	Frustration	More attentive during reading tasks.
11	31.3	Frustration	Emerging comprehension; sustained effort needed.
M (SD)	52.5 (15.8)	—	—

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The posttest results indicate measurable increases in both understanding and self-efficacy. The movement of many from reading frustration to instructional level is confirming evidence that DI is effective in increasing literacy.

Table 6
Comparative Summary of Pretest and Posttest Scores, Reading Levels, and Gains (n = 11)

Participant	Pretest (%)	Pretest Level	Posttest (%)	Posttest Level	% Gain	Descriptor
1	66.7	Instructional	75.0	Independent	+8.3	Transitioned to independent reading with minimal guidance.
2	64.6	Instructional	68.8	Instructional	+4.2	Maintained instructional level; improved confidence.
3	60.4	Instructional	64.6	Instructional	+4.2	Stable progress; enhanced summarization ability.
4	60.4	Instructional	60.4	Instructional	0.0	Plateau; needs enriched reading material exposure.
5	50.0	Frustration	54.2	Frustration	+4.2	Incremental improvement in decoding and vocabulary.
6	47.9	Frustration	43.8	Frustration	-4.1	Decline due to external distractions.
7	33.3	Frustration	41.7	Frustration	+8.4	Enhanced engagement and oral fluency.
8	29.2	Frustration	37.5	Frustration	+8.3	Stronger word recognition; improved effort.
9	25.0	Frustration	39.6	Frustration	+14.6	High gain; benefited from peer-assisted learning.
10	20.8	Frustration	33.3	Frustration	+12.5	Increased motivation and participation.
11	18.8	Frustration	31.3	Frustration	+12.5	Remarkable improvement in comprehension confidence.
Group Mean (SD)	46.0 (16.9)	—	52.5 (15.8)	—	+6.5	—

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There was positive gain across the board, but not all learners functioned independently in their reading. The largest gains were seen with students who began with the lowest score in the pretest, consequently supporting the equity-driven nature of differentiated instruction.

Reflection journals and teacher observations supplement quantitative findings with qualitative data. These stories complement the quantitative findings, demonstrating that motivation, engagement and coping strategies mediates learning gain (Creswell & Creswell, 2018).

Statistical Analysis of Reading Gains

Students showed significant improvement in their reading comprehension as indicated by the quantitative findings associated with DI. A paired-samples t-test was conducted to compare pre and posttest MEAN scores, nervousness (between-subjects) anxiety (within-subject), for the treatment group; results are summarized in Table. 003, with a large effect size (Cohen s d = 1.17) (Cohen, 1988). This suggests that the observed learning gains were not incidental but arose from the systemic and organized use of dynamic instructional strategies.

The findings of the study confirm previous research supporting differentiated instruction as a fair and inclusive teaching practice. Hall (2002) and Tomlinson (2014) argue that differentiation is used to compensate for variability within student context by differentiating instruction while accommodating to learner needs which promotes academic growth and increases engagement.

As seen in Sousa and Tomlinson (2011), this study shows that even struggling readers can accelerate their reading progress when provided with appropriate levels of challenge and support. Aligning with the same idea, results are in-line with DepEd's Hamon: Bawat Bata Bumabasa (3Bs) program which pushes for early responsive/learner-centered literacy interventions for the National Capital Region (NCR) through public schools.

Therefore, differentiated instructional practices become a research-supported pedagogical framework to address the reading problems of junior high school students struggling with comprehension in English, such as those based on their identification status

from Phil-IRI results as frustration level readers.

The action research underscored the transformative potential of differentiated instruction. It confirmed that learners' reading comprehension can significantly improve when instruction is flexible, data-informed, and student-centered. The intervention empowered both the teacher and the learners: the teacher as an adaptive facilitator, and the learners as active constructors of meaning.

This classroom-based inquiry also highlighted the need for sustained literacy interventions beyond remedial programs. To maintain the momentum of improvement, consistent follow-through through reading clubs**,** peer-assisted learning, and formative assessment systems is recommended.

The results affirm that differentiated instruction is an effective strategy for improving the reading comprehension of Grade 7 students with reading difficulties. Statistically significant gains, coupled with qualitative evidence of motivation and confidence, validate DI as both a practical and research-supported pedagogical framework.

Ultimately, this study contributes to the growing body of Philippine classroom-based research supporting the Hamon: Bawat Bata Bumabasa (3Bs) initiative, providing empirical grounding for ongoing efforts to achieve inclusive and equitable quality education as envisioned in Sustainable Development Goal 4 (SDG 4).

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

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

1. Prior to the implementation of DIRE, most Grade 7 struggling readers were at the frustration and struggling levels in reading comprehension.
2. After the intervention, learners demonstrated notable improvement, with several progressing to higher reading levels.
3. Differentiated Instruction for Reading Enhancement proved to be an effective intervention in improving the reading comprehension skills of struggling readers.

Overall, the study confirms that differentiated and learner-centered reading strategies significantly enhance comprehension performance among struggling learners.

In light of the findings and conclusions, the following recommendations are offered:

1. **For English Teachers:** Regularly implement differentiated reading activities and provide leveled texts and guided reading sessions to address varied learner needs.
2. **For School Administrators:** Support reading intervention programs by providing instructional materials, training, and time for remediation activities.
3. **For Learners:** Encourage consistent reading practice at home and active participation in guided and independent reading activities.
4. **For Future Researchers:** Conduct similar studies using experimental designs or larger samples to further validate the effectiveness of differentiated reading interventions.

Reflection constitutes a pivotal component of action research, functioning as the bridge between intervention and professional learning for the teacher-researcher. In this study, the primary objective was to address students' immediate reading challenges; however, the process simultaneously deepened my understanding of pedagogical practice. Implementing differentiated instruction (DI) required not only technical proficiency but also adaptability, creativity, and patience. Designing lessons for multiple readiness levels prompted deliberate planning in lesson structure, material differentiation, and formative assessment, ensuring that each learner's needs were purposefully addressed.

Following the iterative cycle of planning, acting, observing, and reflecting (Kemmis & McTaggart, 1988), instructional strategies were continually refined in response to classroom realities (Faryad, 2018). For instance, when Week 3 observations indicated declining engagement, reflection led to the integration of collaborative and game-based reading activities. This modification resulted in renewed student motivation and improved comprehension in Week 4, illustrating the practical value of reflective pedagogy.

Qualitative evidence from student journals revealed that enjoyment, active coping strategies, self-perception, and engagement were intricately linked to comprehension gains. Learners who consistently practiced buddy reading, decoding exercises, and self-monitoring demonstrated higher posttest improvement. This finding reinforces the principle that effective differentiated instruction nurtures not only cognitive development but also affective and motivational dimensions of learning.

Professionally, the research strengthened my confidence in implementing evidence-based literacy strategies and in systematically using data to inform instruction. It also emphasized the importance of collegial collaboration with fellow teachers and literacy specialists emphasizing that addressing reading difficulties is a shared professional responsibility. Moving forward, I see myself not only as a classroom practitioner but also as a reflective educator and contributor to the discourse on differentiated instruction and literacy advancement within my school and division.

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RESEARCH DOCUMENTATION

IMPROVING ENGLISH READING COMPREHENSION OF GRADES 7-9 IPED LEARNERS THROUGH CULTURALLY RESPONSIVE RECIPROCAL TEACHING

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INTRODUCTION

Reading proficiency represents a significant challenge in the Philippines, with national assessments indicating that many students do not reach minimum proficiency levels (OECD, 2023). This challenge is particularly evident among Indigenous Peoples (IP) learners, who may encounter curricula and materials not reflective of their cultural identities (Magwilang, 2023). In response, pedagogical approaches such as Reciprocal Teaching, which provides a structured framework for comprehension (Palincsar & Brown, 1984), and Culturally Responsive Teaching, which emphasizes the integration of learners' cultural knowledge, have been explored in educational research (Gay, 2018). However, there appears to be limited research on integrating these approaches specifically for IP learners in the Philippine context. This study aimed to develop and examine a Culturally Responsive Reciprocal Teaching (CRRT) approach to support the English reading comprehension of Grades 7–9 IP learners.

DISCUSSION OF RESULTS

The analysis aimed to evaluate the impact of the Culturally Responsive Reciprocal Teaching (CRRT) intervention on the English reading comprehension of Grade 7–9 IPEd learners. A pretest and posttest design using the Phil-IRI assessment provided clear quantitative evidence of improvement.

The pretest data established a critical baseline, with learners showing a mean score of 2.07, which corresponds to a "frustration" level of reading comprehension. Following the CRRT intervention, the posttest results revealed a marked increase in the mean score to 5.14, indicating a shift toward "instructional" and "independent" reading levels. This progress is summarized in the comparative table:

Table 1
Comparative Analysis: Pretest vs. Posttest

Statistic	Pretest	Posttest	Difference	Interpretation
Mean	2.07	5.14	+3.07	Significant improvement
Minimum Score	0	2	+2	Lowest performers improved
Standard Deviation	1.59	2.57	-	Slightly increased variability
Maximum Score	5	10	+5	Top performers exceeded the instructional level
Reading Level Shift	Frustration →	Instructional/ Independent	Positive Shift	CRRT facilitated meaningful learning gains

A paired sample t-test was conducted to determine the statistical significance of the measured gains. The results presented below, confirm that the improvement was statistically significant.

Table 2
Statistical Confirmation of Learning Gains

Statistic	Pretest
t-statistic	-4.92
df	13
p-value (two-tailed)	0.00028
t-critical (0.05) two-tailed	±2.1604

The significant increase in scores, supported by the statistical analysis ($t = -4.92$, $p = 0.00028$), suggests that the integrated CRRT approach-which combined structured comprehension strategies with culturally relevant texts-was associated with measurable improvements in the learners' reading comprehension abilities.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Based on the study's outcomes, it is concluded that the Culturally Responsive Reciprocal Teaching (CRRT) approach was effective in improving the English reading comprehension of Grade 7–9 IPED learners. By strategically integrating learners' cultural backgrounds with structured, collaborative pedagogy, the intervention addressed existing literacy gaps while also strengthening the learners' confidence and sense of identity. This indicates that CRRT holds strong potential as a model for creating more inclusive and culturally sustaining learning environments that honor Indigenous knowledge (Department of Education, 2011).

The findings suggest that contextualizing reading instruction transformed the learning process for participants. The use of culturally relevant materials made reading more engaging and meaningful, while the reciprocal teaching strategies empowered learners to actively participate in constructing meaning from texts. This combination appears to have effectively mitigated prior learning losses and facilitated measurable gains in literacy, moving instruction beyond a purely academic exercise to one that resonates with students lived experiences (Department of Education, 2023; Republic of the Philippines, 2013).

To sustain and expand upon these gains, several recommendations are proposed. These include the long-term implementation of CRRT to reinforce literacy skills, the expansion of culturally grounded textual materials, and the provision of ongoing professional development for teachers in culturally responsive methodologies. Furthermore, collecting qualitative feedback from learners and teachers, along with offering targeted remediation for students still below proficiency, is recommended to ensure inclusive and equitable learning outcomes for all Indigenous learners.

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RESEARCH DOCUMENTATION



RESEARCH BULLETIN

INTEGRATING DIGITAL NOVEL READING IN ENGLISH INSTRUCTION TO ENHANCE VOCABULARY AND READING COMPREHENSION AMONG GRADE 9 STUDENTS

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INTRODUCTION

Reading is the foundation of language development. The ability to read develops linguistic competence and builds vocabulary knowledge. However, reading comprehension has become the persistent challenge among Pit-os National High School students which affects their overall academic performance. To address this problem, this action research aimed to determine the effectiveness of integrating digital novel reading in English instruction to enhance the vocabulary and reading comprehension of the Grade 9 students of Pit-os National High School. This action research stemmed from the idea that digital novel is appealing and accessible tool that lowers students' affective filter and promotes motivation in reading, leading to better reading comprehension (Krashen, 1987).

DISCUSSION OF RESULTS

The research employed a pretest and post-test to measure students' reading comprehension progress. The data collected from the participants before and after the intervention is summarized in the following tables.

Table 1

Pretest and Post-test Scores of the Participants

Pretest and Post-test Scores of the Participants

Students	Pretest Score	Posttest Score
1	8	9
2	6	6
3	7	20
4	13	9
5	12	9
6	13	6
7	11	22
8	9	10
9	8	11
10	7	15
11	10	11
12	8	7
13	9	25
14	7	15
15	17	12
16	9	21
17	10	5
18	7	10

Table 2

Descriptive Statistics of Pretest an Post-test Scores of the Participants

Descriptive Statistics of Pretest and Post-test Scores of the Participants

Scores	*N*	Mean	*sd*	*t*	*p*
Pretest	18	9.50	2.73		
Post-test	18	12.39	5.83	-1.7385	0.1013

The pretest mean showed 9.50, indicating that participants demonstrated frustration level of reading comprehension. After the intervention, the post-test mean exhibited 12.39, suggesting an observable increase. However, the p-value 0.1013 is greater than 0.05, which means the difference between the pretest and post-test scores is not statistically significant at 5% significance level. This suggested that, based on this data, there is no strong evidence to conclude that the post-test scores are significantly different from pretest scores.

The findings revealed an increase in the mean post-test score compared to the pretest, indicating observable improvement in students' reading comprehension. However, the difference was not statistically significant at the 0.05 level. Yet, qualitative observations revealed positive effects on students' fluency, vocabulary, pronunciation, and motivation. This concludes that while digital novel reading may not have statistically significant gains in comprehension accuracy, it serves as a beneficial strategy to engage struggling readers and support their basic reading skills. Thus, the integration of digital novel reading materials is recommended as a reading remediation approach in English (El Haddad & Charles, 2024).

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Reflecting on the outcome of the intervention, digital novel reading greatly support the struggling readers since the audio narration allowed them to hear the correct pronunciation of the words while the visual elements helped them understand the story. It was also observed that when struggling readers are consistently provided scaffolding while reading digital novel, their engagement and motivation in reading increased. Through the audio-visual elements of digital novel, struggling readers exhibited an improvement in word recognition and reading fluency (Shamir & Korat, 2007; Smeets & Bus, 2014). Despite the persistent challenges in comprehension, the overall progress demonstrated that the intervention was effective in addressing the gap in basic reading difficulties.

The integration of digital novel reading may not yield significant gains due to limited time-frame; yet, digital novel reading should be adopted as a remedial strategy for struggling readers, as it supports word recognition, reading fluency, pronunciation, and reading comprehension through guided reading and audio-visual element (Benway, 2011; Cremin, 2014).

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RESEARCH DOCUMENTATION

GAME UP: GRAMMAR ADVANCEMENT THROUGH MEANINGFUL ENGAGEMENT USING PLAY WITH BOARD GAMES FOR GRADE 9 STUDENTS

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INTRODUCTION

Grammar proficiency plays a vital role in students' ability to communicate effectively and perform well academically. However, many Grade 9 learners struggle with grammar due to traditional teaching approaches that rely heavily on memorization and drills. These methods often fail to sustain students' interest and do not adequately address persistent grammar difficulties (Kapp, 2018).

This action research introduced GAME UP (Grammar Advancement through Meaningful Engagement Using Play with Board Games) as an innovative intervention to enhance grammar proficiency among Grade 9 students at Media Once National High School. The intervention utilized interactive board games such as Grammaropoly, Sentence Tower, and Grammar Quest to create a learner-centered, engaging environment that encourages active participation and meaningful practice of grammar skills (Gee, 2020).

DISCUSSION OF RESULTS

The research employed a pre-test and post-test assessment to evaluate changes in the grammar proficiency of Grade 9 students after the implementation of the GAME UP (Grammar Advancement through Meaningful Engagement Using Play with Board Games) intervention. The data gathered from the participants before and after the intervention focused on three key grammar areas: subject–verb agreement, verb tenses, and punctuation. The results of the assessment are summarized in the following tables.

Table 1: ***Overall Grammar Performance of Participants Before the Intervention***

Learner	Subject-verb Agreement	Verb Tenses	Punctuation	Total Score	Performance Level	Observations/Learning Gaps
A	4	3	3	10	Frustration	Needs support in verb tense consistency
B	2	4	2	8	Frustration	Weak punctuation and subject-verb agreement skills
C	5	3	3	11	Instructional	Occasional verb tense lapses
D	4	2	3	9	Frustration	Confused with past and present tense usage
E	3	2	3	8	Frustration	Inconsistent tense application
F	3	4	3	10	Frustration	Frequent subject-verb agreement errors
G	2	3	4	9	Frustration	Struggles with subject-verb agreement
H	4	5	2	11	Instructional	Needs improvement in punctuation for clarity
Computed Mean: 9.5						

Legend: Frustration 1-10, Instructional- 11-19, Independent- 20-30

The pre-test results reveal notable challenges in the grammar proficiency of Grade 9 learners, as shown by the overall mean score of 9.5. A majority of the students, or 75%, performed at the frustration level, while only 25% reached the instructional level, indicating that most learners struggled to demonstrate mastery of essential grammar skills. Frequent errors were observed in verb tenses, subject-verb agreement, and punctuation, suggesting that students had difficulty applying grammar rules accurately and consistently in their writing tasks.

Table 2: ***Overall Grammar Performance of Participants After the Intervention***

Learner	Subject-verb Agreement	Verb Tenses	Punctuation	Total Score	Performance Level	Observations/Learning Gaps
A	6	7	6	19	Instructional	Better tense usage and fewer mistakes in agreement
B	5	6	6	17	Instructional	Clearer punctuation and sentence structure
C	7	8	7	22	Independent	Accurate tenses and confident agreement usage
D	5	6	7	18	Instructional	Reduced frequency of errors, especially in punctuation
E	5	6	5	16	Instructional	Better grammar mastery and application
F	7	8	8	23	Independent	Consistently accurate, participates more in grammar activities
G	6	8	6	20	Independent	Improved collaboration and more consistent grammar use
H	7	9	8	24	Independent	Major gains in clarity and comprehensive accuracy
Computed Mean: 19.9						

Legend: Frustration 1-10, Instructional- 11-19, Independent- 20-30

The post-test results show a remarkable improvement in the grammar performance of the learners, as demonstrated by the increased mean score of 19.9, almost doubling their pre-test performance. Half of the participants (50%) reached the instructional level, while the other half progressed to the independent level, showing that all students moved beyond the frustration level after the intervention.

Improvements were evident in all three grammar components-subject-verb agreement, verb tenses, and punctuation. Learners displayed clearer sentence construction, more accurate and consistent tense usage, and more precise punctuation, which contributed to higher total scores. These gains highlight the effectiveness of the GAME UP strategy, which transformed grammar learning into an engaging and enjoyable experience (Said & Omar, 2020).

Table 3: ***Overall Pre-Test and Post-Test Results of Grade 9 Students in Grammar Proficiency***

Participant	Pre-test score (30 items)	Post-test score (30 items)	Difference	Interpretation
A	10	19	+9	Improved
B	8	17	+9	Improved
C	11	22	+11	Improved
D	9	18	+9	Improved
E	8	16	+8	Improved
F	10	23	+13	Improved
G	9	20	+11	Improved
H	11	24	+13	Improved
Mean	9.5	19.9	+10.4	Improved
SD	1.12	2.71		Improved

The table presents the overall pre-test and post-test results of the Grade 9 students, clearly showing a substantial improvement in their grammar proficiency after the GAME UP intervention. The mean score increased from 9.5 in the pre-test to 19.9 in the post-test, resulting in an average gain of +10.4 points, which indicates that the intervention significantly enhanced the learners' understanding and application of grammar rules. The consistent increase in scores—-rom individual gains of +8 to +13-shows that all students benefited from the strategy, with many demonstrating stronger accuracy in verb tenses, subject-verb agreement, and punctuation. The pre-test results initially highlighted learning gaps, especially in tense consistency and punctuation, likely caused by limited prior practice, reliance on memorization, and low engagement in traditional classroom activities.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Reflecting on the outcomes of the GAME UP (Grammar Advancement through Meaningful Engagement Using Play with Board Games) action research, the intervention proved to be an effective strategy for improving grammar proficiency among Grade 9 students. The use of interactive board games such as Grammar Quest, Grammaropoly, and Sentence Tower provided learners with meaningful and engaging opportunities to practice subject–verb agreement, verb tenses, and punctuation. Through repeated play, collaboration, and immediate feedback, students developed better understanding, confidence, and accuracy in applying grammar rules, moving beyond traditional drill-based learning (Vlachou & Makri, 2019).

The integration of game-based activities into grammar instruction enriched classroom practice by increasing learner participation, motivation, and sustained engagement. The significant improvement in post-test results demonstrates the effectiveness of GAME UP as a practical and learner-centered approach to grammar instruction. It is therefore recommended that this strategy be sustained and adapted for other classes and grammar components to support diverse learners. This study reinforces the importance of innovative and reflective teaching practices in enhancing both academic performance and positive learning experiences in English classrooms.

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RESEARCH DOCUMENTATION

STRUCTURED SINGING BEE: ENHANCING VOCABULARY ACQUISITION AMONG HUMSS GRADE 12 STUDENTS

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INTRODUCTION

Vocabulary is a core component of language acquisition and is essential to learners' ability to communicate, comprehend, and express ideas effectively. As noted by Liando et al. (2022), vocabulary mastery underpins proficiency in listening, speaking, reading, and writing. Limited vocabulary often leads to poor reading comprehension, as unfamiliar words can obstruct meaning. At Tal-ut National High School, HUMSS Grade 12 students, particularly those from Section San Pedro Calungsod, were observed to struggle with comprehension across most subjects except Komunikasyon, a difficulty linked to low vocabulary levels. First-quarter Quarterly Rating Assessment (QRA) results showed that only 25% of students achieved a satisfactory rating, while 37.86% performed at a fairly satisfactory level, highlighting the need for vocabulary enhancement. To address this gap, the Structured Singing Bee intervention was implemented as an engaging, student-centered approach to vocabulary development. By integrating music, the strategy provided a repetitive, rhythmic, and contextual learning experience that supported word retention and comprehension. Grounded in Experiential Learning Theory and Stimulus-Response Theory, the intervention fostered a supportive and low-pressure learning environment, which has been shown to enhance student motivation and retention (Nihayati et al., 2020)..

DISCUSSION OF RESULTS

The research employed a pre-intervention and post-intervention assessment to evaluate changes in students' vocabulary level. The data collected from the participants before and after the intervention is summarized in the following table and figure.

Pre and Post Test Comparison

The comparison of the pre-test and post-test results showed a clear improvement in the students' vocabulary level after the implementation of the Structured Singing Bee. The mean score increased from 101.74 in the pre-test to 130.41 in the post-test, with a mean difference of 29.19 points. This substantial increase indicated that the intervention was effective in enhancing students' vocabulary skills. The results suggested that engaging students through structured singing activities helped improve word recognition, retention, and usage, making vocabulary learning more interactive and meaningful.

Table 1
Pre and Post Test Comparison

Test	Mean	Indicator
Pre	101.74	81-120 Average
Post	130.41	121-160 High
MD	29.19	notable improvement

Figure 1 presents the comparison of the distribution of students' vocabulary performance levels before and after the implementation of the Structured Singing Bee: Enhancing Vocabulary Acquisition Among HUMSS Grade 12 Students. As shown in the graph, a noticeable shift in students' performance can be observed. During the pre-test, a large proportion of students were categorized as struggling, indicating limited vocabulary proficiency. However, after the intervention, 3 students moved from the struggling level to the average category. The improvement suggests that the intervention effectively enhanced students' vocabulary acquisition and retention. The combination of music, rhythm, and repetition likely contributed

to better engagement and recall of new words, making vocabulary learning more enjoyable and meaningful.

Figure 1
Students' Vocabulary Profile before and after the implementation

In addition, the students' vocabulary level profiles showed positive progress. The number of learners in the struggling category decreased from 24 to 19. Three of them moved up to the average category, while the remaining two advanced to the higher category along with those who were previously identified as average. These results support the idea that music based strategies can promote language development. The findings imply that creative instructional methods enhance students' motivation and learning outcomes.

Result of the FGD Thematic Analysis

The insights and perceptions of students regarding the Structured Singing Bee intervention were analyzed using thematic analysis, which allowed the researchers to identify recurring themes and patterns in their experiences, engagement, and perceived effectiveness of the activity. Three main themes emerged from the analysis: *enjoyment and engagement, vocabulary learning and retention, and the role of music* in supporting learning.

A. Enjoyment and Engagement

Students' engagement in an activity was often linked to how enjoyable and motivating the experience was. In this study, the Structured Singing Bee was designed to make vocabulary learning interactive and fun, and students' responses reflected their active involvement.

"Ako, I find it engaging and very enjoyable kay makawala siya sa stress kung mag kanta2x."
"I enjoy the activity so much especially during mag sing na."
"I find it engaging because I can brainstorm with my groupmates."

These statements indicated that students found the activity entertaining and motivating, which encouraged participation and sustained attention. The combination of singing, group collaboration, and gamified elements created a positive learning environment. Engagement through enjoyment not only increased students' willingness to participate but also fostered a sense of camaraderie among peers, making learning less stressful and more meaningful.

B. Vocabulary Learning and Retention

A primary goal of the Structured Singing Bee had been to enhance students' vocabulary knowledge and retention. Data revealed that students had recognized tangible improvements in their word comprehension and usage.

"I learned the word 'premonition', mao jud ni di nako malimtan, mura siyag 'sign'. Parihas anang molakaw ka, naa kay adtoon, then makafeel ka nga something is not right, murag siyag sign or warning nga nay mahitabo nga bati."
"Ako kay "Levitating", dili jud nako siya malimtan. According to maam Diane, it is someone's feeling nga mura siyag maglutaw or floating. Parihas gani anang makakita ka sa imong crush all of a sudden."
"Actually daghan, but "Renegading" nalang akoa, it means breaking the rules. Example kay kanang, kana ganing… ay lahi nalang… Ang instruction kay 1 whole yellow pad ang gamiton, pero pag submit ka nay nigamit ug A4 bondpaper. Oh, diba?"
"I learned the word 'caving in' means to collapse."
These responses suggested that repeated exposure to target vocabulary

through song, along with active recall tasks like supplying missing lyrics, strengthened students' retention and understanding. Students were not only able to recognize new words but also apply them in context, demonstrating that the intervention effectively bridged comprehension with practical use.

C. Role of Music in Supporting Learning

Music had been shown to facilitate memory, engagement, and emotional connection in learning. The findings highlighted how students viewed music as an essential tool in enhancing their vocabulary acquisition.

"My favorite part of the activity is when we sing together."

"When we sing aloud together because it boosts our happy thoughts."

"Mine is, I like the part when… kato ganing we guess the missing lyrics, kay, kay, ay, because we can remember the correct words na gamiton."

Students' reflections indicated that the melodic and rhythmic aspects of songs aided in memorization and recall, making vocabulary learning more effective and enjoyable. Music not only reinforced cognitive processing but also elicited positive emotions, which contributed to an overall enriched learning experience. The findings confirmed that integrating music into vocabulary instruction could support both retention and engagement.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The results of the intervention revealed that students not only improved their vocabulary but also exhibited increased engagement and confidence in learning. The researcher realized that when instructional strategies are aligned with students' interests, learning becomes more effective and enjoyable. Ultimately, this action research demonstrated that integrating music into vocabulary instruction can be a powerful tool to rekindle students' motivation and strengthen their literacy skills in a post-pandemic educational setting.

Based on the findings, the researchers recommend introducing the Structured Singing Bee at earlier grade levels, particularly starting in Grade 7, to strengthen foundational vocabulary skills, improve word retention, and build students' language confidence. Integrating the intervention into the regular English curriculum may further enhance student engagement and motivation . (Department of Education, 2019). Teachers implementing this strategy should carefully select age-appropriate songs aligned with students' language proficiency and musical preferences to maximize its effectiveness.

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RESEARCH DOCUMENTATION

ENHANCING GRADE 10 LEARNERS' WRITING PERFORMANCE AND STATISTICAL LITERACY THROUGH THE STEWARDS (STUDENT TEXT ENGAGEMENT AND WRITING ASSESSMENT THROUGH RESEARCH AND DATA STATISTICS) STRATEGY

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INTRODUCTION

Writing is a foundational skill that underpins communication, reasoning, and critical thinking, enabling learners to express ideas coherently, construct logical arguments, and demonstrate mastery across disciplines. At Mainit National High School, however, Grade 10 teachers have observed that students often struggle to integrate factual and numerical evidence into their written work, revealing a persistent separation between literacy and numeracy instruction that hinders the development of higher-order reasoning skills essential for research writing and evidence-based communication. Statistical literacy, when combined with writing, empowers learners to analyze data, interpret information, and substantiate claims, yet current classroom practices tend to treat these competencies as unrelated, resulting in students who either write creatively without evidence or compute data without clear communication. Research emphasizes the importance of assessment and constructive feedback in refining clarity, structure, and precision, while Philippine education policies such as the Enhanced Basic Education Act of 2013 (RA 10533) and DepEd Order No. 8, s. 2015 highlight assessment as integral to learning. Addressing this gap, the Student Text Engagement and Writing Assessment through Research and Data Statistics (STEWARDS) strategy integrates writing instruction with applied data analysis, aligning with DepEd's MATATAG Curriculum and Learning Recovery Program to strengthen both composition and analytical skills. By situating writing as a process of constructing meaning through evidence, logic, and reflection, STEWARDS provides a pathway for learners to develop evidence-based literacy and produce outputs that are both persuasive and grounded in credible data.

DISCUSSION OF RESULTS

This part provides a comprehensive examination, analysis, and interpretation of the research outcomes, offering insights into the application of the STEWARDS (Student Text Engagement and Writing Assessment Through Research and Data Statistics) approach while underscoring observable patterns and shifts in students' writing skills and their competence in understanding and analyzing statistical data through descriptive statistics that demonstrate learning progress. The analysis focuses on comparisons between pre-test and post-test assessments, including evaluations of average scores, mean percentage scores (MPS), and standard deviations, which provide valuable evidence of the instructional intervention's impact. Each table summarizes student performance with interpretive commentary that highlights emerging trends, educational implications, and areas of notable improvement, while the reflective component emphasizes how the findings can inform teaching strategies and enhance both writing abilities and statistical literacy. Overall, the discussion illustrates the importance of targeted pedagogical strategies like STEWARDS in fostering measurable academic growth and developing critical skills in language and data analysis.

Table 1
Pre-test Scores–Writing Performance (N=34)

The pre-test scores indicate moderate to low writing skills, with a standard deviation of 3.67 suggestion moderate variability among learners. Some learners already demonstrate stronger writing abilities, while others require targeted support. This baseline highlights the need for structured intervention, emphasizing skills such as coherent sentence construction, argument development, and integration of

statistical data. Educators can use this to differentiate instruction and focus support where learners' skills are weaker.

Learner	Pretest	Level
1	10	Proficient
2	5	Developing
3	13	Advanced
4	5	Developing
5	5	Developing
6	5	Developing
7	5	Developing
8	5	Developing
9	5	Developing
10	5	Developing
11	5	Developing
12	5	Developing
13	5	Developing
14	5	Developing
15	5	Developing
16	9	Proficient
17	9	Proficient
18	6	Developing
19	15	Advanced
20	14	Advanced
21	13	Advanced
22	10	Proficient
23	9	Proficient
24	5	Developing
25	13	Advanced
26	5	Developing
27	13	Advanced
28	11	Proficient
29	7	Developing
30	10	Proficient
31	13	Advanced
32	7	Developing
33	13	Advanced
34	15	Advanced
Mean	**8.38**	
MPS (%)	**42**	
SD	**3.67**	

Score	Performance Level
0	No evidence of writing
1 – 4	Emerging
5 – 8	Developing (Basic)
9 – 12	Proficient (Competent)
13 – 16	Advanced (Skilled)
17 – 19	Excellent (Highly Skilled)
20	Outstanding

Table 2
Post-test Scores–Writing Performance (N=34)

Post-test scores show a substantial upward trend with SD increasing from 3.67 to 4.08. this indicates greater consistency in learners' writing performance, implying the STEWARDS strategy effectively supported learners across spectrum. The reduced variability suggests that weaker writers gained significantly, narrowing the gap with stronger learners. This demonstrates the strategy's potential to standardize outcomes and raise overall class performance.

Learner	Posttest	Level
1	12	Proficient
2	13	Advanced
3	19	Excellent
4	11	Proficient
5	12	Proficient
6	15	Advanced
7	18	Excellent
8	17	Excellent
9	18	Excellent
10	10	Proficient
11	9	Proficient
12	7	Developing
13	14	Advanced
14	6	Developing
15	10	Proficient
16	17	Excellent
17	17	Excellent
18	16	Advanced
19	19	Excellent
20	17	Excellent
21	17	Excellent
22	16	Advanced
23	18	Excellent
24	16	Advanced
25	13	Advanced
26	8	Developing
27	18	Excellent
28	19	Excellent
29	17	Excellent
30	18	Excellent
31	20	Excellent
32	8	Developing
33	18	Excellent
34	20	Outstanding
Mean	**14.79**	
MPS (%)	**74**	
SD	**4.08**	

Table 3
Pre-Post Comparison–Writing Performance (N= 34)

The average gain of 6.41 points, with SD = 0.41, reflects consistent improvement among learners. The intervention strengthened the ability to structure ideas and integrate statistical data into writing, indicating that combining literacy and numeracy tasks can effectively enhance both competencies. The gain patterns also suggest that all learners were positively impacted, validating the STEWARDS strategy as an inclusive instructional approach.

The study employed descriptive statistical analysis to summarize the learners' writing and statistical literacy scores before and after the STEWARDS intervention. Mean and standard deviation were used to determine patterns of progress, while frequency and percentage distributions illustrated the proportion of learners achieving various proficiency levels.

Learner	Pretest	Posttest	Gain
1	10	12	2
2	5	13	8
3	13	19	6
4	5	11	6
5	5	12	7
6	5	15	10
7	5	18	13
8	5	17	12
9	5	18	13
10	5	10	5
11	5	9	4
12	5	7	2
13	5	14	9
14	5	6	1
15	5	10	5
16	9	17	8
17	9	17	8
18	6	16	10
19	15	19	4
20	14	17	3
21	13	17	4
22	10	16	6
23	9	18	9
24	5	16	11
25	13	13	0
26	5	8	3
27	13	18	5
28	11	19	8
29	7	17	10
30	10	18	8
31	13	20	7
32	7	8	1
33	13	18	5
34	15	20	5
Mean	**8.38**	**14.79**	**6.41**
MPS (%)	**42**	**74**	**32**
SD	**3.67**	**4.08**	**0.41**

Table 4
Pre-Test–Ability to Interpret Statistical Information

The pre-test shows low statistical literacy, with limited variation (SD = 1.5) suggesting most learners had similar levels of foundation knowledge. This indicates that the intervention should focus on applied statistical reasoning, emphasizing tasks that combine data interpretation with written expression. Low baseline scores highlight a critical need for targeted teaching strategies to build confidence in quantitative reasoning.

Learner	Pretest	Level
1	4	Satisfactory
2	6	Good
3	4	Satisfactory
4	4	Satisfactory
5	4	Satisfactory
6	4	Satisfactory
7	4	Satisfactory
8	4	Satisfactory
9	4	Satisfactory
10	3	Needs Improvement
11	3	Needs Improvement
12	4	Satisfactory
13	1	Unsatisfactory
14	6	Good
15	4	Satisfactory
16	3	Needs Improvement
17	3	Needs Improvement
18	3	Needs Improvement
19	6	Good
20	4	Satisfactory
21	2	Needs Improvement
22	1	Unsatisfactory
23	3	Needs Improvement
24	3	Needs Improvement
25	6	Needs Improvement
26	1	Unsatisfactory
27	4	Satisfactory
28	5	Satisfactory
29	2	Needs Improvement
30	6	Good
31	0	Unsatisfactory
32	5	Satisfactory
33	3	Needs Improvement
34	2	Needs Improvement
Mean	**3.56**	
MPS (%)	**36**	
SD	**1.5**	

Score	Performance Level
0 – 1	Unsatisfactory
2 – 3	Needs Improvement
4 – 5	Satisfactory
6 – 7	Good Performance
8 - 10	Excellent

Table 5
Post-Test – Ability to Interpret Statistical Information

Post-test scores show substantial improvement and the slight decrease of SD suggests that learners' performances become more consistent after the intervention. This demonstrates that the STEWARDS strategy enhanced statistical literacy, allowing learners to interpret and integrate data into writing effectively. The gains indicate that contextualized, applied exercise promote meaningful learning, which can guide teachers in designing future interventions to reinforce data analysis in other subjects.

Learner	Posttest	Level
1	7	Good
2	9	Excellent
3	9	Excellent
4	9	Excellent
5	9	Excellent
6	6	Good
7	9	Excellent
8	7	Good
9	7	Good
10	9	Excellent
11	9	Excellent
12	9	Excellent
13	7	Good
14	9	Excellent
15	5	Satisfactory
16	7	Good
17	8	Excellent
18	8	Excellent
19	9	Excellent
20	9	Excellent
21	8	Excellent
22	8	Excellent
23	8	Excellent
24	8	Excellent
25	9	Excellent
26	7	Good
27	8	Excellent
28	8	Excellent
29	6	Good
30	4	Satisfactory
31	9	Excellent
32	6	Good
33	9	Excellent
34	9	Excellent
Mean	**7.88**	
MPS (%)	**79**	
SD	**1.3**	

Table 6
Pre-Post Comparison – Statistical Interpretation

The average gain of 4.32 points and a negative SD difference (-0.2) suggest uniform improvement in statistical reasoning. Learners demonstrated an ability to analyze numerical information and apply it to written tasks, enhancing both literacy and numeracy skills. The consistent gains indicate that the STEWARDS strategy effectively bridges the gap between theoretical knowledge and practical application.

Learner	Pretest	Posttest	Gain
1	4	7	3
2	6	9	3
3	4	9	5
4	4	9	5
5	4	9	5
6	4	6	2
7	4	9	5
8	4	7	3
9	4	7	3
10	3	9	6
11	3	9	6
12	4	9	5
13	1	7	6
14	6	9	3
15	4	5	1
16	3	7	4
17	3	8	5
18	3	8	5
19	6	9	3
20	4	9	5
21	2	8	6
22	1	8	7
23	3	8	5
24	3	8	5
25	6	9	3
26	1	7	6
27	4	8	4
28	5	8	3
29	2	6	4
30	6	4	-2
31	0	9	9
32	5	6	1
33	3	9	6
34	2	9	7
Mean	**3.56**	**7.88**	4.3235
MPS (%)	**36**	**79**	43.235
SD	**1.5**	**1.3**	-0.2

Table 7
Combined Pre-Post Comparison – Statistical Interpretation

The substantial gains in the mean scores 6.41 (writing) and 4.32 (statistics) and the massive increase in the Man Percentage Score (MPS) for both competencies (Writing: 42% and Statistics: 36%) demonstrate a large , positive effect. The highly significant p-values (0.00001 and 0) are far less than the alpha level (0.05), and the absolute t-statistic values (10.8167 and 12.264) are much greater than the t-critical value (2.034), leading to rejection of the null hypothesis and confirming that the observed improvements are statistically significant and not due to chance. The Pearson Correlation of 0.0179 indicates and extremely weak positive correlation between the students' post-test scores in Writing Performance and Statistical Interpretation, suggesting that while the intervention was successful for both, a student's final score in one competency was largely independent of their final score in the other, which is an important finding for future instructional design. Based on these powerful results, the action research concludes that the

implemented STEWARDS strategy should be adopted and disseminated as a best practice to consistently improve these specific learning competencies. The STEWARDS strategy also demonstrates that integrating writing and statistical interpretation promotes holistic skills development, supporting critical thinking, data-driven reasoning, and evidence-based writing.

Competency	Writing Performance	Statistical Interpretation
Pre-test Mean	8.38	3.56
Pre-test MPS	42%	36%
Pre-test SD	3.67	1.5
Post-test Mean	14.79	7.88
Post- test MPS	74%	79%
Post-test SD	4.08	1.3
Gain	6.41	4.32
t-statistics	10.8167	12.2642
p-vale (two-tailed)	0.00001	0
t-critical value (0.05)	±2.034	±2.034
Pearson Correlation	0.0179	

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The descriptive statistics provide clear evidence that the STEWARDS strategy effectively enhanced both writing performance and statistical literacy, with writing improving from 42% to 74% mean percentage score (MPS) and a slight increase in standard deviation from 3.67 to 4.08, while statistical competence rose from 36% to 79% MPS accompanied by a decrease in standard deviation from 1.5 to 1.3. These results indicate that all learners demonstrated positive gains, reinforcing the conclusion that descriptive statistics sufficiently address the research question without the need for experimental significance tests.

The implications for teaching highlight the importance of differentiated instruction to address the needs of learners who initially scored lower, ensuring that support is tailored to their specific challenges. At the same time, integrated interventions that combine literacy and numeracy foster greater engagement and more meaningful learning experiences by bridging skills that are often taught separately. Moreover, this approach demonstrates replicability across diverse educational contexts, making it a valuable strategy for aligning classroom practices with DepEd standards and strengthening curriculum implementation.

Yes, the implementation of the STEWARDS strategy led to a clear improvement in writing performance and statistical literacy among Grade 10 learners at Mainit National High School, demonstrating its potential as a model instructional intervention for integrated skill development.

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RESEARCH DOCUMENTATION

RESEARCH BULLETIN

INTERDISCIPLINARY INTEGRATION OF PERFORMANCE TASKS: A STRATEGY TO REDUCE STUDENT WORKLOAD AND ENHANCE LEARNING IN SENIOR HIGH SCHOOL

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INTRODUCTION

Heavy student workload often leads to increased stress and decreased engagement affecting quality learning. Workload is defined and measured in different ways. In this study, it is defined as the number of performance tasks that students are expected to complete for the entire semester in all subjects. Based on the survey, grade 11 teacher assigns two to three major performance tasks and four to five minor performance tasks per subject. This amounts to approximately six to eight tasks per subject and a total of forty - eight to sixty-four tasks across all subjects per grading. Some teachers may assign these performance tasks simultaneously. And these tasks can be more demanding than written assignments since this requires more time and effort from students. This situation can create significant pressure as these performance tasks carry greater weight in students' overall grades. A study by Alam et al. (2021) revealed that numerous students express concerns about their academic workload due to heavy performance.

However, performance tasks play a crucial role in the academic experience of students. To address this, Senior High School (SHS) department of Cansojong National High School (CNHS) implemented an interdisciplinary integration of performance tasks. This approach requires collaboration among teachers from various subjects to design a shared performance task. Instead of having multiple individual performance tasks, it will significantly reduce to two to three depending on the collaboration of the different subject teachers. By doing this, the initiative aims to reduce student workload by providing fewer but more meaningful performance tasks.

DISCUSSION OF RESULTS

This research employed explanatory sequential method to investigate changes in perceptions in the assessment of student workload both before and after the implementation of interdisciplinary integration and its effect in reducing student workload and enhancing learning outcomes. The data collected from the Grade 11 teachers and students before and after the integration is summarized in the following tables:

As shown in Table 1, significant changes in student workload can be observed from both teachers' and students' perspectives. Improvements were evident in the manageability of performance tasks, time allocation, and stress reduction. Both learners and teachers reported that performance tasks are now more manageable, sufficient time is provided and overlapping deadlines have been minimized. This has led to reduced feelings of being overwhelmed. Rahim et al. (2016) and Adriano and Santos (2019) found that students experience stress due to workload and deadlines. Thus, reducing student workload lessens feelings of stress and overwhelm.

Table 1

Teacher and Student Perception on Student Workload

Student Perspective	Before Interdisciplinary Integration		After Interdisciplinary Integration		Paired T-Test		
	Mean	Verbal Description	Mean	Verbal Description	T-stat	T-crit	Interpretation
I regularly received performance tasks from multiple subjects at the same time.	4.36	Strongly Agree	3.36	Neutral	3.79*	2.08	Significant Change
The total workload from all subjects is manageable.	3.00	Disagree	3.64	Agree	1.95	2.08	No Significant Change
The workload from performance tasks often feels overwhelming	4.36	Strongly Agree	3.32	Neutral	4.69*	2.08	Significant Change
I have enough time to complete the performance tasks for all subjects	2.73	Neutral	3.73	Agree	3.58*	2.08	Significant Change
The performance tasks in different subjects often overlap in deadlines.	3.91	Agree	3.36	Neutral	1.97	2.08	No Significant Change
I often feel stressed due to the number of performance tasks I have.	4.45	Strongly Agree	3.59	Neutral	3.74*	2.08	Significant Change
Teacher Perspective	Before Interdisciplinary Integration		After Interdisciplinary Integration		Paired T-Test		
	Mean	Verbal Description	Mean	Verbal Description	T-stat	T-crit	Interpretation
The students regularly received performance tasks from multiple subjects at the same time.	4.86	Strongly Agree	3.00	Disagree	7.12*	2.45	Significant Change
The total workload assigned to students is manageable.	3.14	Neutral	4.43	Strongly Agree	6.97*	2.08	Significant Change
The workload from performance tasks often appears overwhelming to students.	4.29	Strongly Agree	2.14	Disagree	8.22*	2.45	Significant Change
Students have enough time to complete perfomance tasks	3.14	Neutral	4.00	Agree	2.12*	2.45	Significant Change
Performance tasks in different subjects often have overlapping deadlines.	4.57	Strongly Agree	3.29	Neutral	4.50*	2.45	Significant Change
Students often express stress due to the number of performance tasks they have.	4.43	Strongly Agree	3.14	Neutral	6.97*	2.45	Significant Change

Table 2 showed that both students and teachers agreed that interdisciplinary integration positively contributed to student learning outcomes. Before integration, students recognized performance tasks as essential to their learning goals despite feeling overwhelmed by the number of performance tasks. After integration, students reported notable gains which were strongly affirmed by teachers. The study by Deysolong et al. (2023) revealed that an integrated approach to

assessments enables learners to apply and connect the skills acquired in different subjects in practical, relevant, and meaningful ways.

Table 2 *Student and Teacher Perception on the Effect of Interdisciplinary Integration in Student Learning Outcomes*

Student Penpective	Before Interdisciplinary Integration		After Interdisciplinary Integration		Paired T-Test		
	Mean	Verbal Description	Mean	Verbal Description	T-stat	T-crit	Interpretation
I feel engaged and motivated to complete my performance tasks.	3.48	Agree	4.00	Agree	2.22*	2.08	Significant change
I find performance tasks to be relevant to my learning goals.	3.82	Agree	4.23	Agree	1.34	2.08	No Significant change
I enjoy the process of completing the performance tasks.	2.95	neutral	3.45	Agree	1.56	2.08	No Significant change
I feel that I can express my creativity through the performance tasks.	4.09	Agree	4.23	Agree	0.77	2.08	No Significant change
I receive adequate feedback on my performance tasks.	3.73	Agree	4.41	Strongly Agree	2.14*	2.08	Significant change
I believe that the skills I develop through performance tasks are useful in my daily life.	4.00	Agree	4.23	Strongly Agree	0.71	2.08	No Significant change
Teacher Perspective	Before Interdisciplinary Integration		After Interdisciplinary Integration		Paired T-Test		
	Mean	Verbal Description	Mean	Verbal Description	T-stat	T-crit	Interpretation
Students seem engaged and motivated to complete their performance tasks.	3.43	Agree	4.43	Strongly Agree	3.24	2.45	Significant Change
Performance tasks are relevant to students' learning goals and interests.	4.29	Strongly Agree	4.71	Strongly Agree	1.16	2.45	No Significant Change
Students generally enjoy the process of completing performance tasks.	3.43	Agree	4.00	Agree	1.92	2.45	No Significant Change
Students have opportunities to express their creativity through performance tasks.	4.57	Strongly Agree	4.71	Strongly Agree	0.55	2.45	No Significant Change
Students receive adequate feedback on their performance tasks.	4.43	Strongly Agree	4.86	Strongly Agree	1.16	2.45	No Significant Change
I believe the skills students develop through performance tasks will be useful in my daily life.	4.86	Strongly Agree	5.00	Strongly Agree	1.00	2.45	No Significant Change

Effect of Interdisciplinary Integration in Enhancing Learning Outcomes

Less burden from teachers and students

When teachers combined their performance tasks, it minimized the workload for both students and teachers. Students reported having fewer and more manageable performance tasks this grading period. In the past, each subject required individual performance tasks often leading to overlapping deadlines and a heavier workload. However, interdisciplinary integration reduced students' workload by minimizing the number of outputs required.

Reduced Financial Contributions

Interdisciplinary integration reduced material costs and financial contributions since there were fewer outputs to comply. Hence, students experienced less financial strain. In the integration of performance tasks, they were able to contribute less but was able to produce quality output since their money is spent on fewer outputs.

Promotes Efficiency in Student Compliance

Interdisciplinary Integration promoted efficiency in working performance tasks. With fewer performances tasks to complete, students allocated more time and gave their undivided attention with the tasks. This allowed students to focus their time and attention in deeper learning and produce better quality outputs.

Effect of Interdisciplinary Integration in Enhancing Learning Outcomes

Produced Quality Output

Students consistently expressed that interdisciplinary integration helped them focused and produced quality outputs. With fewer competing priorities, they allocated more time, energy and effort toward producing a richer and quality project. This improved the depth of their work and time management.

Promote meaningful and interconnected learning

Interdisciplinary integration is meaningful because students applied their learning across multiple subjects to solve real-life problem. Students often accomplished performance tasks that are subject specific. With the interdisciplinary integration, students draw connections between concepts and holistic understanding across different subjects to produce a meaningful output. A study revealed that integrated approach allowed students to apply and integrate the learned skills across learning areas in realistic, significant, and meaningful manner (Deysolong et.al, 2023). This made their experience in making the shared performance task more relevant and engaging.

Increased student engagement and motivation

Interdisciplinary integration increased student motivation and engagement because of the interconnectedness of their learning, its application in real life, and support from the teachers. It required students to connect and apply their learnings from the different subjects, think critically and analytically, and collaborate with their groupmates to develop relevant and authentic outputs.

Challenges in the Implementation of Interdisciplinary Integration

Shared Consequences

Students expressed their concern regarding its grading implications. A low score in the integrated performance task might negatively affect their performance across all shared subject since a single output carried multiple subject grades.

Difficulty to integrate

Some teachers reported experiencing difficulty in integrating due to the technical nature of their subject for the grading. However, there are learning competencies in the next grading period that they can integrate with other subjects. They saw the advantage of integrating performance tasks to other subjects. Hence, they should be provided with sufficient time to plan and prepare to be able to conceptualize meaningfully and connect their subject content with others.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Performance tasks carry the greatest weight in students' grades across all subjects. Failure to comply with these tasks may affect students' academic performance. In many cases, multiple performance tasks are given by different subject teachers. They are often given towards the end of the grading period. This led to overlapping of deadlines that may increase student stress and pressure.

The results of the research revealed that interdisciplinary integration is effective in reducing student workload while enhancing learning outcomes. Moreover, results showed that integrating performance tasks lessened student burden, minimized financial contributions and promoted efficiency in working. On the other hand, interdisciplinary approach allowed students to produced quality output, promote meaningful and interconnected learning and increased student engagement and motivation.

Based on the study's findings, it is recommended that interdisciplinary integration be implemented in both Junior High School and Senior High School. To ensure its effectiveness, teachers should be provided with sufficient time to plan and comprehensive training to build their capacity for designing and delivering interdisciplinary integration.
Ultimately, the results of the study will contribute to reducing student workload while enhancing learning outcomes.

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RESEARCH DOCUMENTATION

SYNERGY IN ACTION: BRIDGING DISCIPLINES THROUGH CROSS-COLLABORATIVE PERFORMANCE TASKS TO ENHANCE GRADE 11 STUDENT ENGAGEMENT AND ACADEMIC ACHIEVEMENT

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INTRODUCTION

Elevating students' academic engagement and achievement through the integration of competencies across subject areas aligns with DepEd Order No. 12, s. 2020; however, multiple and repetitive performance-based assessments often limit students' effectiveness due to time constraints and task difficulty. Interdisciplinary and collaborative performance-based assessments are seen as a viable approach to reducing student stress, improving time management, and enhancing overall performance, while also promoting holistic learning. Despite these benefits, teachers face intellectual and instructional challenges in identifying cross-disciplinary connections and designing integrated, competency-based tasks. Moreover, existing literature indicates that integrative and collaborative performance tasks help learners see meaningful connections between instruction and assessment, resulting in improved motivation, quality of outputs, and overall learning experiences. Thus, this study aims to investigate the impact of subject integration and teacher collaboration through cross-collaborative performance tasks (CCPT) on student engagement and achievement.

DISCUSSION OF RESULTS

The research employed both quantitative and qualitative methods. For the quantitative component, a survey questionnaire was used to gather the perceptions of students and teachers regarding the extent to which Cross-Collaborative Performance Tasks enhanced student engagement and achievement. For the qualitative component, semi-structured interview was utilized to obtain in-depth accounts of participants' experiences. The data collected from the participants are summarized in the following tables.

Table 1

Students' Perception on Cross-Collaborative Performance Tasks

Students' Perception on Cross-Collaborative Performance Tasks

Perceptions	Mean	SD	Verbal Interpretation
The Cross-Collaborative Performance Tasks.....			
1. encouraged teachers to work together across subjects, which made performance tasks more unified and manageable for students.	3.35	0.52	Strongly Agree
2. made the learning objectives easier to understand through integrative assessments.	3.23	0.55	Agree
3. allowed me to see how ideas from Literature, Philosophy, and Communication are related.	3.35	0.56	Strongly Agree
4. helped me connect lessons from different subjects into one creative project.	3.32	0.52	Strongly Agree
5. helped me appreciate the connection between academic and real-life learning.	3.34	0.63	Strongly Agree
6. integrated activities that developed various types of intelligences such as linguistic, interpersonal, intrapersonal, and visual-spatial skills.	3.28	0.67	Strongly Agree
7. promoted the integration of knowledge, values, and skills from various fields.	3.36	0.52	Strongly Agree
8. helped me apply lessons from different subjects to produce a unified output.	3.23	0.61	Agree
9. were enjoyable and fun to complete.	3.34	0.60	Strongly Agree
10. made learning more meaningful through the integration of multiple subject areas.	3.24	0.64	Agree
Aggregate Average	3.30	0.58	Strongly Agree

Legend: 1.00 - 1.75 - Strongly Disagree; 1.76 - 2.50 – Disagree; 2.51 - 3.25 – Agree; 3.26 - 4.00 - Strongly Agree

The findings indicate a highly positive perception of Cross-Collaborative Performance Tasks among students. High mean scores ranging from 3.34 to 3.36 show that students strongly agreed that CCPT fostered teacher collaboration across subjects, helped them see connections among disciplines, and promoted the integration of knowledge, values, and skills. Although slightly lower mean scores (3.23) suggest some challenges in integrating concepts and understanding learning objectives, perceptions remained favorable overall. The aggregate mean of 3.30, interpreted as Strongly Agree, demonstrates that CCPT effectively enhanced student engagement, interdisciplinary understanding, and the overall quality of the learning experience.

Table 2

Teachers' Perception on Cross-Collaborative Performance Tasks

Teachers' Perception on Cross-Collaborative Performance Tasks

Perceptions	Mean	SD	Verbal Interpretation
1. The collaborating teachers were easy to integrate with.	3.57	0.53	Strongly Agree
2. The subjects expected to collaborate were reasonable and align to the expected output.	3.71	0.49	Strongly Agree
3. The output expected can be linked across curriculum.	3.71	0.49	Strongly Agree
4. Giving of instructions were made easy and providing examples across subjects are logical.	3.43	0.53	Strongly Agree
5. It was satisfying to see the students asking questions about the process of making the output.	3.71	0.49	Strongly Agree
6. The performance tasks promoted interdisciplinary understanding among students.	3.71	0.49	Strongly Agree
7. Students were able to effectively collaborate in groups while working on the integrated tasks.	3.71	0.49	Strongly Agree
8. The integrated tasks helped students develop critical and creative thinking skills.	3.71	0.49	Strongly Agree
9. The integration of tasks across subjects was manageable within the given timeframe.	3.71	0.49	Strongly Agree
10. Overall, the integration of performance tasks across subjects enhanced the learning experience for students.	3.71	0.49	Strongly Agree
Aggregate Average	3.67	0.50	Strongly Agree

Legend: *1.00 - 1.75 - Strongly Disagree; 1.76 - 2.50 – Disagree; 2.51 - 3.25 – Agree; 3.26 - 4.00 - Strongly Agree*

The findings indicate a highly favorable perception of Cross-Collaborative Performance Tasks among teachers. High mean scores ranging from 3.43 to 3.71 show that teachers strongly agreed that CCPT was well-structured, easy to implement through collaboration, and effectively aligned across subject areas. Teachers also strongly agreed that CCPT enhanced student engagement, interdisciplinary understanding, collaboration, and the development of critical and creative thinking skills. The consistently high mean of 3.71 across key indicators, including manageability of tasks and overall learning enhancement, reflects the feasibility and pedagogical effectiveness of CCPT. These results demonstrate that CCPT successfully promotes instructional collaboration, professional growth among teachers, and improved learning experiences for students.

Table 3

Cross-Collaborative Performance Tasks Enhance Student Engagement

Cross-Collaborative Performance Tasks Enhance Student Engagement

Student Engagement	Mean	SD	Verbal Interpretation
The Cross-Collaborative Performance Tasks.....			
1. made learning more enjoyable and motivating.	3.38	0.58	Strongly Agree
2. encouraged me to actively participate in classroom and group activities.	3.34	0.52	Strongly Agree
3. increased my interest in the lessons and subjects involved.	3.29	0.68	Strongly Agree
4. inspired me to take initiative and show leadership within my group.	3.26	0.68	Strongly Agree
5. allowed me to express my creativity and unique ideas.	3.31	0.57	Strongly Agree
6. gave me a sense of purpose and responsibility in accomplishing our project.	3.37	0.60	Strongly Agree
7. improved my confidence in presenting and performing tasks.	3.33	0.60	Strongly Agree
8. encouraged collaboration and positive interaction with my peers.	3.24	0.64	Agree
9. helped me enjoy learning through creative and real-life experiences.	3.37	0.61	Strongly Agree
10. made me feel more engaged and connected to my learning.	3.33	0.67	Strongly Agree
Aggregate Average	3.32	0.62	Strongly Agree

Legend: *1.00 - 1.75 - Strongly Disagree; 1.76 - 2.50 – Disagree; 2.51 - 3.25 – Agree; 3.26 - 4.00 - Strongly Agree*

The findings reveal a high level of student engagement resulting from the implementation of cross-collaborative performance tasks. Mean scores ranging from 3.29 to 3.38 show that students strongly agreed that these tasks made learning enjoyable, increased motivation and interest in lessons, and encouraged active participation, initiative, and leadership. Students also strongly agreed that the tasks enhanced creativity, responsibility, confidence, and meaningful collaboration with peers. The overall positive ratings, with an aggregated average of 3.32 (*Strongly Agree*), demonstrate that cross-collaborative performance tasks effectively foster both academic engagement and social interaction. These results confirm that the approach serves as a motivating instructional strategy that supports holistic student development.

Table 4

Cross-Collaborative Performance Tasks Enhance Academic Achievement

Cross-Collaborative Performance Tasks Enhance Academic Achievement

Academic Achievement	Mean	SD	Verbal Interpretation
The Cross-Collaborative Performance Tasks..... 1. improved my understanding of lessons from different subjects.	3.26	0.64	Strongly Agree
2. helped me apply classroom knowledge to real-life situations.	3.39	0.53	Strongly Agree
3. enhanced my critical and analytical thinking skills.	3.29	0.64	Strongly Agree
4. developed my problem-solving and decision-making abilities.	3.27	0.63	Strongly Agree
5. improved my ability to communicate effectively in oral and written forms.	3.22	0.61	Agree
6. strengthened my ability to synthesize ideas across different disciplines.	3.25	0.53	Agree
7. encouraged me to plan, organize, and manage time efficiently.	3.26	0.58	Strongly Agree
8. enhanced my creativity and innovation in problem-solving.	3.19	0.64	Agree
9. improved my overall academic performance in the involved subjects.	3.24	0.62	Agree
10. contributed positively to my academic growth and achievement.	3.32	0.63	Strongly Agree
Aggregate Average	3.27	0.61	Strongly Agree

Legend: *1.00 - 1.75 - Strongly Disagree; 1.76 - 2.50 – Disagree; 2.51 - 3.25 – Agree; 3.26 - 4.00 - Strongly Agree*

The data shows that cross-collaborative performance tasks significantly enhanced students' academic achievement. Mean scores ranging from 3.19 to 3.35 show that students strongly agreed these tasks improved lesson comprehension, application of knowledge to real-life situations, critical and analytical thinking, problem-solving, communication, and interdisciplinary synthesis. Students also agreed that the tasks helped them plan, organize, manage time, and enhance creativity and innovation. The overall positive ratings, with an aggregate average of 3.27 (Strongly Agree), demonstrate that cross-collaborative performance tasks are highly effective in promoting academic growth and achievement. These results confirm that the approach fosters meaningful learning, higher-order thinking, and practical application of knowledge across disciplines.

Table 5

Summary of Main Themes and Sub-themes from the Perceptions of Students on Cross-Collaborative Performance Tasks

Summary of Main Themes and Sub-themes from the Perceptions of Students on Cross-Collaborative Performance Tasks

Main Themes	Sub-Themes
Enhanced Engagement and Motivation Through Collaboration	• Fostering social connection and comfort • Intrinsic engagement through creativity and novelty • Driving accountability and team-oriented excellence
Real-World Application through Interconnected Learning	• Realizing subject interconnectedness • Practical application and deeper comprehension • Experiential learning as a superior method
Overcoming Coordination and Time Constraints through Communication	• Time and resource management • Initial team misalignment and conflict • Overcoming challenges through direct communication and patience
Stronger Social Bonds and Collaborative Creative Processes.	• Fostering community and personal confidence • Collaborative ideation and skill application • The intrinsic value of the creative process
Prioritizing Proactive Scheduling and Structured Support	• Dedicated time allocation and advance scheduling • Enhancing clarity and standardization of instructions • Fostering student well-being and skill development

Based on the students' interview, the thematic analysis shows that Cross-Collaborative Performance Tasks, such as the

FiliKula Film Festival, significantly enhanced student engagement and motivation by transforming learning into a creative, goal-oriented, and collaborative experience. Students reported that the tasks promoted real-world application of knowledge and helped them see connections across different subjects, leading to deeper understanding and active learning. Despite challenges with coordination, time management, and initial team conflicts, students developed crucial communication, leadership, and organizational skills. The tasks also strengthened social bonds and fostered collaborative creative processes, improving both personal confidence and academic performance. Students recommended proactive scheduling, clear instructions, and structured support to reduce stress and ensure successful and meaningful engagement in future collaborative projects.

Table 6

Summary of Main Themes and Sub-themes from the Perceptions of Teachers on Cross-Collaborative Performance Tasks

Summary of Main Themes and Sub-themes from the Perceptions of Teachers on Cross-Collaborative Performance Tasks

Main Themes	Sub-Themes
Perceived Effectiveness on Learning Outcomes	• Integrative application • Skill development • Competency alignment
Strategies for Teacher Collaboration	• Foundational communication • Proactive planning • Supportive consensus
Implementation Challenges	• Logistical disruption • Workload management • Conceptual clarity
Suggestions for Improvement	• Systematic evaluation • Enhanced clarity • Proactive planning

Based on the teachers' interviews, the thematic analysis shows that Cross-Collaborative Performance Tasks were perceived as highly effective in enhancing learning outcomes through integrative application, skill development, and alignment with competency standards. Teachers highlighted the importance of foundational communication, proactive planning, and supportive consensus as key strategies for successful collaboration. They also identified challenges in implementation, including logistical disruptions, workload management, and the need for conceptual clarity. Despite these challenges, teachers emphasized that the tasks promoted meaningful interdisciplinary learning and professional growth. To further improve the approach, they recommended systematic evaluation, enhanced clarity of instructions, and proactive planning to ensure smooth and effective implementation.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The implementation of Cross-Collaborative Performance Tasks (CCPT) significantly enhanced Grade 11 students' engagement, motivation, creativity, leadership, and collaborative skills. Students reported that these tasks allowed them to apply knowledge across multiple disciplines, connect classroom learning to real-life contexts, and develop higher-order thinking skills such as critical analysis, problem-solving, and communication. Teachers perceived CCPT as a feasible, integrative, and pedagogically effective approach that strengthened professional collaboration, instructional planning, and consensus-building. Despite challenges related to scheduling, workload, logistical coordination, and conceptual clarity, the overall findings confirm that interdisciplinary, performance-based tasks foster deeper learning, meaningful engagement, and holistic development among both students and teachers.

The action research process highlighted the transformative potential of CCPT in promoting engagement, motivation, and meaningful learning. Reflection at every stage, from planning and implementation to observation and evaluation, enabled both teachers and students to identify challenges, refine instructional strategies, and recognize the value of interdisciplinary collaboration. Personally, this experience reinforced the importance of evidence-based innovation in teaching and the role of systematic inquiry in improving student outcomes. It also emphasized that complex, integrative projects, while demanding, cultivate essential life and academic skills, foster professional growth among teachers, and create richer, more connected learning experiences. Moving forward, ongoing reflection and iterative improvement will ensure that CCPT continues to meet student needs and strengthen teacher collaboration, ultimately enhancing learning across the curriculum.

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RESEARCH DOCUMENTATION

BOOSTING STUDENTS' ENGAGEMENT AND ACADEMIC PERFORMANCE IN HOPE 3 THROUGH INTERACTIVE TECHNOLOGY BASED LEARNING (ITBL) AMONG GRADE 12 STEM STUDENTS

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INTRODUCTION

This action research examined the impact of Interactive Technology-Based Learning (ITBL) on student engagement and academic performance among Grade 12 STEM students in HOPE 3 at Pardo National High School. It addressed the limitations of traditional, teacher-directed PE instruction in engaging digital-native learners and meeting 21st-century skill demands. Supported by related studies, the research highlighted the potential of interactive and multimedia tools to enhance motivation and participation, particularly in Physical Education. Given the limited local studies on technology integration in Philippine public PE classes, this study aimed to bridge the gap by determining whether ITBL could improve engagement and academic outcomes. The findings are intended to inform effective, learner-centered PE strategies aligned with DepEd's goals for technology integration and 21st-century learning.

DISCUSSION OF RESULTS

The data indicate that the integration of ITBL positively affected both student engagement and academic performance. The increase in engagement suggests that interactive, technology-enhanced lessons can motivate students to participate actively. Likewise, the improvement in academic performance demonstrates that ITBL helps reinforce learning through visual, auditory, and interactive modalities.

Table 1: *Level of Student Engagement Before and After ITBL*

Indicators	Pre-Test Mean	Post-Test Mean	Interpretation
Participation in Class	2.7	4.0	Moderate → High
Collaboration with Peers	2.8	4.2	Moderate → High
Motivation to Learn	2.9	4.1	Moderate → High
Overall Engagement	2.8	4.1	Moderate → High

Table 2: *Academic Performance Before and After ITBL*

Indicators	Pre-Test Score (%)	Post-Test Score (%)	Interpretation
Knowledge of HOPE Concepts	68	85	Satisfactory → Very Good
Practical Skills	70	86	Satisfactory → Very Good
Overall Performance	68	85	Satisfactory → Very Good

Table 3: *Statistical Analysis (Paired t-test)*

Variable	Pre-Test Mean	Post-Test Mean	t-value	p-value	Significant?
Student Engagement	2.8	4.1	8.23	0.001	Yes
Academic erformance	68	85	9.15	0.001	Yes

The findings show that integrating ITBL has a positive impact on both student engagement and academic achievement. Higher engagement levels indicate that technology-enhanced, interactive lessons encourage more active student participation. Similarly, the gains in academic performance suggest that ITBL strengthens learning by utilizing visual, auditory, and interactive approaches.

CONCLUSIONS AND RECOMMENDATIONS/ REFLECTIONS

The pre-test survey revealed that students had a moderate level of engagement before the integration of Interactive Technology-Based Learning (ITBL), with an average score of 2.8 on a 5-point scale. Classroom observations indicated that students were sometimes distracted during traditional lessons and participated only when prompted.

After the four-week ITBL intervention, post-test survey results showed a notable improvement in engagement, with an average score of 4.1. Observation checklists corroborated these findings, indicating that students were actively participating, collaborating in group activities, and responding to online quizzes with enthusiasm. (*see Table 1*)The results show that ITBL improved both student engagement and academic performance by encouraging active participation and reinforcing learning through interactive and multimedia approaches.

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RESEARCH DOCUMENTATION

IMPROVING LEARNER'S PERFORMANCE ON THE IDENTIFIED DIFFICULT COMPETENCY IN FILIPINO V THROUGH SIMPLIFIED WORKSHEETS

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INTRODUCTION

The Most Essential Learning Competencies (MELC) determined Filipino as a subject that is concerned with developing the (5) macroskills. Moving towards the development of this primer goal, learners showed low mastery especially on the identified difficult competency "Nakikilala at Nagagamit ang pangkalahatang sanggunian sa pagtatala ng mahahalagang impormasyon tungkol sa isang isyu" during regular class time. This action research aimed to evaluate the effectiveness of the utilization of simplified worksheets with enclosed concepts and substantial examples to improve the written performance of 25 Grade V-learners from Paknaan Elementary School. Research indicates that effective instructional materials, particularly worksheets with clear concepts and examples, enhance students' knowledge, skills, motivation, and engagement (Muzumdar, 2016; Dizon et al., 2021; Torrefranca, 2017; Vergara, 2017; Julianti & Sumarmin, 2019; Estacio, 2015; Erkus, 2017).

DISCUSSION OF RESULTS

The research employed a pre-intervention and post-intervention assessment to evaluate the significant improvement in the utilization of simplified worksheets. The data were tabulated and interpreted before and after the intervention and was summarized in the following tables.

Table 1: *Pre-Test Results*

LEARNERS	PRE-TEST (20 item test) V- POMELO		PRE-TEST (20 item test) V- SWEETSOP	
	PRE-TEST	%	PRE-TEST	%
1	12	60	10	50
2	9	45	11	55
3	11	55	9	45
4	8	40	10	50
5	13	65	12	60
6	12	60	7	35
7	11	55	12	60
8	11	55	11	55
9	12	60	10	50
10	7	35	8	40
11	11	55	11	55
12	9	45	12	60
13	10	50		
Total Score	136		123	
MPS	52.30%		51.25%	

The pre-test results for both Grade V-Pomelo and Grade V-Sweetsop learners revealed that the identified Filipino competency posed a significant challenge. Among the **13 V-Pomelo learners**, scores ranged from **35% to 65%**, with **69% of learners scoring below 60%**, indicating limited mastery and the need for targeted intervention. Similarly, the **12 V-Sweetsop learners** obtained scores ranging from **35% to 60%**, with most learners demonstrating only partial understanding of the competency. Although some learners showed moderate prior knowledge, overall results highlighted clear learning gaps. These findings emphasize the necessity of **appropriate instructional interventions**, such as simplified worksheets, to strengthen comprehension and improve learners' performance in difficult competency.

Table 2: *Post-Test Results*

LEARNERS	POST-TEST (20 item test) V- POMELO		POST-TEST (20 item test) V- SWEETSOP	
	POST-TEST	%	POST-TEST	%
1	19	95	16	80
2	17	85	18	90
3	17	85	16	80
4	16	80	17	85
5	19	95	19	95
6	20	100	15	75
7	16	80	19	95
8	16	80	19	95
9	19	95	17	85
10	15	75	18	90
11	16	80	20	100
12	15	75	19	95
13	18	90		
Total Scores:	223		213	
MPS	85.75%		88.75%	

The post-test results for both V-Pomelo and V-Sweetsop show that the learners achieved **very high mastery** of the competencies assessed in the 20-item test. Scores ranged from **75% to 100%**, indicating that all learners demonstrated strong understanding of the lesson. For **V-Pomelo**, the MPS of **85.75%** shows that majority of learners were able to answer at least 17 out of 20 test items correctly. Meanwhile, **V-Sweetsop** recorded a slightly higher MPS of **88.75%**, showing a more consistent cluster of high scores between 85–100%.

Table 3: *Comparative Pre-Test and Post-Test Results*

LEARNERS	POMELO		SWEETSOP	
	PRE-TEST	POST TEST	PRE-TEST	POST-TEST
1	12	19	10	16
2	9	17	11	18
3	11	17	9	16
4	8	16	10	17
5	13	19	12	19
6	12	20	7	15
7	11	16	12	19
8	11	16	11	19
9	12	19	10	17
10	7	15	8	18
11	11	16	11	20
12	9	15	12	19
13	10	18		
Total Score	136	223	123	213
	52.30%	85.75%	51.25%	88.75%

The results of the pre-test and post-test revealed a significant improvement in the performance of both Pomelo and Sweetsop group after the intervention. For the Pomelo group, the Mean Percentage Score increased from **52.30%** in the pre-test to **85.75%** in the post-test, showing a marked gain of ***33.45*** in mastery. Similarly, the Sweetsop group demonstrated an impressive rise in their MPS from **51.25%** to **88.75%** showing a marked gain of ***37.50%***. The total scores of both groups increased substantially, with Pomelo gaining **87 points** and Sweetsop gaining **90 points** from pre-test to post-test.

These consistent improvements indicate that the intervention was highly effective in **enhancing learners' understanding, bridging prior knowledge gaps, and strengthening mastery** of the targeted difficult Filipino competency.

Table 4: *Pre-Test and Post-Test Results in Percentage Difference*

Learners	V- POMELO		Difference	V- SWEETSOP		Difference
	Pre-Test	Post-Test	Inc (Dec)%	Pre-Test	Post-Test	Inc (Dec)%
1	60	95	35	50	80	30
2	45	85	40	55	90	35
3	55	85	30	45	80	35
4	40	80	40	50	85	35
5	65	95	30	60	95	35
6	60	100	40	35	75	40
7	55	80	25	60	95	35
8	55	80	25	55	95	40
9	60	95	35	50	85	35
10	35	75	40	40	90	50
11	55	80	25	55	100	45
12	45	75	30	60	95	35
13	50	90	40			

The pre-test scores of V-Pomelo ranged from 35% to 65%, while the post-test scores ranged from 75% to 100%. The difference in scores (improvement) ranged from 25% to 40%, with most learners showing a consistent increase. The average improvement among learners under V-Pomelo is approximately 36%, indicating that the learners significantly improved after the intervention.

The **pre-test scores** of V-Sweetsop ranged from **35% to 60%**, and the **post-test scores** improved to a range of **75% to 100%**. The **difference in scores** varied between **30% and 50%**, also showing consistent improvement among all learners. The **average improvement** for V-Sweetsop is around **37%**, slightly higher than V-Pomelo. This indicates that the **V-Sweetsop intervention was equally or slightly more effective** in improving learners' performance**:**

This suggests that the simplified worksheets were effective in enhancing learners' performance.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

The study confirmed that the use of **simplified worksheets** as a remedial intervention significantly improved the **written output performance and mastery of a difficult Filipino competency** among 25 Grade V learners from V-Pomelo and V-Sweetsop. Pre-test and post-test results revealed substantial academic gains, with Mean Percentage Scores increasing from **below mastery levels (around 51–52%) to very good and excellent levels (85–89%)**. All learners demonstrated positive improvement, successfully closing initial learning gaps.

In addition to quantitative gains, qualitative observations showed increased **learner confidence, motivation, and active participation**, indicating that simplified worksheets are effective, inclusive, and learner-friendly instructional tools. These materials supported independent learning, clarified thinking processes, and made complex concepts more accessible, resulting in improved comprehension and performance.

Based on these findings, the study recommends the **regular integration of simplified worksheets** in both remediation and initial instruction, institutional support for their development, and teacher training focused on scaffolded and data-driven material design.

Future research is encouraged to explore their effectiveness across other subjects and grade levels. The reflection emphasizes that learner difficulties often stem from inaccessible materials rather than lack of ability, reinforcing the importance of **empathetic, learner-centered, and differentiated instruction** in improving educational outcomes.

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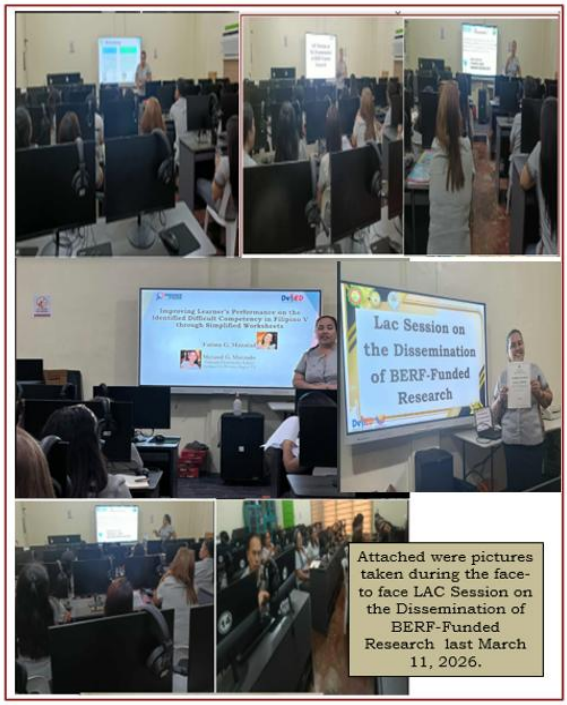

INTEGRASYON NG ESTRATEHIYANG SQ3R SA PHIL-IRI: PAGPAPAHUSAY NG KASANAYAN SA PAG-UNAWA NG MGA MAG-AARAL SA FILIPINO 7

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INTRODUKSYON

Ang pag-unawa sa binasa ay isang mahalagang kasanayan na patuloy na nagiging hamon sa maraming mag-aaral sa Pilipinas, batay sa mga natuklasan ng PISA, 2022 at Phil-IRI. Sa Lanas National High School, ipinakita ng Phil-IRI Verification Test noong 2025 na 81% ng mga mag-aaral sa Baitang 7 ay nasa antas ng *frustration* at *instructional* sa pag-unawa sa Filipino, na nagpapakita ng limitadong epekto ng umiiral na mga programa sa pagbasa.

Dahil dito, kinakailangan ang mas sistematiko at epektibong interbensyon upang mapabuti ang kasanayang ito. Ang estratehiyang SQ3R (Survey, Question, Read, Recite, Review) ay kinikilalang mabisang pamamaraan sa pagpapahusay ng pag-unawa at pagganap sa pagbabasa.

Nilalayon ng pananaliksik na ito na suriin ang bisa ng estratehiyang SQ3R bilang interbensyon para sa mga mag-aaral sa Baitang 7 na nasa *frustration* at *instructional level* ng Phil-IRI, partikular sa pag-unawa sa binasa.

TALAKAYAN NG MGA RESULTA

Ang pag-aaral ay gumamit ng paunang pagsusulit (pretest) at pahuling pagsusulit (post-test) upang suriin ang pagbabago sa kasanayan sa pag-unawa ng pagbasa ng mga mag-aaral matapos gamitin ang estratehiyang SQ3R. Inipon at sinuri ang datos mula sa mga mag-aaral na nasa *frustration* at *instructional level* batay sa Phil-IRI *Verification Test*. Ang kanilang resulta bago at pagkatapos ng interbensyon ay inilalahad at tinatalakay sa mga sumusunod na talahanayan.

Talahanayan 1

Mga Marka ng mga Mag-aaral sa Paunang Pagsusulit (Pre-test) at ang Lebel ng Pag-unawa

	Batay sa Iskor ng Mag-aaral	Lebel ng Pag-unawa sa Pagbasa
1	5	Instructional
2	3	Frustration
3	7	Independent
4	0	Frustration
5	5	Instructional
6	4	Frustration
7	1	Frustration
8	1	Frustration
9	2	Frustration
10	3	Frustration
11	5	Instructional
12	2	Frustration
13	3	Frustration
14	5	Instructional
15	3	Frustration
16	4	Frustration
17	4	Frustration
18	1	Frustration
19	0	Frustration
20	5	Instructional
21	4	Frustration
22	3	Frustration
23	1	Frustration
24	5	Instructional
25	2	Frustration
26	2	Frustration
27	5	Instructional
28	4	Frustration
29	5	Instructional
30	5	Instructional
31	4	Frustration
32	6	Instructional
33	5	Instructional
34	3	Frustration
35	7	Independent
Mean = 3.54		**SD = 1.81**

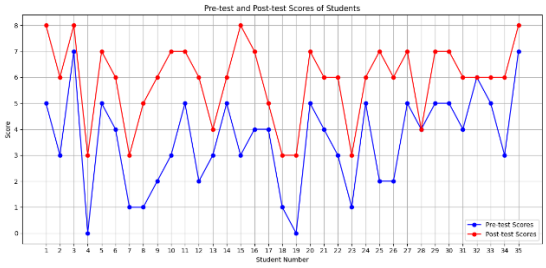
Talahanayan 2

Mga Marka ng Mag-aaral sa Panghuling Pagsusulit (Post-test) at ang Lebel ng Pag-unawa

		Lebel ng Pag-unawa sa Pagbasa Batay sa Iskor ng Mag-aaral
1	8	Independent
2	6	Instructional
3	8	Independent
4	3	Frustration
5	7	Independent
6	6	Instructional
7	3	Frustration
8	5	Instructional
9	6	Instructional
10	7	Independent
11	7	Independent
12	6	Instructional
13	4	Frustration
14	6	Instructional
15	8	Independent
16	7	Independent
17	5	Instructional
18	3	Frustration
19	3	Frustration
20	7	Independent
21	6	Instructional
22	6	Instructional
23	3	Frustration
24	6	Instructional
25	7	Independent
26	6	Instructional
27	7	Independent
28	4	Frustration
29	7	Independent
30	7	Independent
31	6	Instructional
32	6	Instructional
33	6	Instructional
34	6	Instructional
35	8	Independent
Mean = 5.89		**SD=1.51**

Ipinakita ng mga resulta ang malinaw na pag-unlad sa pag-unawa ng mga mag-aaral matapos gamitin ang SQ3R. Tumaas ang mean sa 5.89, at bumaba ang standard deviation mula 8.81 patungong 1.51, na nagpapakita ng mas pantay-pantay na pagganap.

Sa distribusyon, 37.14% ng mga mag-aaral ang umabot sa *Independent Level*, 42.86% sa *Instructional*, at 20% na lamang ang nasa *Frustration Level*. Ang pagbaba mula 62.86% patungong 20% sa Frustration Level ay nagpapakita ng malinaw na epekto ng interbensyon. Pinatunay ng mga pagbabagong ito na ang SQ3R ay epektibong nakapagpahusay sa reading comprehension ng mga mag-aaral sa Baitang 7.



Ipinapakita ng datos ang malinaw na pagtaas ng marka ng karamihan sa mga mag-aaral matapos ang interbensyon. Makikita na ang *post-test* ay mas mataas kaysa sa *pre-test* para sa halos lahat ng respondente, na nagpapakita ng makabuluhang pag-unlad sa kanilang pag-unawa sa binasa.

Ang pagtaas ng marka pagkatapos ng interbensyon ay nagpapakita na ang SQ3R ay epektibong nakatulong sa pagpapahusay ng kasanayang pangkomprehensiyon. Samantala, ang pagbaba ng bilang ng mga mag-aaral na nanatili sa mababang marka ay lalo pang nagpapatunay na naging matagumpay ang interbensyon sa pag-angat ng kanilang antas ng pag-unawa.

Partikular na kapansin-pansin ang paglipat ng maraming mag-aaral mula *Frustration Level* tungo sa *Instructional* at *Independent Level*, na sumusuporta sa mga natuklasan ng naunang pag-aaral ni Cataraja (2022) na nagpakitang mas epektibo ang SQ3R kaysa sa tradisyunal na pagbabasa.

Ang mga resulta ay nagpapahiwatig na ang sistematikong proseso ng Survey, Question, Read, Recite, Review ay nakapagpatibay sa kakayahan ng mga mag-aaral na unawain ang teksto. Patunay ito na ang SQ3R ay maaaring magsilbing mahalagang estratehiya sa iba't ibang sitwasyong pang-edukasyon upang mapalago ang kasanayan sa pagbasa na may pag-unawa.

KONKLUSYON, REKOMENDASYON, AT REPLEKSYON

Ipinakita ng resulta ng pag-aaral na ang SQ3R ay may makabuluhang epekto sa pagpapahusay ng pag-unawa sa pagbasa ng mga mag-aaral sa Baitang 7. Ang malaking pagtaas sa post-test scores ay nagpapapatunay na ang sistematikong hakbang ng SQ3R ay mas epektibo kaysa sa tradisyonal na paraan ng pagbabasa. Ang paglipat ng mga mag-aaral mula *Frustration Level* patungo sa *Instructional* at *Independent Level* ay malinaw na indikasyon ng pag-unlad.

Mula sa karanasan ng implementasyon, naging makabuluhan ang SQ3R dahil nagbigay ito ng malinaw na proseso ng pagbasa sa aktibong pag-unawa ng mga mag-aaral. Bagama't may iilang nangangailangan pa ng dagdag na suporta, malinaw na nakatulong ang estratehiya sa kanilang pangkalahatang pagganap.

Inirerekomenda ang patuloy na paggamit ng SQ3R sa Filipino at iba pang asignatura, pagsasanay para sa mga guro, pagbibigay ng dagdag na gabay sa mga estudyanteng nangangailangan pa ng suporta, at pakikipagtulungan sa mga magulang upang mas maging matagumpay ang paglinang ng kasanayan sa pagbasa.

Sa kabuuan, ipinapakita ng pag-aaral na ang SQ3R ay isang mabisang pamamaraan na makatutulong sa paghubog ng mga mag-aaral na may mas mataas na antas ng pag-unawa, kumpiyansa, at kahandaan para sa mas malalim na pagkatuto.

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TEACHPLAY HUB: ENHANCING MATHEMATICAL PROFICIENCY OF GRADE 3 LEARNERS THROUGH GAME-BASED STRATEGIES

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INTRODUCTION

Mathematics is a fundamental component of education worldwide, fostering essential skills such as logical reasoning, problem-solving, and critical thinking (Akhter, 2018). However, despite its importance, global trends reveal persistent challenges in mathematics education. Many countries, including the Philippines, face a troubling decline in students' participation and performance in the subject (Beaudhamp & Parkinson, 2018). This alarming trend raises pressing concerns about the effectiveness of current teaching methods, the adaptability of education systems to evolving demands, and the collective responsibility of stakeholders in addressing these issues. While much of the existing research focuses on digital game-based learning, this study introduces an alternative approach: a non-digital, teacher-led game-based intervention that directly addresses foundational mathematical skills. The TeachPlay Hub, designed by the researcher, is a structured, game-based intervention program tailored to the specific numeracy challenges identified in EGMA assessments. The TeachPlay Hub was implemented over four weeks during remediation hours, with a structured rotation of activities and weekly formative assessments to measure student progress. This approach seeks to transform traditional numeracy instruction into an engaging, student-centered learning experience, ensuring that non-numerate learners build confidence, develop foundational math skills, and foster a positive attitude toward learning. By assessing the impact of this intervention, the study aimed to provide evidence-based insights for improving mathematics remediation programs, equipping teachers with effective, replicable strategies to support struggling learners.

DISCUSSION OF RESULTS

This study employed a pretest–posttest action research design to evaluate the effectiveness of game-based instructional strategies, particularly non-digital games, in improving learners' mathematics performance. Data were collected using the Early Grade Mathematics Assessment (EGMA) to assess learners' fluency and accuracy. The results obtained before and after the intervention are presented in the succeeding tables.

Table 1

Overall Performance of Participants Before the Intervention

Learner	Subtraction HPS (20)	Missing Number HPS (10)	Word Problem HPS (5)	Overall Score (35)	Percentage	Interpretation
A	5	3	1	9	26%	Non-Numerates
B	12	5	3	20	57%	Non-Numerates
C	8	3	1	12	34%	Non-Numerates
D	8	4	1	13	37%	Non-Numerates
E	7	2	2	11	31%	Non-Numerates
F	13	3	2	18	51%	Non-Numerates
G	4	3	3	10	29%	Non-Numerates
H	11	4	2	17	49%	Non-Numerates
I	6	6	2	14	40%	Non-Numerates
J	8	5	1	14	40%	Non-Numerates

Legend: 0%-74% (Non-Numerates) 75%-100% (Numerates)

Table 1 shows the pretest results of ten identified learners across three numeracy skill areas: subtraction, missing number, and word problem solving. The overall scores ranged from 9 to 20 out of a possible 35, equivalent to percentages between 26% and 57%. Based on the given legend, all learners fall under the non-numerate category (0%–74%), indicating that none of the learners met the expected level of numeracy proficiency prior to the intervention.

In terms of specific skills, subtraction scores were generally low, with several learners obtaining less than half of the highest possible score, suggesting weak mastery of basic subtraction concepts and procedures. Performance in the missing number tasks also reflected limited number sense and difficulty in recognizing numerical patterns and relationships. Moreover, word problem solving yielded the lowest scores among the three skill areas, highlighting learners' challenges in mathematical reasoning, and application of operations to real-life situations.

Overall, the consistently low performance across all learners and skill domains underscores significant learning gaps in foundational numeracy skills. These results emphasize the need for targeted instructional

interventions focusing on strengthening subtraction strategies, enhancing number sense, and developing problem-solving skills. The pretest findings served as the basis for identifying learners' learning needs and for designing appropriate remedial activities to improve their numeracy performance.

Table 2

Overall Performance of Participants After the Intervention

Learner	Subtraction HPS (20)	Missing Number HPS (10)	Word Problem HPS (5)	Overall Score (35)	Percentage	Interpretation
A	13	7	3	23	66%	Non-Numerates
B	16	9	4	29	83%	Numerates
C	17	8	3	28	80%	Numerates
D	11	6	3	20	57%	Non-Numerates
E	17	9	4	30	86%	Numerates
F	17	8	4	29	83%	Numerates
G	16	9	4	29	83%	Numerates
H	18	9	4	31	89%	Numerates
I	12	6	2	20	57%	Non-Numerates
J	18	8	4	30	86%	Numerates

Legend: 0%-74% (Non-Numerates) 75%-100% (Numerates)

The posttest results revealed varying levels of numeracy competency among the learners, reflecting both the effectiveness of the intervention and the differing learning needs of the students. Out of the ten participants, seven learners (B, C, E, F, G, H, and J) achieved overall scores ranging from 28 to 31 out of 35, corresponding to percentages between 80% and 89%, and were classified as Numerates, demonstrating strong proficiency in subtraction, missing number identification, and word problem-solving skills. In contrast, three learners (A, D and I) scored between 20 and 23 out of 35, with percentages ranging from 57% to 66%, and were identified as non-numerates, indicating that they still face challenges in foundational numeracy areas.

The intervention, which involved three non-digital math games over a four-week period, appears to have contributed to the improved performance of the numerate learners by providing a hands-on, interactive approach to practicing mathematical concepts. Activities such as Math Bingo, Number Sequence Memory Match, and Picture Puzzle likely enhanced engagement, motivation, and conceptual understanding, allowing learners to apply subtraction, missing number, and problem-solving skills in a playful yet structured context. However, the continued difficulties observed among the non-numerate learners highlight that while game-based interventions are effective for many, some learners require additional scaffolding, repeated practice, and individualized support to reach mastery.

From an educational perspective, these findings underscore the importance of differentiated instruction and the incorporation of interactive learning strategies that cater to varying learner abilities. Teachers should consider using non-digital games as a complementary tool to traditional instruction, while also implementing targeted remedial activities for learners who need extra reinforcement. Regular monitoring through formative assessments can help identify learners at risk of falling behind and guide instructional planning, ensuring that all students develop the foundational numeracy skills necessary for success in more complex mathematical tasks.

Table 3

Significant Difference Between the Pretest and Posttest Scores

Learner	Pre-test			Post-test			Comparative Analysis	
	Score	%	Interpretation	Score	%	Interpretation	Difference	%
A	9	26%	Non-Numerates	23	66%	Non-Numerates	14	40%
B	20	57%	Non-Numerates	29	83%	Numerates	9	26%
C	12	34%	Non-Numerates	28	80%	Numerates	16	46%
D	13	37%	Non-Numerates	20	57%	Non-Numerates	7	20%
E	11	31%	Non-Numerates	30	86%	Numerates	19	54%
F	18	51%	Non-Numerates	29	83%	Numerates	11	31%
G	10	29%	Non-Numerates	29	83%	Numerates	19	54%
H	17	49%	Non-Numerates	31	89%	Numerates	14	40%
I	14	40%	Non-Numerates	20	57%	Non-Numerates	6	17%
J	14	40%	Non-Numerates	30	86%	Numerates	16	46%
Average	**13.8**	**39.4**		**26.1**	**74.7**		**12.3**	**35.1**

The pre-test results show that all learners were classified as non-numerates, with scores ranging from 9 to 20 and an average score of 13.8 (39.4%). This indicates that prior to the intervention, the learners generally demonstrated low numeracy skills and had difficulty in the assessed mathematical competencies.

In contrast, the post-test results reveal a marked improvement in learner performance. Scores increased to a range of 20 to 31, with an average score of 26.1 (74.7%). Notably, seven out of ten learners (B, C, E, F, G, H, and J) progressed from being non-numerates to Numerates, suggesting that the intervention was effective in improving their numeracy skills. Although four learners (A, D and I) remained classified as non-numerates, their post-test scores still showed substantial gains compared to their pre-test performance.

The comparative analysis further highlights these improvements. All learners

exhibited positive differences in scores, with increases ranging from 6 to 19 points, and percentage gains from 17% to 54%. Learner E demonstrated the highest improvement, with a 19-point (54%) increase, while Learner I recorded the least improvement at 6 points (17%). On average, learners improved by 12.3 points or 35.1%, reflecting a significant overall gain in performance.

The table clearly indicates that the intervention had a positive and significant impact on learners' numeracy skills, as evidenced by the substantial increase in post-test scores and the shift of the majority of learners from the Non-Numerate to Numerate classification.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Based on the quantitative data obtained from the implementation of the TeachPlay Hub, which utilized structured non-digital game-based activities for Grade 3 learners, several key conclusions were drawn regarding the effectiveness of the intervention and its impact on learners' mathematical proficiency. The findings clearly indicated that the integration of TeachPlay Hub as a game-based instructional strategy served as a highly effective and well-structured intervention in enhancing the mathematical abilities of Grade 3 learners. The use of non-digital games provided an engaging and learner-centered learning environment that supported active participation, conceptual understanding, and skill development. As a result, learners demonstrated improved performance in mathematics, affirming the value of incorporating play-based and experiential learning strategies in elementary mathematics instruction.

Considering the favorable findings and conclusions of this study, the researcher put forward the following recommendations to institutionalize the TeachPlay Hub intervention and to further enhance its effectiveness and sustainability in improving the mathematical performance of Grade 3 learners. It is strongly recommended that the use of TeachPlay Hub be institutionalized as a structured instructional intervention in Grade 3 mathematics. The school is encouraged to develop and produce game-based instructional materials that are aligned with learners' needs, interests, and local context. The creation of these materials will promote learner engagement, cultural relevance, and meaningful learning experiences, thereby strengthening the impact of the TeachPlay Hub intervention.

Reflecting on the implementation of this action research, the integration of non-digital games proved to be highly effective not only in enhancing learners' mathematical skills but also in building their confidence and active participation during rhythmic activities. Learners became more motivated, engaged, and willing to participate, which contributed to a more positive and supportive learning environment. This experience highlights the significance of adopting innovative, learner-centered instructional approaches as effective strategies in addressing persistent mathematical difficulties in elementary education and in fostering holistic learner development.

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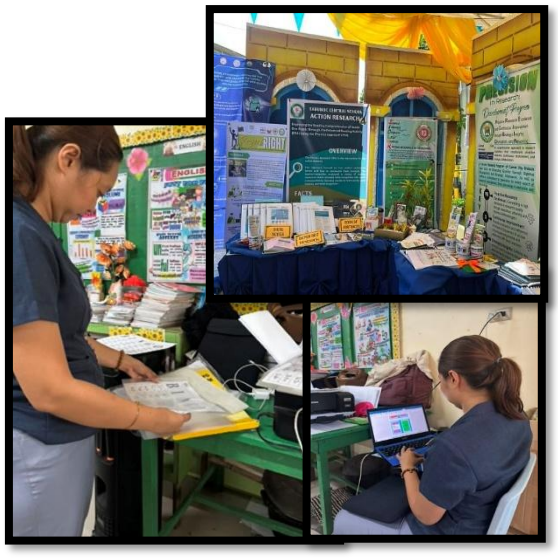

RESEARCH BULLETIN

THE EMPOWERED ACHIEVERS AS MENTORS (TEAM) PROGRAM: LEADING THE WAY TO MASTERY OF FOUR FUNDAMENTAL SKILLS IN MATHEMATICS AMONG GRADE 4 LEARNERS

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INTRODUCTION

Mathematics is a fundamental component of education, playing a critical role in developing students' analytical thinking, problem solving abilities, and real-life application skills. However, at Kayam Elementary School, data from the 4th Quarterly Reports on Assessment of the learners during S.Y. 2024–2025, when they were in Grade 3, reveal that 17.85% of the 28 learners struggle with mastering the four fundamental mathematical skills. These students, classified as "Fairly Satisfactory" or those with failing grades, face significant challenges that negatively impact their academic performance, self-confidence, and motivation to learn. If unaddressed, these difficulties could create long-term learning gaps, making it harder for students to grasp more advanced mathematical concepts in higher grade levels and beyond.

To respond to this issue, this action research introduces The Empowered Achievers as Mentors (TEAM) Program, a structured peer-assisted learning initiative designed to support struggling students in developing proficiency in the four fundamental mathematical skills. The intervention strategically leverages academically accomplished students, referred to as "Achievers," as mentors. Achievers are identified as students who have obtained an average grade of 90 and above in mathematics during the 4th quarter. At Kayam Elementary School, five Achievers have been selected to serve as mentors, with a 1:1 mentor-mentee ratio, ensuring personalized support and effective intervention. Through structured mentoring sessions and interactive activities, this program aims to foster a collaborative and engaging learning environment where struggling learners receive targeted assistance to improve their mathematical competencies.

The theoretical foundation of this approach is rooted in the principles of cooperative learning and Vygotsky's Zone of Proximal Development (ZPD), which emphasize that students learn more effectively when supported by more knowledgeable peers who provide guidance and scaffolding. High-achieving mentors can bridge the gap between instruction and comprehension by offering relatable explanations, reinforcing concepts, and encouraging struggling learners. Studies have consistently highlighted the benefits of peer-assisted learning in mathematics education. Cruz and Santiago (2023) demonstrated its effectiveness in addressing Filipino students' numeracy challenges, while Johnson and Lee (2020) emphasized its global impact in fostering collaboration, boosting engagement, and improving conceptual understanding in mathematics classrooms.

Despite the well-documented benefits of peer-assisted learning, limited empirical evidence exists regarding its systematic implementation in addressing the four fundamental mathematical skills among Grade 4 students at Kayam Elementary School. Furthermore, there has been insufficient exploration of how school administrators and teachers can support the sustainability and integration of peer mentoring programs into the existing curriculum.

Thus, this study seeks to evaluate the effectiveness of The Empowered Achievers as Mentors (TEAM) Program.

DISCUSSION OF RESULTS

The study employed a researcher developed 10 items test for each mathematical fundamental skill, designed to assess the effectiveness of the intervention. The test was used both as a pre-test and a post test. The data collected from the participants before and after the intervention is summarized in the following tables.

Pre-Test Results

Data in Table 1 presented the mean of the pre-test score of the 5 Grade 4 learners in their 10-item pre-test for each mathematical skill before the implementation of the TEAM Program intervention. The results show that learners demonstrated developing proficiency in three of the four fundamental mathematical operations addition, subtraction, and multiplication with mean scores ranging from 7.4 to 7.6. These results indicate that while learners possess a moderate understanding of these basic skills, further reinforcement and practice are still necessary to achieve mastery.
In contrast, the mean score for division is notably lower at 3.8, which falls under the struggling category. This suggests that division remains the most challenging operation for the learners, indicating significant gaps in comprehension and computational skills. The findings imply that learners may have difficulty applying their knowledge of multiplication facts and inverse operations when performing division.

Table 1
Pre-Test Results

Operation	Mean	Interpretation
Addition	7.4	Developing
Subtraction	7.6	Developing
Multiplication	7.4	Developing
Division	3.8	Struggling

This result underscores the need for targeted instructional help of the TEAM Program, particularly in strengthening learners' conceptual understanding of division through guided practice, mentorship and customized activities. Emphasizing mastery skills and the connection between multiplication and division is essential to ensure balanced of mastery of the four fundamental skills of mathematical operation.

Post-Test Results

Data in Table 2 revealed a significant improvement in learners' performance across all four fundamental mathematical operations following the implementation of the TEAM Program. Learners achieved proficient levels in addition, subtraction, and multiplication, with mean scores of 9.4, 9.4, and 8.8, respectively. These results demonstrate that the mentoring sessions effectively strengthened the learners' computational fluency and conceptual understanding in these areas.

Although division remains the lowest among the four operations, the mean score of 6.6, categorized as developing, reflects a considerable increase compared to the pre-test mean of 3.8. The improvement suggests that the TEAM Program has positively contributed to learners' confidence and skill development, while also highlighting the need for continuous reinforcement and practice to attain mastery.

Table 2
Post-Test Results

Operation	Mean	Interpretation
Addition	9.4	Proficient
Subtraction	9.4	Proficient
Multiplication	8.8	Proficient
Division	6.6	Proficient

Comparative Results

Table 3 presents the comparison between the pre-test and post-test mean scores of learners in the four basic mathematical operations after the implementation of the TEAM Program.

Table 3
Comparative of Pre-test Mean and Post test Mean results with Mean Difference and Interpretation

Operation	Pre-Test Mean	Post-Test Mean	Mean Diffe-rence	Interpretation
Addition	7.4	9.4	2.0	Significant Improvement
Subtraction	7.6	9.4	1.8	Significant Improvement
Multiplication	7.4	8.8	1.4	Significant Improvement
Division	3.8	6.6	2.8	Significant Improvement

The results show an increase in post-test mean scores across all operations, indicating overall improvement in learners' mathematical performance. Addition and subtraction both demonstrated substantial gains, with mean differences of 2.0 and 1.8, respectively, reflecting strengthened foundational skills. Multiplication also showed notable improvement with a mean difference of 1.4, suggesting better recall and application of number facts. Most notably, division exhibited the largest mean difference of 2.8, indicating that the TEAM Program was particularly effective in addressing learners' difficulties in

this operation. Overall, the findings suggest that peer-assisted learning through the TEAM Program significantly enhanced learners' understanding and mastery of the four fundamental mathematical skills.

Analysis of Mentees' Response

Improved understanding of fundamental mathematical skills

"Mas nakasabot nako gamay maam kaysa sauna."
"Mas sayon lage sabton ug si Mentor nako ang magtudlo maam, lasbi na sa multiply naa siyay gitudlo nga kamot gamit ra lage maam"

Most of the mentees reported an improved understanding of basic mathematical operations after participating in the mentoring sessions. They shared that the guidance provided by their mentors enabled them to grasp the lessons more easily.

It helps them to understand the operation clearly in a way that can make the learners manage and solve with confidence.

Comfortable and Supportive Learning Environment

"Dili raman ko mauwaw mangotana ni Mentor maam kay buotan raman siya gud, di pod siya masuko nako bxta di ko kahibaw mo answer unya hinayhinayon raman niya pagstorya unsaon ni pagsolve maam"
"Malingaw ko bxta si Mentor magtudlo nako maam kay mag cge raman mi ug katawa unya magbinuang-binuang raman mi bxta gani lisod mokatawa ra gihapon mi unya hantod kadugayabn makahibaw nako"

Learners described feeling comfortable and happy during the mentoring sessions. They shared that the environment encouraged them to ask questions and participate more actively. The presence of laughter and light interactions, as shared by the learners, also suggests that the sessions promoted not only cognitive engagement but also emotional ease, contributing to a more effective and enjoyable learning experience.

Increased in Self-Confidence

"Katong pag-una maam mahadlok ko mo answer lage kay basin makasab-an ko ni mentor, pero okay raman diay siya maam. Mangotana na jod ko bxta malibog ko ron."
"Usahay makabantay ko maam nga maka-answer rako usahay bisan ako ra pero kana ra di kayo lisod maam ug dili libog"
gihapon mi unya hantod kadugayabn makahibaw nako"

Many mentees mentioned that they developed greater confidence in solving mathematical problems, even without direct assistance.

I observed that as the mentoring sessions progressed, they became more willing to attempt answers independently, even when the tasks were slightly challenging. Their statements reflect a shift from fear of making mistakes to a readiness to try and seek clarification when needed.

Need for continued support

"Kanang dali ra man kaayo ta mahuman ug answer-asnwer ani maam, usahay kay di pa kaayo ko kasabot gani unya mahuman nata kay mo ana man ka oras na."
"Gamay gihapon akog score sa divide divide maam, mangotana pako ug balik ni Mentor ron kay wa pa kaayo ko kasabot maam"
gihapon mi unya hantod kadugayabn makahibaw nako"

Some learners expressed the need for additional time and further assistance to strengthen their mathematical skills, particularly in more difficult areas such as division.

I recognized that several of them continue to need sustained support and guidance, especially in more challenging operations such as division. Their comments made me aware that the allotted time for each session was sometimes insufficient for them to fully grasp the concepts before moving on to the next task.

Analysis of Mentors' Responses

Effectiveness of Peer Mentoring as a Teaching Approach

"Sayonon ra nako akong examples niya maam para dali siya kasabot. Makasabot raman pod siya maam."

"Malipay lage ko maam bxta makasolve siya ug sakto kay makaingon pod ko bah nga may nalang nakasabot na siya siya gamay"

Mentors found peer-assisted learning effective in helping mentees improve their skills. They emphasized the use of simple examples and engaging activities suited to the mentees' learning levels.

I observed that mentors were able to simplify examples and adjust explanations based on the mentees' level of understanding, which made learning more accessible. Hearing mentors' express pride and satisfaction when their mentees successfully solved problems showed me that the process was mutually beneficial. Mentees improved their skills while mentors strengthened their leadership and instructional abilities.

Active Participation of Mentees

"Excited lage na si Mentee 1 pirme maam, labi na naa ta assignment kay para daw inig kagabie maka.asnwer ra pod sya ug basta Friday pod maam excited lage kaayo mi maam kay naa man saging ug juice."

"Daghan kaayo na sya ug pangotana nako maam pero okay ra maam kay iyang pangotana kay about man sa atong asa siya gilisuran pod."

Mentors observed that their mentees became more engaged and motivated during the mentoring sessions.

I observed that many mentees attended the activities with excitement, especially when tasks or assignments were given, which showed their growing interest in the lessons.

Development of Mentors' Leadership and Teaching Skills

"Usahay maam kay kapoyon ko ug explain niya pero mangita nalang ko ug sayon-sayon ra nga explaination para makasabot siya dayon."

" Karon maam ganahan nako magteacher-teacher niya kay pamati nako makamao raman diay ko mo explain gamay kay makasabot man si mentee 2 sa akoa."

The mentoring experience also contributed to the mentors' personal growth. They reported improved patience, communication skills, and self-confidence in teaching.

I observed notable growth in the mentors' patience, communication skills, and self-confidence. They do not only develop practical teaching techniques but also enhanced their ability to lead and guide peers effectively.

Challenges Encountered During Mentoring

"Usahay maam ba kay lisoran ko mag.explain niya labi na di siya kasabot dayon sa akong giingon nga ingon anion gani nimo."

"Kasagaran maam kay dili mi kahuman sa among activity kay dali kaayo mahuman imong oras man."

Some mentors experienced difficulties related to time management and explaining certain mathematical concepts clearly.

Mentors learned to be more patient, to adjust their explanations, and to manage time more efficiently during teaching. These experiences not only tested their problem-solving skills but also strengthened their resilience and adaptability as emerging leaders and educators.

Parents' Feedback

Improved Academic Confidence and Interest

"Karon bitaw maam magstorya mi ni mentee 2 ganahan naman kuno siya mo answer ug math labi na usahay kay makasabot jod siya tarong ug makapangtana kuno siya sa iyang mentor maam."

"Sauna daw maam maulaw siya mangotana ug motubag kay kahiabw kuno siya sayop iyang answer pero karon maam sakto na kuno iyan mga answer intawn."

Most of the parents reported that the mentoring sessions helped their children develop a more positive attitude towards learning.

I observed these changes indicate that the mentoring program do not only support academic growth but also fostered a positive attitude towards learning. Learners became more curious, and confident in expressing their ideas, which is essential for long term academic success.

Children became more responsible

> *"Inig kaabot ana sa balay maam manguha dayon na ug lalog kay para daw ighuman niya ug kuhag lalog mag-answer na siya sa gipa-answer ni maam niya nga assignment ug activity sa kani inyong program maam ay."*
>
> *"Akong nabantayan niya karon maam sa kay bisan di siya storyaan or pangotan-on mag-answer-answer ra intawn na ug iyaha maam usahay magsamok sa ate kay naa siyay nalibgan sauna maam ig-abot ana magpunay ra jod na ug duwa bisan kasab-an pa na nimo."*

Parents noticed that their children became more disciplined in managing their study time and completing activities.

I observed that the mentoring program helped children develop greater responsibility and self-discipline.

Increased parental engagement and awareness

> *"Karon maam mangotana na jod ko ana niya bitaw ug unsay gibuhat ninyo sa eskwelahan, unsay buhatonon ninyo nga gipadala ni maam."*
>
> *"Mura pod ko ug nakahunahuna ron maam nga importante pod pagapangotan-on ang mga bata ug kumusta or unsay gibuat nilan diri sa eskwelahan para makahibaw pod oko unsay dagan sa ilang pag-eskwela."*

Parents also shared that the program encouraged them to become more involved and aware of their children's behavior and progress.

I observed that the mentoring program not only impacted the students but also encouraged greater parental involvement in their children's learning.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

From my perspective as a teacher and researcher, I can say that the mentoring program through the TEAM Program had a positive impact on both mentors and mentees. I observed that the mentors developed their leadership and teaching skills. They became more patient, confident, and able to explain lessons in ways their mentees could understand. They also learned to face challenges, like managing time and explaining difficult concepts, which helped them grow as leaders.

I also saw that the mentees became more confident in their learning, more interested in participating, and more responsible in completing their assignments and managing their study time. Parents shared that they became more involved and aware of their children's progress, supporting them at home.

Overall, I believe that the mentoring program not only helped improve students' academic skills but also promoted personal growth, responsibility, and cooperation among mentors, mentees, and parents. This experience showed me the value of mentoring programs in supporting both learning and teaching in our school.

Recommendations

Based on the positive quantitative and qualitative findings of the study, the following recommendations are proposed to strengthen and sustain the implementation of the TEAM Program:

1. Continue and expand the mentoring program to help more students improve their basic mathematical skills, confidence, and engagement.
2. Increase the duration of the sessions to allow more time for learners to fully understand lessons and complete activities, especially for challenging concepts like division.
3. Provide additional support for challenging concepts, especially in operations like division, to ensure learners fully understand the lessons.
4. Offer ongoing mentor training and guidance to strengthen teaching, time management, and leadership skills.

5. Encourage parental involvement by providing guidance on supporting their children's learning at home.
6. Maintain a supportive and engaging learning environment where learners feel comfortable asking questions and participating actively.
7. Monitor and evaluate program effectiveness using tests, observations, and feedback to adjust strategies and meet students' needs.

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RESEARCH DOCUMENTATION

RESEARCH BULLETIN

VRE MATH: A LESSON FRAMEWORK USING VIDEO, RATHMELL TRIANGLE MODEL, AND EXERCISES TO ENHANCE PROBLEM-SOLVING SKILLS

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INTRODUCTION

This action research explores the effectiveness of the VRE Math Framework, an instructional approach that integrates Video Animated Stories, the Rathmell Triangle Model, and contextualized Exercises, in enhancing the problem-solving skills of Grade 4 learners identified as emerging in the Rapid Mathematics Assessment (RMA) at Calibasan Elementary School. Addressing persistent difficulties in mathematical word problem solving—often rooted in weak comprehension and representational skills—the study responds to both school-level diagnostic data and broader national concerns on low numeracy performance. By combining multimedia-based motivation, structured visual–verbal–symbolic abstraction, and guided practice through localized Learning Activity Sheets, the VRE Math Framework aims to scaffold learners' understanding and application of mathematical concepts in real-life contexts. Using a quantitative pre-test and post-test design, this research examines whether such a contextualized and multimodal lesson framework can significantly improve learners' mathematical proficiency, engagement, and confidence, while also providing a replicable model for numeracy intervention in similar educational settings.

DISCUSSION OF RESULTS

Table 1: Comparative Analysis of Learners' Math Skill Levels Before and After the Intervention

Areas / Learner Level	Before the Intervention (Pre-test)	After the Intervention (Post-test)	p-value	Verbal Interpretation
Emerging (Not Proficient)	7	1		
Emerging (Low Proficient)	11	3		
Developing (Nearly Proficient)	2	12		
Transitioning (Proficient)	0	3	0.0003	Significant Improvement
At Grade Level (Highly Proficient)	0	1		
Weighted Mean	1.75	3.37		
Mean Difference	1.62			

Note. *Results were tested at a 0.05 margin of error (α = 0.05) using a paired t-test to determine the significant difference between pre-test and post-test scores.*

Table 1 shows a significant improvement in learners' mathematical performance after the implementation of the VRE Math Framework. Prior to the intervention, most learners were at the Emerging (Low Proficient) level, with a mean score of 1.75, indicating limited mastery of problem-solving skills. After the intervention, the mean increased to 3.37, classified as Developing (Nearly Proficient), with a mean difference of 1.62. The computed p-value of 0.0003 (α = 0.05) confirms a statistically significant difference between pre-test and post-test scores, indicating that the observed improvement can be attributed to the VRE Math Framework. These results support the effectiveness of integrating multimedia, representational scaffolding, and contextualized instruction in improving learners' problem-solving skills and addressing numeracy gaps.

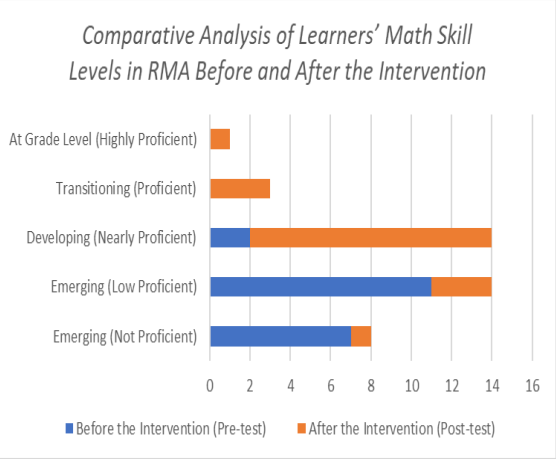

Table 2: *Comparative Analysis of Learners' Math Skill Levels in RMA Before and After the Intervention*

Components of VRE Math Framework	Composite Mean	Verbal Interpretation
Contextualized Video Animated Story	3.61	Highly Effective
Rathmell Triangle-Based Discussion	3.53	Effective
Contextualized Learning Activity Sheets (LAS)	3.61	Highly Effective
Overall Composite Mean	**3.58**	**Highly Effective**

Table 2 shows the overall results which demonstrate that the VRE Math Framework was perceived as highly effective in supporting learners' development of mathematical problem-solving skills. The components worked together to create a comprehensive and interactive learning experience: the animated story sparked curiosity and motivation; the Rathmell Triangle-Based Discussion deepened conceptual understanding; and the contextualized LAS provided essential reinforcement and practice.

These findings echo Mayer (2009) and Paivio's (1991) Dual Coding Theory, which emphasize the power of visual–verbal integration in learning, and DepEd's (2022) advocacy for contextualized instruction to promote inclusivity and comprehension. The slightly lower ratings in "Independent Problem-Solving" and "Instruction Clarity" indicate that while the VRE framework is effective overall, further scaffolding may enhance autonomous learning..

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTION

This action research concluded that the **VRE Math Framework** is an effective intervention for improving the problem-solving skills of Grade 4 learners identified as emerging in the Rapid Mathematics Assessment (RMA). The significant increase in post-test scores and the shift of learners from emerging to developing and proficient levels indicate that integrating video-based instruction, representational scaffolding through the Rathmell Triangle Model, and contextualized exercises enhances comprehension, engagement, and mathematical confidence.

Based on these findings, it is recommended that teachers adopt the VRE Math Framework as part of regular instruction and remediation programs, particularly for learners who struggle with word problems. School administrators may consider institutionalizing the framework as a school-based numeracy intervention aligned with RMA results. Future implementations may improve effectiveness by refining video pacing, clarifying activity instructions, and providing additional support for independent problem-solving.

Reflecting on the process, this study highlighted the importance of **action research as a tool for reflective teaching practice**. The systematic cycle of planning, implementation, and evaluation enabled data-driven instructional decisions that positively influenced learner outcomes. The experience affirmed that contextualized, multimedia-based strategies not only address learning gaps but also promote sustained learner motivation and teacher growth.

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RESEARCH DOCUMENTATION

RESEARCH BULLETIN

ENHANCING GRADE 7 LEARNERS' PROFICIENCY THROUGH THE KINDLE & FUN WORKBOOK

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INTRODUCTION

Operations like addition, subtraction, multiplication, and division on integers are basic concepts that must be mastered as one important foundation in learning mathematics so that learners will be able to grasp more complex concepts and solve difficult problems with confidence (Cetin, 2019).

Effective math teaching must get learners involved in all parts of learning. This includes how they think, interact with others, and manage their feelings. Some active strategies are: paper folding, gallery walks and math trails. These methods make learning math fun and engaging as noted by Vale and Barbosa in 2023.

During the School Learning Action Cell (SLAC) sessions at Bato National High School, mathematics teachers noted that many Grade 7 learners continued to struggle in operating integers despite the use of engaging strategies. Quarter 3 Assessment results of SY 2024–2025 revealed that 20.73% of learners were categorized at the Fairly Satisfactory level of proficiency, this indicated weak mastery of foundational concepts. To address the difficulties faced by Grade 7 students in performing integer operations, researchers implemented a four-week Demystifying Integer Operations Intervention through the use of "Kindle and Fun" workbook. It was designed to provide step-by-step lessons, guided activities, and learning tasks that would help learners strengthen their understanding of integer concepts and operations and an improved outcome of understanding is expected.

DISCUSSION OF RESULTS

The study employed a pre-experimental research design, which is a one-group pre-test and post-test approach. The data collected for the experiment were analyzed using descriptive statistics to find out the effectiveness of the four-week Demystifying Integer Operations Intervention utilizing the "Kindle and Fun" workbook among struggling grade seven students in operating integers. The results of this study are given below:

Table 1: *Pre-Test Scores of Grade 7 Struggling Learners (n=18)*

Learner	Pre-test Score (30 items)	Performance Category
1	15	Did Not Meet Expectations (DME)
2	13	DME
3	12	DME
4	12	DME
5	7	DME
6	8	DME
7	13	DME
8	12	DME
9	9	DME
10	6	DME
11	5	DME
12	4	DME
13	6	DME
14	8	DME
15	16	DME
16	14	DME
17	11	DME
18	14	DME
Mean:		**10.28**

Table 1 shows the mean score of 10.28 out of 30 for the pre-test, an evident struggle for learners in operating integers at the onset. Out of 18 participants, 94.44% obtained scores below 50%, which clearly shows that a large learning deficit with respect to the mathematics competency being targeted.

Table 2: *Post-Test Scores of Grade 7 Struggling Learners*

Measure	Post-test Score (30-items)	Post-test
1	30	Outstanding (O)
2	30	O
3	30	O
4	28	O
5	27	Very Satisfactory (VS)
6	26	VS
7	30	O
8	30	O
9	25	VS
10	26	VS
11	26	VS
12	24	Fairly Satisfactory (FS)
13	26	VS
14	26	VS
15	30	O
16	30	O
17	30	O
18	30	O
Mean	**28**	

Learners' post-tests average score stands at 28.00 out of 30, indicating high levels of mastery among the learners after the intervention. From the results, all the learners have increased their understanding in mastering integer operations. The improvements in learners' skills were achieved through the use of interactive lessons, speed drills and exercises from the Kindle & Fun Workbook.

Table 3. *Comparative Analysis: Pre-Test vs. Post-Test*

Measure	Pre-test	Post-test	Difference	Interpretation
Mean Score	10.28	28	+17.72	Significant Improvement
Score Range	5–14	25–30	-	Learning Gains Evident
Performance	Mostly	Mostly	-	Large Learning Gains Across All
Distribution	DME/FS	O	-	Improved Proficiency of Learners

Comparing the results of the learners' pre-test and pos-test scores, as reflected in table 4, the learners performed considerably better in the post-test. The mean score in the pre-test is 10.28 while 28.00 is the mean score of the post-test with mean gain of 17.72 points. A decrease in standard deviation of the post-test with a difference of -1.65 from the pre-test scores result, suggests learners' scores became more consistent after the intervention. The score range also improved from 4-16 to 24-30. In addition, the computed Cohen's d value of 8.89 points to a very large intervention effect. These results showed enough evidence that through Kindle and Fun Workbook most participants' skills improved from lower performance categories to the Outstanding level.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Going through this action research helped the researchers to better understand the difficulties encountered by Grade 7 learners in performing operations on integers.

The implementation of the Demystify Operations on Integers Intervention with the Kindle & Fun Workbook not only improved the proficiency of struggling Grade 7 learners but also demonstrated the importance of innovative, engaging, and learner-centered teaching. This study emphasizes that when instructional strategies are carefully designed, properly implemented, and continuously monitored, they can improve learners' proficiency in mathematics, address foundational learning gaps, and empower both learners and teachers.

It can be concluded that well-structured, learner-oriented, and interactive interventions are effective ways of enhancing the mathematical ability of struggling Grade 7 learners. The use of Demystify Operations on Integers: Kindle & Fun Workbook resulted in increased learners' competency in working with integers, which was evident from the significant improvement in mean scores and a large effect size. The intervention not only

helped learners improve their mathematics but also motivated them and improved their confidence in solving mathematical problems. Mathematics teachers should deliver lessons creatively that capture the interest of the learners.

To continue achieving these improvements, teachers should be provided with learning opportunities and training that can help them strengthen their use of interactive. differentiated, and learner-centered teaching strategies. Encourage collaboration among teachers, school heads, and stakeholders to share effective classroom practices and support sustained implementation of effective teaching practices. Continue and expand the use of the workbook in other grade levels and mathematics topics by adapting the activities to the needs and abilities of the students.

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RESEARCH DOCUMENTATION

RESEARCH BULLETIN

IMPROVING MASTERY OF ADDITION AND SUBTRACTION OF FRACTIONS IN MATHEMATICS 8 AMONG GRADE 8 LEARNERS THROUGH TEACHER-MADE DIGITIZED ACTIVITIES

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INTRODUCTION

A teacher with eight years of experience teaching math and eleven years of experience teaching information communication technology (ICT) says that math is hard for many students and that teachers need to be creative in how they teach it to keep students interested, help them understand the concepts, and help them master the skills. It also needs pupils to be able to think critically and solve problems, which could be too much for them if they are used to just memorizing things in other classes. The fundamental challenge of teaching children to add and subtract fractions results from their inability to focus during lessons because of the instructional methods. Teacher-Made Digitized Activities enable teachers to create enjoyable learning experiences through their implementation of various digital resources which include educational applications and interactive assessment tools and games. Digital learning applications provide students with immediate feedback together with individualized educational content which results in significant math skill development according to research findings (Zheng, Warschauer, and Lin 2021). The activities enable teachers to monitor student progress more effectively which enables them to provide customized educational support for each individual student. Digital learning tools not only increase student engagement with educational material but also improve their ability to solve problems and comprehend new information according to research findings (Bozkurt 2022). The Test of Fundamental Academic Skills (TOFAS) showed that eleven eighth graders are not meeting planning standards, especially when it comes to adding and subtracting fractions. Students need to know how to add and subtract fractions because these skills are the building blocks for the problems they will have to solve later. This shows that we need to do certain things to fix basic math problems. Adding digital activities to math lessons makes the learning environment more interactive and effective, which helps students learn how to do fraction operations.

DISCUSSION OF RESULTS

Before the intervention was put into place, the results of the Test of Fundamental Academic Skills (TOFAS) were looked at to find students who were having trouble with fraction operations. The results showed that Grade 8 students did not do well on adding and subtracting fractions. The students achieved their lowest performance when they answered only 19.70% of the math problems correctly. The result demonstrated that the student required immediate teaching assistance because he had a significant learning gap. More research showed that 11 male students got 0% of the answers right on the fraction addition and subtraction part of the TOFAS. The researchers selected these students for the study and then used their initial scores as the foundation for conducting action research.

A pre-test created by the researcher was given to make sure the TOFAS results were correct. The results showed that students did not understand basic fraction ideas, such as how to find common denominators, how to rename fractions, and how to choose the right math operations.

Table 1: *Pre-Test Statistical Summary*

Statistic	Result
Highest Score	5
Lowest Score	0
Mean Score	2.09
Mean Percentage	4.35%
Standard Deviation	1.78
Interpretation	Very Low Mastery

The students showed that they lack of understanding about fraction operations through their pre-test score results which

reached a mean percentage of 4.35 percent. The results demonstrate that the students experienced significant difficulties with essential fraction skills which required them to receive structured learning through enjoyable activities and technological support. The intervention period lasted for several weeks which required the use of Teacher-Made Digitized Activities. The educational material also had lessons that students could interact with and tests and assignments that were based on games. These would help the students understand the ideas better and get better at following the steps.

Table 2: *Post-Test Statistical Summary*

Statistic	Result
Highest Score	38
Lowest Score	28
Mean Score	33.18
Mean Percentage	69.12%
Standard Deviation	3.18
Interpretation	Proficient

The post-test mean percentage score of 69.12% indicates a Proficient level of mastery. All learners demonstrated measurable improvement, with mastery levels ranging from Developing to Advanced.

A comparison of the pre-test and post-test scores highlights the significant learning gains achieved by the learners.

Table 3: *Comparison of Pre-Test and Post-Test Mean Scores*

Measure	Pre-Test	Post-Test	Mean Gain
Mean Raw Score	2.09	33.18	+31.09
Mean Percentage	4.35%	69.12%	+64.77%

The calculated learning gain percentage was very high as the score obtained on the pre-test was very low. Such a large increase indicates that students made significant and meaningful progress in their understanding and use of fractions.

The findings of the study indicate that the use of digitized activities can improve the process of teaching addition and subtraction of fractions. At the start of the investigation, the learners had very low mastery given that the pre-test mean percentage was 4.35%. Following the intervention, their performance improved significantly with the mean post test being 69.12%. All the eleven participants showed significant improvement. This included those learners who initially scored 0% but later scored in the 50-79% range. The standard deviation from pre-test to post-test has decreased, indicating that students' understanding of the concept of fractions was more uniform. The improvements stem from the engagement, repetition, and feedback of a digitized activity. Students were able to correct misconceptions and continue the practice.

Ultimately, the results support that the Teacher-Made Digitized Activities can be used as an effective strategy to address the learning gap of the fraction operations, as well as improve the learners' conceptual understanding and performance of mathematics significantly.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

This action research was carried out to determine the effect of Teacher-Made Digitized Activities on Grade 8 learners' ability to add and subtract fractions. Before implementing the use of Teacher-Made Digitized Activities, students were found to have a pre-test mean percentage score of 4.35%, and TOFAS results indicated that all participants had 0% accuracy with regards to these operations. After implementing digitized activities pilot projects, students made significant improvements in both how well they understood the concepts and how well they were able to apply the operations. Students' post-test mean percentage score was 69.12%, which resulted in the majority of students now being classified at the Developing to Proficient levels in Mastery. In conclusion, structured, interactive, and technology-supported instruction significantly improves student performance on fraction operations and enhances learning. It is recommended that mathematics teachers,

school administrators, curriculum planners, learners, and future researchers collaboratively support and expand the use of teacher-made digitized instructional activities, particularly aligned with MATATAG competencies, to enhance engagement, improve mathematics achievement, strengthen ICT-supported teaching and learning, and further validate its effectiveness across different contexts and learner populations. Overall, our study showed that designed digital learning materials can really help students learn Math. These digital activities helped learners not only to get better at math but also to enjoy learning. When students are given the tools, clear help, and chances to try things out in an interactive way, they can get over their difficulties and do much better. The experience we had showed that with the support, students can make real progress in their learning. The digitized activities made learning Math fun and less scary for the students. Students were able to master the skills with the help of digitized activities.

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RESEARCH BULLETIN

ENHANCING GRADE 10 STUDENTS' GRAPHING SKILLS IN POLYNOMIAL FUNCTIONS USING GEOGEBRA MOBILE APPLICATION

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INTRODUCTION

Problem-solving skills are crucial in Polynomial functions are instrumental in modeling various real-world phenomena, such as projectile motion in physics, economic trends in finance, and engineering designs in technology (Ryoo, 2019). Learning to graph these functions helps develop students' ability to analyze and interpret data effectively, a skill crucial for practical applications (NCTM, 2000). Additionally, polynomial functions are prominently featured in standardized assessments like PISA (Programme for International Student Assessment) (OECD, 2022) and are integrated into the DepEd curriculum (DepEd, 2013), highlighting their significance in both global and national educational frameworks. Proficiency in this topic not only supports academic success but also nurtures critical thinking and problem-solving abilities, which are indispensable in professional and everyday contexts.

Despite the importance of understanding polynomial functions, classroom observations at Babag National High School revealed that many Grade 10 students struggled to visualize and connect their algebraic representations to graphical forms. Despite repeated instruction, students often expressed confusion when tasked with identifying key features of the graphs, such as intercepts, turning points, and end behavior. This lack of confidence became more apparent during assessments, where students frequently made errors in plotting graphs accurately and describing their behavior. Furthermore, conventional teaching methods relying heavily on static representations of graphs limited students' ability to fully grasp the dynamic nature of polynomial functions.

Analysis of Grade 10 student performance from three consecutive second-quarter assessments (2021 to 2023) confirmed these observations, revealing consistent difficulties in three core competencies-illustrating, understanding, and describing polynomial behavior. For instance, in the 2021–2022 school year, students achieved an average score of 29.38% in graph illustration, 28.15% in understanding function behavior, and 28% in describing polynomial graphs. These low scores persisted across subsequent years, indicating a persistent learning gap. Interviews with Grade 10 mathematics teachers corroborated these findings, emphasizing the need for innovative instructional strategies, particularly for learners at risk of failing.

Research suggests that technology-enhanced and gamified interventions can effectively address such learning gaps. Structured, interactive, and technology-based approaches have been shown to foster engagement, motivation, and conceptual understanding in mathematics (Haciomeroglu, 2011; McKnight et al., 2016). Previous studies implementing a gamified flipped classroom approach (Ofril & Ofril, 2025) demonstrated that integrating gamification with active learning strategies, collaborative tasks, and immediate feedback promotes higher learner engagement, confidence, and problem-solving skills.

GeoGebra, as a dynamic and interactive mathematics software, provides an ideal platform to operationalize these strategies. Its versatility across algebra, calculus, and statistics, combined with accessibility on multiple devices and a user-friendly interface, allows learners to explore mathematical concepts with immediate visual feedback (Tomaschko & Hohenwarter, 2016). Previous studies (Ardina & Boholano, 2024) further highlight the benefits of using GeoGebra to enhance conceptual visualization, although most research has been conducted in higher education contexts.

Given its promising features and supported by research on gamified learning approaches, GeoGebra can create a dynamic, interactive, and engaging learning environment that addresses the needs of at-risk Grade 10 students. This approach aligns with the goals of the Basic Education Development Plan (BEDP) 2030, which emphasizes technology-enabled learning to improve mathematics education and address persistent learning gaps.

DISCUSSION OF RESULTS

Comparison of Pre-test and Post-test Scores Before and After the Intervention

The results of the pre-test and post-test show an increase in students' scores following the intervention. As presented in Table 1, the pre-test yielded a mean score of 4.1 with a standard deviation of 2.6 indicating that learners initially had low mastery of the topic. After the intervention, the post-test mean increased to 6.5 with a standard deviation of 2.3 reflecting a gain of 2.4 points. This upward shift suggests that the intervention positively influenced students' understanding of the lesson. Additionally, the slight decrease in standard deviation from 2.6 to 2.3 implies that students' scores became more consistent, indicating a more uniform level of learning across the group.

Table 1

Comparison of Pre-test and Post-test Scores Before and After the Intervention

	Mean (M)	Standard Deviation (SD)
Pre-test	4.1	2.6
Post-test	6.5	2.3

Paired t-test Results for Pre-test and Post-test Scores

To verify whether the intervention significantly affected students' performance, a paired t-test was conducted. The results, shown in Table 2, reveal a t-value of 4.1295 with a p-value of 0.002561, which is below the 0.05 significance level. This indicates a statistically significant improvement in students' scores from pre-test to post-test, suggesting that the increase was attributable to the intervention. The findings imply that the strategy was effective in enhancing learners' understanding of the topic, addressing learning gaps, and promoting more consistent and higher academic achievement. Integrating this approach into classroom instruction may therefore support better content mastery and overall student performance.

Table 2

Paired t-test Results for Pre-test and Post-test Scores

	t-value	p-value
Pre-test vs Post-test	4.1295	0.002561

Summary of Observation Notes During the Implementation of the GeoGebra Intervention

During the implementation, several observable behaviors indicated learners' engagement, challenges, and progress. At the start, students struggled with manual graphing and navigating the GeoGebra app. Some had difficulty using the features to adjust coefficients or plot points accurately, and device access limitations were noted. Over time, engagement increased as learners explored the app, experimented with graphs, and checked the accuracy of their manual work. Collaboration helped mitigate device challenges, and students gradually demonstrated greater independence and confidence.

Table 3

Summary of Observation Notes During the Implementation of the GeoGebra Intervention

Observed Behavior	Description Based on Classroom Observations	Frequency	Examples of Observed Instances
Increasing Engagement	Students became more participative and eager to use GeoGebra as sessions progressed.	High	Students voluntarily checked their graphs using GeoGebra.
Difficulty in Manual Graphing	Learners struggled with plotting polynomial functions accurately during initial sessions.	High	Frequent erasures, repeated requests for assistance.
Struggles with App Navigation	Several students found it challenging	Moderate	Students asked how to input

Observed Behavior	Description Based on Classroom Observations	Frequency	Examples of Observed Instances
	to locate tools or adjust coefficients in the application.		equations or move the graph.
Improvement During Practice	Students showed steady progress in graphing accuracy and app usage across sessions.	High	Faster plotting, fewer errors, more independent work.
Device Access Challenges	Some learners lacked personal devices or had intermittent access, affecting practice time.	Low–Moderate	Students shared phones or waited for device availability.

Qualitative Results: FGD Themes After Implementation

After completing the intervention, a focus group discussion (FGD) was conducted to capture learners' reflections on their experiences with GeoGebra in graphing polynomial functions. The thematic analysis revealed three main themes. Theme 1: Enhanced Understanding and Accuracy in Graphing Polynomial Functions highlights how students used GeoGebra to visualize graphs and verify the correctness of their manually drawn work, strengthening their conceptual understanding and accuracy. Theme 2: Increased Engagement and Confidence in Graphing reflects the heightened motivation, interest, and self-assurance students gained as they interacted with the application. Theme 3: Overcoming Challenges in Using GeoGebra captures the initial difficulties learners faced, including limited device access, navigating the app's features, and balancing manual and digital graphing, which were gradually addressed through practice and guidance. Together, these themes provide a comprehensive view of how GeoGebra impacted students' learning, engagement, and skill development in polynomial graphing.

Themes	Essence
Theme 1: Enhanced Understanding and Accuracy in Graphing Polynomial Functions	Students demonstrated improved comprehension of polynomial graphs through the use of GeoGebra, which allowed them to dynamically visualize functions and confirm the correctness of their manually drawn graphs, directly enhancing their graphing skills.
Theme 2: Increased Engagement and Confidence in Graphing	The interactive features of GeoGebra motivated students to actively participate in graphing activities and boosted their confidence in solving polynomial problems, encouraging persistence and self-directed learning.
Theme 3: Overcoming Challenges in Using GeoGebra	Students faced difficulties such as limited access to devices, initial struggles in navigating GeoGebra's features, and occasional over-reliance on the app instead of manual problem-solving, yet these challenges were gradually overcome, supporting the development of their graphing skills.

Theme 1. *Enhanced Understanding and Accuracy in Graphing Polynomial Functions*

Six of the participants agreed that using GeoGebra for graphing polynomial functions significantly enhanced their understanding and allowed them to confirm the accuracy of their manually drawn graphs. Students reported that the interactive and dynamic visualization provided by GeoGebra enabled them to connect algebraic expressions with graphical representations, making abstract concepts such as roots, turning points, and end behavior more concrete and accessible. This also helped them identify errors in their calculations and reinforced their conceptual understanding of polynomial functions. The following statements illustrate their experiences:

"Pag kina-unhan, maglisud ko ug sabot sa liko-liko sa graph, pero karon makita na nako pinaagi sa graph." (S1)
"Ang pag-usab-usab sa coefficients sa GeoGebra nakatabang gyud nako maklaro ang effect sa graph." (S7)
"Mas dali nako ma-check kung sakto akong answers kay makita nako dayon sa graph." (S2)
"Bisan ang mga complex nga polynomial functions, mas sayon na nako masabtan gamit ang GeoGebra." (S5)
"Gigamit nako ang graph sa cellphone pag tan-aw kung sakto ba akong ge-graph sa papel." (S4)
"Akoang gisuwayan ang lain-laing coefficients, mas makasabot ko unsaon paglihok sa graph bisan wala pa ko nag-compute sa papel." (S6)

These responses indicate that GeoGebra serves as both a visualization and confirmation tool, supporting students in linking symbolic algebraic representations to their graphical forms (Haciomeroglu, 2011). Interactive technology like GeoGebra scaffolds learning by providing immediate feedback, encouraging self-directed exploration, and reinforcing conceptual understanding (McKnight et al., 2016). Research also shows that dynamic mathematics software enhances students' ability to visualize functions, experiment with variables, and validate their solutions, leading to greater accuracy and confidence in problem-solving.

Moreover, the opportunity to experiment with coefficients and observe real-time effects on graphs allowed students to engage in active learning, explore mathematical patterns, and develop a deeper understanding of polynomial behavior. By confirming their work through GeoGebra, students were able to strengthen both procedural and conceptual knowledge, making abstract mathematical concepts more tangible and meaningful. This aligns with findings that interactive and dynamic tools facilitate better comprehension, retention, and skill development in mathematics education (Ardina & Boholano, 2023).

Theme 2. *Increased Engagement and Confidence in Graphing Polynomial Functions*

The respondents reported that using GeoGebra made learning polynomial graphing more engaging and interesting, which gradually increased their motivation to participate in mathematics activities. Several students admitted that before using GeoGebra, they felt hesitant, anxious, or stressed when plotting graphs manually, particularly when working with complex functions. However, the interactive and dynamic features of the software encouraged them to explore, experiment, and actively engage in the learning process, which in turn boosted their confidence in solving polynomial problems.

Students shared their experiences as follows:

"Mas lingaw ko karon sa Math kay makita nako dayon ang graph kung sakto ba akong gi-plot." (S3)
"Bisan lisod sa una, karon ganahan nako mu-try og lain-laing polynomial kay tungod sa GeoGebra." (S1)
"Mas confident nako kay makita nako ang resulta dayon ug ma-check nako akong answer." (S5)
"Sa una permi ko ma-stress sa plotting manually, pero karon ganahan nako kay maka-explore ko og graph sa GeoGebra." (S2)
"Karon pako kasabot sa math ayh." (S10)
"Sayon raman diay mag-graph". (S7)

These responses indicate that GeoGebra's interactivity not only facilitated understanding but also transformed students' attitudes toward learning, turning initial frustration into curiosity, motivation, and a willingness to engage with challenging tasks. Research shows that dynamic mathematics software enhances student engagement, promotes active exploration, and strengthens self-confidence, particularly in abstract areas like polynomial graphing (ResearchGate, 2024; Wu, Zhu, & Xu, 2025).

Moreover, the ability to visualize the immediate effects of changing coefficients and observe graphs in real time gave students assurance in their problem-solving abilities and fostered a sense of ownership over their learning (Ziatdinov & Valles Jr, 2022; Bulut & Bulut, 2009). This confidence often encouraged students to attempt more complex problems and persist through challenges, demonstrating that engagement and motivation are closely tied to interactive, technology-assisted learning experiences.

Theme 3. *Overcoming Challenges in Using GeoGebra for Graphing Polynomial Functions*

Despite the benefits, students faced several challenges that initially affected their learning. These included limited access to devices, unfamiliarity with GeoGebra features, and occasional over-reliance on the app instead of practicing manual graphing. Nevertheless, students gradually adapted and learned to integrate GeoGebra with traditional graphing methods, which supported the development of their skills.

Students reported their challenges as follows:

> *"Maglisod man ko ug gamit sa cellphone. Mag-patudlo ra ko ni ***** unsaon pag-butang sa graph". (S9)*
> *"Wa ko'y cellphone magamit". (S4)*
> *"Di ko kasabot maong akoa lang sundogon ang graph." (S2)*

These responses suggest that while technology enhances learning, students still need practice, guidance, and access support to maximize its benefits. Research indicates that combining dynamic mathematics software with manual problem-solving and gradual familiarization strengthens both conceptual understanding and procedural skills (Ardina & Boholano, 2023; Edwards & Jones, 2015). Overcoming these challenges allowed students to become more resilient, independent, and competent in graphing polynomial functions, demonstrating meaningful skill development even for those at risk of failing mathematics.

Reflection

1. Status of Learners' Graphing Skills Before the Implementation of the GeoGebra Intervention

Before implementing the GeoGebra mobile application, the ten Grade 10 learners at risk of failing Mathematics demonstrated low mastery of polynomial graphing, limited confidence, and difficulties with manual plotting. The pre-test mean score of 4.1 with a standard deviation of 2.6 indicated poor conceptual understanding and inconsistent performance. Classroom observations revealed that learners struggled to visualize graphs, connect algebraic expressions to their graphical representations, and plot points accurately, frequently requiring guidance. **This data suggested that learners lacked both foundational knowledge and confidence, highlighting the need for a teaching approach that could enhance understanding, procedural accuracy, engagement, and conceptualization of abstract functions.**

2. Status of Learners' Graphing Skills During the Implementation of the GeoGebra Intervention

During implementation, observable behaviors indicated learners' engagement, challenges, and gradual progress. Initially, students faced difficulties navigating the GeoGebra app, adjusting coefficients, and plotting points accurately, while limited device access restricted practice opportunities. Manual graphing remained challenging at first. Over time, learners became more engaged, explored polynomial graphs dynamically, experimented with coefficients, and checked the accuracy of their manual work using GeoGebra. Peer collaboration helped mitigate device limitations, and students gradually demonstrated increased independence, confidence, and accuracy. **These behaviors suggested that GeoGebra promoted active learning, immediate feedback, and self-directed exploration, which were key mechanisms for enhancing graphing skills, especially in abstract functions.**

3. Status of Learners' Graphing Skills After the Implementation of the GeoGebra Intervention

Following the intervention, post-test results showed a mean score of 6.5 with a standard deviation of 2.3 and a statistically significant p-value of 0.002561, indicating substantial improvement in polynomial graphing skills. The focus group discussion revealed three main themes: Theme 1 – Enhanced Understanding and Accuracy in Graphing Polynomial Functions, reflecting improved conceptual comprehension and verification of manual graphs; Theme 2 – Increased Engagement and Confidence in Graphing, demonstrating higher motivation and self-assurance; and Theme 3 – Overcoming Challenges in Using GeoGebra, showing that learners successfully addressed initial difficulties in app navigation, device access, and integrating manual with digital graphing. **This data indicated that GeoGebra helped learners visualize abstract concepts, strengthened procedural and conceptual knowledge, and fostered persistence, independence, and confidence in graphing.**

In conclusion, **the data showed that integrating the GeoGebra mobile application was an effective strategy to enhance the graphing skills of Grade 10 learners at risk of failing Mathematics in Babag National High School for the school year 2025-2026.** Evidence from pre- and post-tests, classroom observations, and FGD responses indicated improved understanding, accuracy, engagement, and confidence in graphing polynomial functions. The intervention successfully addressed challenges in manual plotting and app navigation, promoting both conceptual and procedural learning.

RESEARCH DOCUMENTATION

RESEARCH BULLETIN

IMPROVING GRADE 8 STUDENTS' PROBLEM-SOLVING SKILLS IN MEASURES OF CENTRAL TENDENCY FOR UNGROUPED DATA THROUGH DESMOS UNIFIED WORKSHEET ACTIVITIES (DUWA)

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INTRODUCTION

Problem-solving skills are crucial in mathematics education, as they enable students to evaluate, plan, and apply logical reasoning to tackle complex problems (Polya, 1957). Successful problem-solving integrates both cognitive and metacognitive processes, allowing students to address mathematical issues in a structured and inventive way (Schoenfeld, 1985). However, many students struggle to develop these skills, often due to insufficient engagement, weak conceptual understanding, or limited access to tools that encourage higher-order thinking. This has been evident at Babag National High School Junior High School during the years 2022, 2023, and 2024, as reflected in the least-learned competencies and Form IV assessments in the topic of measures of central tendency of ungrouped data. These difficulties underscore the need for innovative teaching strategies that boost students' problem-solving capabilities while promoting their active involvement in the learning process.

The measures of central tendency for ungrouped data, including the mean, median, and mode, are fundamental statistical concepts introduced in Grade 8. These concepts play a crucial role in developing students' understanding of data analysis and its real-world applications (Garfield & Ben-Zvi, 2008). However, research indicates that students often struggle with these topics due to computational errors and misconceptions about the underlying principles (Sharma, 2006). Addressing these difficulties requires teaching strategies that not only clarify procedural steps but also emphasize conceptual understanding, ensuring students can connect statistical concepts to broader mathematical contexts.

The Desmos graphing calculator, known for its interactive and user-friendly design, has proven to enhance mathematics instruction (Abdullah et al., 2021). Incorporating both printed and digital Desmos worksheets offers an inclusive approach for diverse learning environments, especially in schools with limited technology access. The Desmos Unified Worksheet Activities (Project DUWA) aim to boost student engagement and problem-solving skills through interactive visualizations and guided practice, bridging traditional and technology-based instruction for more accessible learning.

Previous research highlights the effectiveness of tools like Desmos in improving student outcomes in mathematics (Zulfa, 2017; Montijo, 2017; Gulli, 2021; Chorney, 2022; Haryani & Hamidah, 2022; George et al., 2023; Chechan et al., 2023; Minarni & Barus, 2023; Yusoff & Wan Mamat Pauzam, 2023). For instance, Minarni & Barus (2023) showed that problem-based Desmos activities enhance critical thinking in topics like linear equations. While most studies emphasize digital use, this research explores printed Desmos worksheets to develop problem-solving skills in Grade 8 mathematics, focusing on measures of central tendency for ungrouped data.

As I reflected on this study, I see a valuable opportunity to address the needs of students at risk of failing, particularly in Grade 8 mathematics. Many teachers in our school have observed that students require a reflective understanding and visualization of ungrouped measures of central tendency, combined with the development of computational skills. By integrating Desmos activities with thoughtful instructional design, I aim to create a learning environment that strengthens students' problem-solving abilities, builds their confidence, and fosters a deeper interest in mathematics. This research underscores my commitment to developing effective and equitable teaching practices that support all learners, especially those who face academic challenges.

DISCUSSION OF RESULTS

The primary goal of this intervention was to improve Grade 8 students' problem-solving skills in the topic of measures of central

tendency (mean, median, and mode) for ungrouped data. To achieve this, the

intervention integrated **Desmos Unified Worksheet Activities (DUWA)**, a combination of interactive digital tools and traditional worksheets, into the learning process for the school year 2025–2026.

Pre-Implementation Phase. The intervention began with the development and design of the DUWA, ensuring that the content aligned with the topic of measures of central tendency, including mean, median, and mode. Worksheets were created in both digital and hard copy formats to accommodate students with varying access to technology. Clear instructions were also prepared to guide students in using the Desmos platform and the corresponding worksheets.

An initial pre-assessment tool, such as a quiz, survey, or diagnostic test, was prepared and administered to evaluate students' prior knowledge of measures of central tendency and to assess their baseline problem-solving abilities. Students were provided access to either the digital or printed version of DUWA based on their access to technology.

Before beginning the activities, students were informed about the objectives of the intervention, their expected roles, and how the activities would be structured. The pre-assessment measured students' understanding and skills in calculating the mean, median, and mode for ungrouped data. To further assess problem-solving ability, real-world problems were presented to determine students' current levels of proficiency.

Implementation Phase. Desmos Unified Worksheet Activities has four (4) components named as Project DUWA, presented below.

The intervention was designed to provide a well-rounded learning experience that combined the strengths of technology and traditional methods to enhance students' problem-solving skills in measures of central tendency

(1) **Digital Integration** incorporated the use of the Desmos platform, allowing students to interact with dynamic data sets, visualize relationships between numbers, and observe how changes in data affected measures such as mean, median, and mode. This interactive technology helped students move beyond abstract concepts, offering a more engaging and accessible way to learn.

Table 1

Ofril, Amelton's Desmos Unified Worksheet Activities (DUWA) Framework

Desmos	Unified	Worksheet	Activities
Digital Integra-tion Technology was incorporate d to enhance learning, particularly through the Desmos platform.	**Understan -ding Visual-ization** Students were helped to develop unified problem-solving skills by integrating interactive activities that enhanced their ability to visualize data relationships, thereby fostering a cohesive understandin g of abstract mathematical concepts.	**Worksheet Engage-ment** Students were provided with both digital and hard copy worksheets to ensure broad accessibilit y and engagement in learning.	**Active Reflection** Students were encouraged to examine their learning processes and problem-solving approaches to foster metacognitiv e development and deeper self-awareness.

(2) **Understanding Visualization** complemented this by helping students better grasp data relationships through interactive activities, which deepened their comprehension of the material.

(3) **Worksheet Engagement** provided both digital and hard copy worksheets to ensure broad accessibility and participation. This approach allowed all students, regardless of their access to technology, to engage in the learning process. The digital format offered interactivity and real-time feedback, while the printed version allowed those without technology to still benefit from the activities.

(4) **Active Reflection** encouraged students to regularly assess their learning process, identify strengths and weaknesses, and adjust their problem-solving strategies. This metacognitive approach fostered a mindset of continuous improvement, helping students develop not only their mathematical skills but also the ability to monitor and regulate their own learning.

Together, these components created a comprehensive and accessible intervention that supported diverse learning styles and promoted deep, reflective learning. To ensure a comprehensive, consistent, and detailed implementation, the following table presented the list of sessions and activities that were executed:

Table 2

Sessions Activities

SESSIONS	ACTIVITIES
Session 1: Introduction to Measures of Central Tendency Objective: Introduced the concepts of mean, median, and mode and their real-life applications.	**Session 1 Activities:** 1. Delivered a brief lecture with examples of how measures of central tendency were used in real-world scenarios (e.g., weather, test scores, and surveys). 2. Conducted a group activity where students explored a pre-prepared data set and manually identified the mean, median, and mode. 3. Introduced the Desmos platform, demonstrating its features and explaining how it would be used in the intervention.
Session 2: Digital Integration with Desmos Objective: Used technology to visualize and analyze measures of central tendency.	**Session 2 Activities:** 1. Conducted a guided Desmos tutorial, allowing students to interact with dynamic data sets and observe how changing values impacted the mean, median, and mode. 2. Assigned an individual Desmos-based task, where students visualized data relationships and answered related questions. 3. Facilitated a class discussion to share insights and observations from the activity.
Session 3: Understanding Visualization Objective: Deepened students' comprehension of data relationships through interactive visualization.	**Session 3 Activities:** 1. Reviewed key insights from Session 2 and the Desmos activity. 2. Organized a group task where students worked in small groups to solve problems involving dynamic data sets on Desmos. 3. Guided a reflection activity where groups explained their findings to the class, focusing on how visualization improved their understanding
Session 4: Worksheet Engagement Objective: Reinforced learning through hands-on practice using both digital and physical worksheets.	**Session 4 Activities:** 1. Distributed both digital and printed worksheets containing real-life data problems. 2. Facilitated students' completion of problems, focusing on calculating mean, median, and mode from different types of data sets. 3. Conducted a peer review activity, where students exchanged worksheets, checked each other's work, and provided constructive feedback
Session 5: Active Reflection and Strategy Building Objective: Developed metacognitive skills and strategies for continuous improvement.	**Session 5 Activities:** 1. Guided students in a self-assessment activity, completing a reflective journal entry to identify their strengths, challenges, and strategies used to solve problems. 2. Facilitated a group discussion for students to share reflections and collectively discuss effective problem-solving approaches. 3. Administered an exit task, in which students completed a mixed-format assessment (data interpretation and calculations) to demonstrate their learning progress.

Table 2. The implementation started with **Session 1,** highlighting the value of Video-Based Teaching and Learning in Mathematics. This instructional strategy was supported by research from Ofril et al. (2024) and Ofril & Ofril (2025), which indicated that utilizing videos with strong visuals could effectively decrease the mental effort required of students (cognitive load) and enhance their overall understanding (maximize comprehension).

Session 2 was dedicated to integrating technology with the statistical concepts introduced previously, transitioning from manual calculations to dynamic visualization. The session began with a guided Desmos tutorial. In this tutorial, students were actively engaged, allowing them to interact with dynamic data sets. A key focus was enabling them to directly observe how changing individual data values impacted the mean, median, and mode of the set. This interactive experience provided immediate visual feedback, reinforcing the relationship between the data distribution and the measures of central tendency. Following the guided instruction, students were assigned an individual Desmos-based task. This task required them to visualize data relationships independently using the platform and then answer related questions based on their observations. This allowed for an assessment of individual comprehension and the application of their newly acquired technological skills. The session concluded with the instructor facilitating a class discussion. Students were encouraged to share their insights and observations from the Desmos activity, discussing any surprising shifts in the mean or median they noticed, and how the visual representations aided their understanding of the data's center. The session commenced with the delivery of a brief lecture that utilized videos to demonstrate examples of how measures of central tendency (mean, median, and mode) are applied in real-world scenarios. These examples included practical applications in contexts such as analyzing weather patterns, calculating test scores, and interpreting survey results.

Session 3 focused on consolidating the students' knowledge and applying their digital skills in a collaborative setting. The session began with a review of the key insights from Session 2 and the individual Desmos activity. This ensured all students were aligned on the core concepts before proceeding. The main activity involved organizing a group task. Students were instructed to work in small groups to solve complex problems that involved dynamic data sets on Desmos. Unlike the previous individual task, these problems required deeper analysis and discussion, challenging the groups to manipulate and interpret the data together to find the required measures of central tendency and explain the distribution. To conclude the session, the instructor guided a reflection activity. Each group was asked to explain their findings to the class, specifically focusing on how the data visualization improved their understanding and problem-solving process. This meta-cognitive step emphasized the value of the Desmos platform not just as a calculator, but as a tool for deeper conceptual grasp of statistics.

Session 4 served as a crucial step for assessment and application, transitioning students from purely dynamic digital work to solving structured problems based on real-life data. The session commenced with the distribution of worksheets, which were provided in both digital and printed formats to accommodate different learning preferences and encourage flexibility. These worksheets contained various real-life data problems. Next, the instructor facilitated the students' completion of these problems. The main focus was on calculating the mean, median, and mode from different types of data sets, ensuring students could handle raw data, grouped data, and various distributions. This activity allowed the instructor to circulate and provide immediate, targeted support. The final phase of the session involved a peer review activity. Students exchanged their completed worksheets and were guided to check each other's work critically. They were instructed to provide constructive feedback on both the accuracy of the calculations and the clarity of the problem-solving steps. This collaborative review not only reinforced the students' own understanding but also developed their ability to assess and articulate mathematical concepts.

Session 5 served as the culmination of the intervention, focusing on self-assessment, reflection, and final demonstration of learning. The session began by guiding students in a self-assessment activity. Each student was required to complete a reflective journal entry where they identified their individual strengths in

understanding central tendency, noted the challenges they encountered throughout the sessions, and articulated the strategies they used to successfully solve problems, particularly those involving Desmos visualization. Following the individual reflection, the instructor facilitated a group discussion. Students were encouraged to share their reflections and collectively discuss effective problem-solving approaches they discovered. This peer-to-peer sharing helped solidify successful techniques and provided students with a broader range of strategies they could apply in future mathematical tasks.

Finally, the instructor administered a comprehensive exit task. This assessment was designed in a mixed-format (including both data interpretation and calculations) to allow students to demonstrate their learning progress across all objectives. The exit task served as the final measure of their improved ability to calculate and understand the mean, median, and mode, both with and without technological aid.

Student	Pre-test	Post-test	Difference
1	8	9	1
2	6	8	2
3	8	8	0
4	5	7	2
5	8	10	2
6	7	9	2
7	6	7	1
8	5	6	1
9	7	8	1
10	5	6	1
mean	6.5	7.8	1.3

Post-Implementation Phase. In this phase, I conducted the post-assessment. To evaluate the effectiveness of the intervention, I focused on assessing its impact on students' problem-solving skills. A monitoring plan was implemented, which included a weekly checklist to document student participation in the DUWA activities, available in both digital and hard-copy formats. I also compiled a "lessons learned" document to capture experiences, challenges, and successes encountered during the intervention, with a specific focus on problem-solving skills. This document served as a reflective tool to identify areas for improvement and to guide the refinement of future interventions aimed at enhancing students' problem-solving abilities. Furthermore, I analyzed the data gathered during the implementation phase to determine the intervention's overall effectiveness and to propose recommendations for further improvement.

Pre-Test and Post-Test Scores

Table 3, the pre-test and post-test results indicate that the DUWA intervention effectively enhanced students' problem-solving skills in measures of central tendency. The mean pre-test score of 6.5 increased to 7.8 in the post-test, reflecting an average gain of 1.3 points. Most students demonstrated measurable improvement, with individual gains ranging from 1 to 2 points, suggesting that the intervention had a consistent positive effect across the class. Only one student maintained the same score, which may reflect an already strong understanding prior to the intervention.These results suggest that DUWA, through its structured, interactive, and technology-supported

Table 3

Pre-Test and Post-Test Scores

activities, can improve both conceptual understanding and computational accuracy in Grade 8 mathematics. The table provides a clear quantitative foundation for further discussion of how strategies during and after the intervention contributed to these improvements.

Summary of Paired t-Test Results

In table 4. the paired t-test results confirm that the DUWA intervention significantly improved Grade 8 students' problem-solving skills in measures of central tendency. With a p-value of <0.001, the increase in post-test scores compared to pre-test scores is statistically significant, indicating that the observed gains are unlikely due to chance. The average difference of 1.3 points demonstrates meaningful improvement in students' understanding and application of mean, median, and mode. outcomes, highlighting the intervention's effectiveness in enhancing both computational accuracy and conceptual understanding. The t-value of 6.0908 further confirms the reliability of these results, showing that the intervention had a

substantial and consistent effect across the sample of ten students. Overall, the statistical analysis reinforces the conclusion that DUWA is an effective tool for improving problem-solving skills in Grade 8 mathematics.

Table 4
Summary of Paired t-Test Results

P-value	t	sample size (n)	Average of Differences (x̄d)	SD of differences (Sd)	Effec Size
<0.001	6.09	10	1.3	0.6749	1

Reflection During the Intervention

Table 5 presents student reflections during the DUWA intervention, capturing their experiences, challenges, and observed behaviors over multiple weeks. The table highlights how students interacted with the activities, the strategies they used to solve problems, and the level of engagement and persistence demonstrated throughout the intervention.

During the DUWA intervention, students demonstrated a progressive increase in engagement, understanding, and confidence. In the early sessions, several students reported difficulty remembering steps for mean and median, but they remained persistent, asking questions and seeking guidance as needed. Collaborative activities using mobile devices fostered peer learning, allowing students to discuss problem-solving strategies and support one another.

As the intervention progressed, reflections indicated that students were gradually gaining mastery of formulas and strategies, enjoying story-based problems, and using Desmos to validate their answers. By the final sessions, students reported increased confidence in solving problems independently, demonstrating sustained focus, persistence, and self-regulation. These reflections highlight that DUWA not only supports conceptual understanding and computational skills but also encourages active engagement, collaboration, and confidence-building throughout the learning process

Table 5
Reflection During the Intervention

Participant	Week / Session	Reflection During Activity	Observed Behavior / Notes
1	Week 2	"I find it hard to remember the steps for mean and median."-S1	Needed guidance; concentrated on task
2	Week 2	"I like working with my group; we solve problems together."-S2	Actively collaborated with peers
3	Week 2	"I struggle with division, but repetition helps me."-S3	Focused during practice; asked questions
4	Week 3	"The story problems are fun, but tricky."-S4	Engaged and motivated; attempted all tasks
5	Week 3	"Using Desmos helped me check my answers quickly."-S5	Applied technology effectively; confident in validation
6	Week 3	"I get confused with the mean, median, and mode sometimes."-S6	Needed prompts; gradually improving
7	Week 4	"I enjoy solving the group challenges the most."-S7	Participated actively; shared strategies
8	Week 4	"I am starting to understand the formula better now."-S8	Focused; repeated exercises diligently
9	Week 5	"Sometimes I make mistakes, but I can correct them with Desmos."-S9	Self-corrected errors; used tech as reinforcement
10	Week 5	"I feel more confident answering the questions."-S10	Increased confidence; engaged and persistent

Strategies and Reflections After the Intervention

Table 6 presents the strategies and reflections implemented after the DUWA intervention. The table outlines the specific actions, their purposes, and the tools or methods used to enhance Grade 8 students' problem-solving skills in measures of central tendency. These strategies were derived from

student reflections and classroom observations, demonstrating how DUWA can be applied effectively to reinforce understanding, strengthen computational skills, encourage collaboration, and validate learning outcomes

After the DUWA intervention, several strategies were found to be effective in improving students' problem-solving skills in measures of central tendency. Repetition through worksheets allowed learners to reinforce their understanding of mean, median, and mode, while manual counting exercises helped improve accuracy and internalize computations. Collaborative tasks, such as group work using mobile devices, encouraged peer learning and discussion, fostering both engagement and problem-solving skills. Additionally, focused practice on multiplication and division targeted essential computational skills, and story-based problems provided real-world contexts that enhanced relevance and motivation.

Table 6
Strategies and Reflections After the Intervention

Strategy / Action	Purpose / Goal	Tools / Methods Used
1. Repetition	Reinforce understanding of concepts	DUWA worksheets, repeated exercises
2. Manual Counting	Improve calculation accuracy	Paper-based exercises
3. Group Work Using Phones	Encourage collaboration and peer learning	Mobile devices for group activities
4. Focused Practice on Multiplication and Division	Strengthen computational skills for central tendency	Targeted practice exercises
5. Engaging Story-Based Problems	Apply concepts in real-world scenarios	Story problems embedded in DUWA
6. Validation and Reinforcement	Confirm solutions and deepen understanding	Desmos as a support tool

The integration of Desmos as a validation and reinforcement tool further strengthened learning outcomes, enabling students to self-check their solutions, correct errors, and gain confidence. Taken together, these strategies show that DUWA is most effective when implemented as a blended, interactive, and reflective approach, combining repetition, collaborative problem-solving, contextual application, and technology-supported feedback. This holistic use of DUWA not only improves computational accuracy but also enhances engagement, confidence, and overall problem-solving ability in Grade 8 mathematics.

Thematic Analysis Results

Table 7 presents the results of the thematic analysis of student reflections during and after the DUWA intervention. Using Braun and Clarke's (2006) approach, key themes were identified from students' feedback, highlighting how the intervention influenced their engagement, problem-solving strategies, confidence, and perceived need for further practice. Representative quotes are included to illustrate each theme and provide insight into students' experiences.

The thematic analysis of student reflections during and after the DUWA intervention revealed several key insights into the learning experience. First, students demonstrated **enhanced engagement**, becoming more focused, motivated, and actively involved in problem-solving activities. One student reflected, "I struggled at first, but I kept trying until I got it," highlighting how the interactive and gamified nature of DUWA encouraged persistence and attention.

Additionally, the integration of **Desmos as a support tool** strengthened students' problem-solving strategies, allowing them to validate answers and gain confidence in computing mean, median, and mode. As one student noted, "Now I can solve mean, median, and mode without asking for help," emphasizing the role of technology in scaffolding understanding and promoting self-correction.

Students also reported **improved confidence** and progress in their mathematical performance, suggesting that repeated practice combined with interactive worksheets positively influenced both skill acquisition and self-efficacy. A student shared, "I like doing the activities on the tablet; it makes learning fun," reflecting increased motivation and satisfaction in learning. At the same time, students recognized the **need for greater access and additional practice opportunities**, indicating that while DUWA effectively enhances engagement and competence, mastery requires sustained practice. One student expressed, "I need more exercises to be faster and accurate," highlighting the importance of continued reinforcement to consolidate problem-solving skills in measures of central tendency. Overall, the findings suggest that DUWA provides a structured, interactive, and supportive environment that improves engagement, strategy use, confidence, and learning outcomes in Grade 8 mathematics.

Table 7
Thematic Analysis Results

Theme	Definition / Description	Student Quotes
1. Enhanced Learning Engagement Through DUWA	Students became more focused, motivated, and actively involved in learning activities during DUWA.	"I struggled at first, but I kept trying until I got it."-S1
2. Strengthening Problem-Solving Skills with Desmos Support	Students developed problem-solving strategies and gained confidence using Desmos-supported activities.	"Now I can solve mean, median, and mode without asking for help."-S2
3. Improved Confidence and Progress in Math Performance	Students gained self-assurance in their math skills and demonstrated noticeable progress.	"I like doing the activities on the phone or laptop; it makes learning fun."-S3
4. Need for Greater Access and Practice Opportunities	Students recognized the need for additional practice and more opportunities to reinforce learning.	"I need more exercises to be faster and accurate." -S4

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

As a teacher-researcher and a math teacher, the results of this study carry significant meaning for me. Seeing how Desmos Unified Worksheet Activities (DUWA) positively influenced students' problem-solving skills affirms the value of integrating structured, interactive approaches in teaching mathematics. Observing students systematically engage in tasks—through repetition, manual computation, focused practice, collaborative work, and story-based problem-solving—has reinforced my belief that learning becomes more meaningful when students can actively explore, validate, and correct their own understanding.

What resonates most with me is how DUWA fostered student engagement, persistence, and confidence. Witnessing students tackle challenges, collaborate effectively, and sustain focus throughout the activities highlighted the importance of creating learning experiences that are both interactive and supportive. Their reflections on enjoyment, self-assurance, and mastery of procedures remind me that motivation and confidence are as crucial as accuracy in developing mathematical competence. At the same time, their recognition of the need for continued practice underscores the ongoing responsibility of teachers to provide reinforcement and scaffold learning.

Overall, this experience has strengthened my conviction that a blended approach—combining hands-on strategies with technology-supported validation—can transform the way students understand and apply mathematical concepts. As a teacher, it reminds me that teaching is not only about delivering content but about cultivating curiosity, resilience, and reflective problem-solving skills that empower students to succeed.

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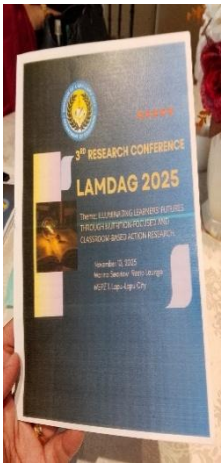

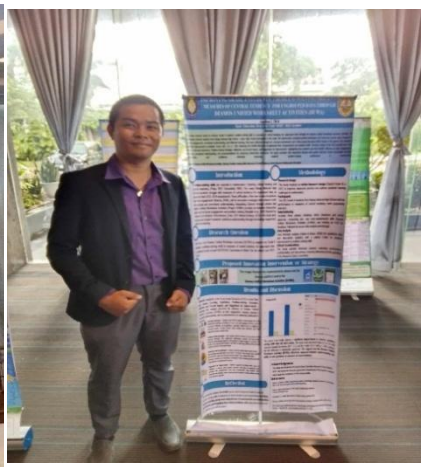

1st Regional ManCom '26 BERF-Funded Action Research Exhibit:
DISSEMINATION OF BERF-FUNDED RESEARCH

ENHANCING MATH PERFORMANCE OF STRUGGLING GRADE 9 LEARNERS THROUGH TEACHER-CREATED VIDEO LESSON TUTORIAL (TC-VLT)

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INTRODUCTION

Mathematics has long been recognized as one of the most challenging subjects for learners at all grade levels (Lalian, 2019; Beltran, 2021). The abstract nature of mathematical concepts, combined with a lack of foundational skills, often leads to poor academic performance. This issue has been further exacerbated by calamitous events such as COVID-19, typhoons, earthquakes, etc., which disrupted classes and deepened the struggle of many students in mathematics. In response, Republic Act No. 12028 institutionalized the Academic Recovery and Accessible Learning (ARAL) program in the Philippines to help address learning gaps while reflecting the vision of DepEd Order No. 10, s. 2024, advocating for the integration of ICT in instruction. This action research, titled "Enhancing Math Performance of Struggling Grade 9 Learners Through Teacher-Created Video Lesson Tutorial," seeks to explore the impact of using Teacher-Created Video Lesson Tutorials (TC-VLT) to improve the math performance of Grade 9 students at Calumboyan National High School. The study focuses on the school-based learning recovery initiative, particularly in mathematics. The TC-VLT used in this study is designed to be short, concept-specific, and compatible across various devices. These videos are paired with Self-Learning Modules and PowerPoint presentations, providing comprehensive learning experience. Implementation strategies include the use of learning buddies, flexible learning engagement, and the creation of supportive learning environments. The major outputs of this action research are the TC-VLTs complemented with Self-Learning Modules and PowerPoint presentations, all of which focus on addressing the identified least-learned competencies.

DISCUSSION OF RESULTS

This study employed pretest and post-test assessments to evaluate the progress in math performance of the target participants across several key competencies. These competencies included solving right triangles when the hypotenuse and an acute angle are given, solving right triangles when one leg and an acute angle are provided, solving right triangles given two legs, solving problems involving angles of elevation and depression, and applying the sine and cosine laws to solve oblique triangles. The data collected from the participants before and after the intervention are summarized in the following tables below.

Table 1: *Grade 9 Learners' Math Pretest Performance in the Identified Math Least Learned Competencies*

LEARNING COMPETENCIES	Pretest Mean (m) of Correct Responses	Post-test Mean (m) of Correct Responses	*Percentage (%) Increase*
Solving a Right Triangle When the Two Sides are Given	30.00	*91.25*	*204.17*
Solving Right Triangle Given a Hypotenuse and an Acute Angle	*22.86*	*87.14*	*281.19*
Solving a Right Triangle Given a Leg and an Acute Angle	*25.56*	*86.67*	*239.08*
Solving a Right Triangle Given Two Legs	*30.00*	*97.50*	*225.00*
Solving Angle of Elevation and Angle of Depression	*27.50*	*90.00*	*227.27*
Solving Oblique Triangles Using the Sine Law and Cosine Law	*5.00*	*81.25*	*1525.00*
Mean Percentage Scores	*23.49*	*89.97*	*283.01*

Table 2: Comparative Analysis of the Pretest and Post-test Scores of the identified struggling Grade 9 Learners

Learner Participants (LP)	Pretest Scores	Post-test Score	Post-test & Pretest Difference	% increase/ decrease
LP-1	7	39	32	457.14
LP-2	9	33	24	266.68
LP-3	9	37	28	311.11
LP-4	13	37	24	184.62
LP-5	6	34	28	466.67
LP-6	10	34	24	240.00
LP-7	8	31	23	287.50
LP-8	6	30	24	400.00
LP-9	14	38	24	171.43
LP-10	7	31	24	342.86
Mean	**8.9**	**34.4**	**25.5**	**312.80**

Table 3: *Significant Difference Between the Pretest and Posttest Scores of the Struggling Grade 9 Learners*

Test	Mean	Variance	Computed t	Tabular Value at 0.05 level of Significance	Decision/ Findings
Pretest	8.9	7.65	-28.027	2.262	There is a significant difference between the pretest and post-test scores
Posttest	34.4	10.27			

Table 4: *The Effect Size of the Significant Difference Between the Pre-test and Post-test Scores of the Struggling Grade 9 Learners*

Comparison Group	Cohen's d	Effect Size Interpretation
Pretest vs. Post-Test	8.47	Large (Highly noticeable or impactful)

Note: Cohen's d values are categorized as follows: small (d=0.2); medium (d=0.5); and large (d=0.8)

The data presented in Tables 1-4 highlight a significant improvement in the math performance of Grade 9 struggling learners at Calumboyan National High School. Table 1 reveals a substantial increase in students' scores across all identified least-learned competencies, with an overall mean percentage improvement of 283.01% in the post-test compared to the pretest. Similarly, Table 2, which presents a comparative analysis of pretest and post-test scores, shows a mean difference of 25.5, equivalent to a 312.80% increase in math performance following the intervention and enhancement program.

In Table 3, which examines the significant difference between pretest and post-test scores, shows that the computed t-test value is -28.027, which is considerably smaller than the t-critical value of 2.262 at a 5% significance level. This indicates a statistically significant difference between the learners' scores before and after the intervention, suggesting that the intervention had a measurable impact on their performance. Table 4 further confirms this significant difference between the pretest and post-test scores after the intervention.

Finally, Table 5 presents the computed value of Cohen's d, which measures the magnitude of the effect size of the significant difference. The calculated Cohen's d value is 8.47, classified as "large," indicating a very strong effect. This high effect size underscores the substantial impact of "Enhancing Math Performance of the Struggling Grade 9 Learners Through Teacher-Created Video Lesson Tutorials" intervention in improving student math performance.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Mathematics, as a subject, often presents unique challenges due to its abstract nature. Many of its concepts require deep cognitive engagement, which can be mentally exhausting for students. This mental strain can cause a decline in enthusiasm and self-efficacy, both of which are essential for academic success. When learners struggle to grasp difficult concepts, they are at risk of becoming disengaged from the subject. The complex and often detached nature of mathematical topics can make it especially hard for students to connect with the material, further compounding their difficulties. This reflection examines key insights gained from an intervention aimed at supporting struggling Grade 9 learners of Calumboyan National High School, highlighting how it impacted their learning experiences.

One major realization from this intervention is that teaching is a complex and demanding profession. It requires more than just content knowledge; teachers must demonstrate dedication, creativity, and adaptability to meet the diverse needs of their students. Traditional methods of teaching, while fundamental to education, may not always be sufficient to engage all learners, particularly those who find the subject matter challenging. For students who already feel overwhelmed by the abstract nature of mathematics, conventional approaches can lead to disengagement and a lack of motivation, making it essential for educators to find more dynamic ways to reach these learners.

In response to these challenges, the integration of technology and new teaching methods proved to be invaluable in making the learning process more engaging. The Department of Education's Order No. 10, Series of 2024, emphasizes the importance of incorporating information and communication technology (ICT) into the teaching and learning process. This directive advocates for the creation of contextualized learning materials to cater to diverse learning styles and needs. The use of digital tools, such as teacher-created video lesson tutorials, offers an innovative way to present complex mathematical concepts in a more accessible and understandable manner. These video lessons allow students to learn at their own pace, revisiting difficult topics whenever necessary, thus fostering a more personalized and independent approach to learning.

The use of Teacher-Created Video Lesson Tutorial (TC-VLT) , in particular, was a key element in supporting struggling learners. By enabling students to access the content outside of traditional classroom hours, they were able to process the material in their own time and at their own pace. This approach not only helps students build a deeper understanding of mathematical concepts but also encourages self-directed learning, which can be a powerful motivator for those who may feel overwhelmed in the classroom setting. The flexibility of this method provides students with the opportunity to focus on areas where they need the most improvement, promoting better retention and comprehension of the subject matter.

In addition to TC-VLT, the introduction of learning buddies, or peer tutoring, proved to be another promising strategy. By pairing students, we fostered a collaborative and supportive learning environment. Peer tutoring allows students to learn from each other, reinforcing their understanding of the material while developing important social and communication skills. This approach not only helps struggling learners grasp difficult concepts but also promotes a sense of teamwork and mutual support, which can boost confidence and engagement. The social aspect of learning in pairs or small groups makes the educational process more inclusive and helps students feel more connected to their peers and the subject.

Moreover, extending the learning engagement time beyond traditional school hours added significant value to the intervention. Allowing students to learn in a comfortable, non-pressured environment outside of the classroom gave them the flexibility to absorb information at their own pace. This extended learning time, paired with the use of TC-VLT and supplementary materials such as modules and PowerPoint presentations, provided students with a well-rounded approach to reinforcing mathematical concepts. The ability to revisit lessons and work through problems without the constraints of scheduled class time ensured that students could address gaps in their understanding and gain greater confidence in their abilities.

Ultimately, the combination of video lessons, peer tutoring, and extended learning opportunities led to a noticeable improvement in the performance of struggling learners. By blending these elements into the teaching approach, we were able to enhance both the students' understanding of mathematics and their enthusiasm for the subject. The intervention highlighted the importance of adapting teaching methods to suit the varied learning needs of students. In subjects like mathematics, which can often seem intimidating and abstract, it is crucial to use innovative strategies that engage students and foster a deeper understanding of the material.

In conclusion, this intervention reinforced the idea that teaching is not just about delivering content, but about creating an environment where students can actively engage with the material in a way that suits their individual learning styles. The success of this approach underscores the potential of combining technology, peer support, and flexible learning time to improve the academic performance of struggling learners. It also emphasizes the need for teachers to continuously innovate and adapt their methods to ensure that every student has the opportunity to succeed, especially in subjects like mathematics that may seem daunting at first.

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STRATEGIC INTERVENTION MATERIALS UTILIZING PhET SIMULATIONS (SIM-UPS): AN INTERACTIVE LEARNING APPROACH FOR ENHANCING THE WRITTEN PERFORMANCE OF GRADE 8 SCIENCE LEARNERS ON THE LEAST LEARNED MELCs IN PHYSICS

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INTRODUCTION

In order to foster the goal of learning and instill essential learning competencies for learners' overall growth, education has provided a multitude of possibilities for learners to participate in various learning exercises and activities. Based on DepEd Order No. 8, s. of 2015 on the policy guidelines on classroom assessment for K-12 basic education program, learners are graded based on the three components of summative assessment: written work, performance task, and quarterly assessment. In Science, 40% of the performance of the learners is based on the written performance. That means that learners must earn a passing rate or above to suffice this component – written work – of summative assessment. However, the researcher significantly noted that most of the grade 8 learners' written work performance in Subangdaku Tech-Voc High School falls below average in the first quarter of the current SY 2024-2025. Based on the SMEA data last October 11, 2024, Grade 10 got the highest Written Output of 77.80%, then Grade 9 ranks second with the average of 77.38%. However, among all the JHS in Subangdaku Tech-Voc High School, the Grade 8 learners got the lowest written outputs (MPS) with the average of 57.40%. This situation may denote the academic challenges that the learners encountered in learning the concepts of Science specifically in Physics subject.

DISCUSSION OF RESULTS

This study employed a Quasi-Experimental and utilized descriptive research design comparing the performance of the pre-test and post-test results of the participants. This action research aimed to determine the impact of SIM-UPS: An Interactive Learning Approach for Enhancing the Written Performance of Grade 8 Science learners in teaching the least learned most essential learning competencies (MELCs) in Physics at Subangdaku Tech-Voc High School of Mandaue City Division during the School Year (SY) 2024-2025 as a basis for interactive learning activities. The data collected from the participants before and after the intervention is summarized in the following tables.

Table 1
Pre-Test Performance of the Learners Before the Implementation of SIM-UPS

Pre-Test Performance of the Learners Before the Implementation of SIM-UPS

Score Interval	Frequency	%	Mean Percentage Score (MPS) Bracket	Description
9-10	0	0	96%-100%	Mastered
8	0	0	86%-95%	Closely Approximating Mastery
7	2	8	66%-85%	Moving Towards Mastery
5-6	11	44	35%-65%	Average
3-4	10	40	16%-34%	Low
1-2	2	8	5%-15%	Very Low
0	0	0	0%-4%	No Mastery
Total	**25**	**100**	**100**	
Mean		**4.52**		Did not meet expectations
Standard Deviation		**1.388**		Moderately Dispersed

Legend:
9-10 Mastered
8 Closely Approximating Mastery
7 Moving Towards Mastery
5-6 Average
3-4 Low
1-2 Very Low
0 No Mastery

The table 1 above shows pre-test performance of the learners in which 10 or 40% of the learners have 16%-34% *Low Mastery Level*, 2 or 8% have 5%-15% Very *Low Mastery,* and 0% or No learners have *Mastered* the competency in identifying the interrelationship among voltage, current, and resistance. This indicates that the majority of the learners have not yet developed sufficient understanding of the concept prior to instruction. It further suggests the need for targeted interventions and instructional

strategies to improve their mastery of this fundamental concept in electricity.

Table 2

Post-test Performance of the Learners After the Implementation of SIM-UPS

Post-Test Performance of the Learners After the Implementation of SIM-UPS

Score Interval	Frequency	%	Mean Percentage Score (MPS) Bracket	Description
9-10	12	48	96%-100%	Mastered
8	2	8	86%-95%	Closely Approximating Mastery
7	3	12	66%-85%	Moving towards mastery
5-6	4	16	35%-65%	Average
3-4	4	16	16%-34%	Low
1-2	0	0	5%-15%	Very Low
0	0	0	0%-4%	No Mastery
Total	**25**	**100**	**100**	
Mean		**7.36**		Did meet the expectations
Standard Deviation		**2.38**		Relatively High Level of data dispersion

Legend:
9-10 Mastered
8 Closely Approximating Mastery
7 Moving Towards Mastery
5-6 Average
3-4 Low
1-3 Very Low
0 No Mastery

Table 2 shows that in the post-test of the most least learned competency in Physics 8, 12 or 48% of the learners were 96%-100% Mastered the Competency on it with scores ranging from 9-10, 2 or 8% were 86%-95% Closely Approximating Mastery , 3 or 12% were 66%-85% Moving Towards Mastery, 4 or 16% of them were 35%-65% Average with scores ranging from 5-6, and 4 or 16% were 16%-34% Low Mastery Level with scores ranging from 3-4 in identifying the interrelationship among voltage, current, and resistance and explaining the advantages and disadvantages of series and parallel connections in homes.

Table 3

Paired T-Test on the Significant Difference Between the Pre-Test and Post-Test Performance of the Learners ***Before and After the Implementation of SIM-UPS***

Paired T-Test on the Significant Difference Between the Pre-Test and Post-Test Performance of the Learners Before and After the Implementation of SIM-UPS

Variables Tested	n	Mean	t	p-value	Decision	Interpretation
Pre-test (Before Implementation)	25	4.52	-5.074	0	Reject Ho	There is a significant difference
Post-test (After Implementation)	25	7.36				

It was reflected from the data above that the significant difference between the pre-test and post-test result was evident. As shown in table 3, results of the paired-t test indicated that there is a significant large difference between Before ($M = 4.5$, $SD = 1.4$) and After ($M = 7.4$, $SD = 2.4$), $t(24) = 6$, $p < .001$. The experimental groups showed a higher difference of means which evaluates the effectiveness of the SIM-UPS: An Interactive Learning Approach. Moreover, Since the p-value < α, H0 is rejected. The average pre-test scores are not equal to the average post-test scores of before and after the implementation of the SIM-UPS. The learners' improvement in mean percentage score for pre-test is 45.52% minus the 73.6% of post-test mean percentage resulted to percentage increase to 28.4%. Therefore, there was a 28.4% increase in content mastery and 48% of learners reached the mastery level which shows a clear upward shift in learners' performance levels. In other words, the sample difference between the pre-test and post-test performances of the learners is enough to be statistically significant. Nonetheless, comparing the means of pre-test and post-test scores 16 of the learners, the data concluded that there are big differences in means which impulse that the learners who are into the experience of SIM-UPS had more learning in terms of the scientific concepts pertaining to those topics in Physics.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Reflecting on the outcomes of Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS): An Interactive Learning Approach for Enhancing the Written Performance of Grade 8 Science learners on the Least Learned MELCs in Physics action research, this SIM-UPS has proven to the participants demonstrated a substantial and statistically significant improvement in content mastery after the implementation of SIM-UPS.

The increase in mean score, percentage gain, upward movement in mastery levels and the significant t-test result indicates that Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS) was effective in enhancing learners' understanding and performance in Physics specifically the

interrelationship of voltage current and resistance. It becomes clear that the intervention's ability to change instruction from static to dynamic is what makes it successful. ICT Integration: Integrating PhET simulations in physics instruction and learning provides a teaching aid, creating effective interactive animations and visualizations that help improve the conceptual grasp of physics among 21st-century digital learners. PhET simulations help them develop their conceptual comprehension by expanding learners' knowledge in physics. The PhET simulation's dynamic visualization stimulates learners' curiosity, increasing their level of engagement deeply with the physics subject and contents Banda and Nzabahimana (2021). In order to encourage broader adoption of e-learning in physics, the researcher advise institutionalizing the use of SIM-UPS by guaranteeing robust administrative support for ICT access, internet connectivity, and ongoing professional development in digital pedagogy.

In order to improve learners' comprehension of physics ideas through active, technology-enhanced learning, Science teachers are urged to use SIM-UPS as a remediation tool. Learners are also encouraged to interact meaningfully and cooperatively with these digital resources in order to improve performance. In order to match instruction with worldwide movements toward technology-based teaching, it is also recommended to strengthen ICT integration. Lastly, larger samples and control groups should be used in future research to broaden the study's reach. Finally, future research should expand the study scope by using larger samples and control groups, and by exploring SIM-UPS' effects on critical thinking development and reducing physics-related anxiety.

The Localized DUA Plan seeks to improve Grade 8 learners' knowledge of the least learned MELCs in Physics by communicating, implementing, and maintaining the use of Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS). Through LAC sessions, formal presentations, faculty meetings, and PTA discussions, key data highlighting SIM-UPS' efficacy in raising mastery, engagement, and performance will be shared with educators, school administrators, other subject areas, and parents. Science instructors will include SIM-UPS into everyday instruction, remediation, and enrichment activities. Grade-level teams will standardize materials with administrative and ICT support, and the department chair will oversee implementation. Through proposals, curriculum reviews, and parent briefings that highlight improved learner outcomes and promote technology-enhanced, learner-centered instruction, the advocacy component seeks support from school administrators, curriculum committees, and parents in order to institutionalize SIM-UPS, allocate necessary resources, and maintain its expansion across grade levels.

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RESEARCH DOCUMENTATION

Conducted orientation to the learners-parents as to the nature, scope, and timeline of the action research on Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS). Provided an assent form to the parents during the signing of assent and waiver form. (02-8-2025)

RESEARCH DOCUMENTATION

Conducted a pre-test assessment to the participants before implementing Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS): An Interactive Learning Approach for Enhancing the Written Performance of Grade 8 Science Learners. (02-11-2025)

The learners are answering Activity 1 of the Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS): An Interactive Learning Approach for Enhancing the Written Performance of Grade 8 Science Learners at the STVHS-Computer Laboratory. (02-18-2025)

Provided each participants a Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS): An Interactive Learning Approach for Enhancing the Written Performance of Grade 8 Science Learners. (02-11-2025)

The learners are answering the Activities of the Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS): An Interactive Learning Approach for Enhancing the Written Performance of Grade 8 Science Learners at the STVHS-Computer Laboratory. (02-24-2025)

RESEARCH DOCUMENTATION

Allowing other learners to assist/pair-sharing some of their slow learner classmates during the implementation phase of SIM-UPS.

Conducted a post assessment to check the effectiveness of Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS): An Interactive Learning Approach for Enhancing the Written Performance of Grade 8 Science Laboratory. (03-4-2025)

Checking the activities answered by the learners during the post implementation phase of SIM-UPS to assess their performance and determine the effectiveness of the intervention in improving their written outputs.

Conducted a post assessment to check the effectiveness of Strategic Intervention Materials Utilizing PhET Simulation (SIM-UPS): An Interactive Learning Approach for Enhancing the Written Performance of Grade 8 Science Laboratory. (03-4-2025)

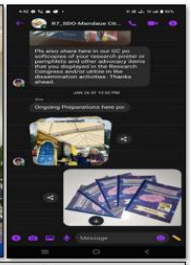
RESEARCH DOCUMENTATION

MONITORING AND FINALIZATION OF BERF 2025
ACTION RESEARCH FROM SCHOOLS DIVISION RESEARCH AND INNOVATION COMMITTEE (SDRIC) held on November 26, 2025, at 2nd Floor
DepEd-Mandaue City Conference Hall



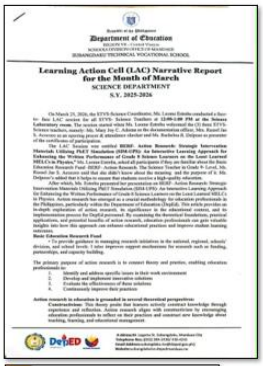
Date of Monitoring	Process Monitored	Person Involved	Significant	Issues Challenges	Action Taken	Technical Assistance
November 26,2025	BERF 2025 ACTION RESEARCH	SCHOOLS DIVISION RESEARCH AND INNOVATION COMMITTEE (SDRIC)	Finalization of the Action Research Report	Compress to 1 page the acknowledgement part Validators' feedback form of the SIM-UPS must include in the Methodologies	Complied	Supported

SIM-UPS (BERF-ACTION RESEARCH 2025) DISSEMINATION MOVs: 1st Regional ManCom 2026 BERF-Funded Action Research Exhibit

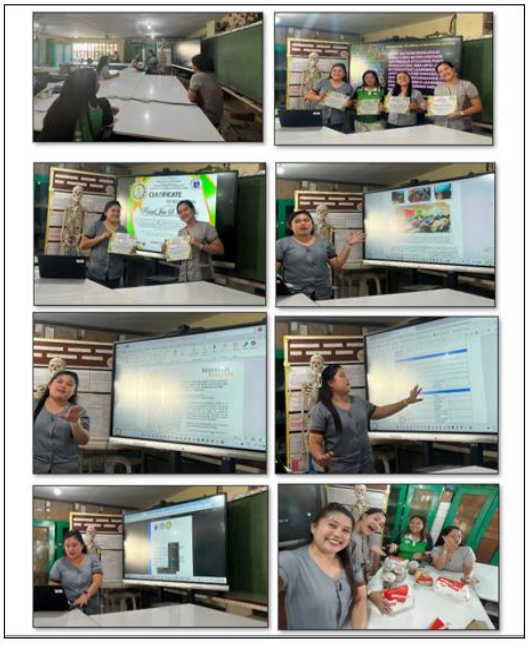



Participated during the PPRD Booth during the conduct of the 1st Regional ManCom 2026, held on January 27–28, 2026 at the DepEd-Ecotech Center through showcasing the SIM-UPS and provided copies as part of research dissemination and advocacy. Submitted the AR to Policy, Planning, and Research Division (PPRD) of the Department of Education, Central Visayas for the E-Saliksik (DepEd Research Portal).

Learning Action Cell (LAC) Narrative Report for the Month of March
SCIENCE DEPARTMENT
SY 2025-2026




MODE OF VERIFICATION: Attached here are the pictures we took during the face-to-face LAC Session.



Attached here are the pictures we took during the face-to-face LAC Session.

ATOMIC QUEST BOARD GAME: A HANDS-ON EXPLORATION TO ENHANCE CONCEPTUAL UNDERSTANDING AND ENGAGEMENT IN ATOMIC STRUCTURE FOR GRADE 8 LEARNERS

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INTRODUCTION

For the last two school years, the item analysis reports have consistently revealed that learners faced a significant difficulty in determining the number of subatomic particles. When learners reached a higher grade level, they showed poor performance during the lessons in atoms. In the above situation, a hands-on exploration seemed to be an ideal strategy to drive learning motivation and promote better learning performance. This action research, entitled "Atomic Quest Board Game: A Hands-on Exploration to Enhance Conceptual Understanding and Engagement in Atomic Structure for Grade 8," aimed to assist learners by enhancing their understanding of determining the number of subatomic particles (protons, neutrons, and electrons) of an element by providing them a tangible and hands on experience. Furthermore, this research facilitates collaborative learning by encouraging collaboration among learners through fun and challenging activities that promote critical thinking in the context of chemistry. Together, these goals support the aim of fostering a more engaging and supportive educational environment for Grade 8 chemistry learners.

DISCUSSION OF RESULTS

This study employed the quantitative method utilizing action research design. This design was considered appropriate as the study aimed to measure the students' performance before and after the implementation of the interactive atom model in teaching the number of subatomic particles of an element. The table below presents essential metrics reflecting learners' comprehension and engagement with the instructional material. These data points establish a foundation for conducting a comparative analysis of learning outcomes before and after the intervention

Table 1: *Learners' Performance in Determining the Number of Subatomic Particles of an Atom during the Pretest*

Learning Objectives	Test Item No	No. of Correct Responses	% of Correct Responses	Mean (m) of Correct Responses
Identify early atomic models and basic atomic structure.	1	3	20	38.335
	7	7	46.67	
	8	6	40	
	9	7	46.67	
Recognize and describe the properties of subatomic particles.	2	5	33.33	34.9175
	3	4	26.67	
	4	4	26.67	
	6	8	53.33	
Determine atomic composition (number of protons, neutrons, electrons)	5	1	6.67	21.6675
	11	3	20	
	13	3	20	
	14	2	13.33	
	15	4	26.67	
Distinguish between atoms, ions, and isotopes.	10	3	20	31.6675
	12	3	20	
	16	4	26.67	
	17	2	13.33	
	18	3	20	
	20	4	26.67	
	19	4	26.67	
	21	5	33.33	
	22	5	33.33	
	23	6	40	
	24	7	46.67	
	25	7	46.67	
	26	5	33.33	
	27	4	26.67	
	28	5	33.33	
Infer atomic relationships and similarities among elements.	29	6	40	40.64
	30	7	46.67	
	31	5	33.33	
	32	7	46.67	
	33	7	66.67	
	34	7	66.67	
	35	5	33.33	
	36	7	46.67	
	37	4	26.67	
	38	7	46.67	
	39	7	46.67	
	40	5	33.33	

Determine atomic composition (number of protons, neutrons, and electrons) has a percentage of 12.6675. This low score highlights a critical gap in foundational science knowledge, specifically determine the number of subatomic particles, which could hinder the progress in more advanced chemistry topics.

Table 2: *Learners' Performance in Determining the Number of Subatomic Particles of an Atom during the Post-test*

Learning Objectives	Test Item No	No. of Correct Responses	% of Correct Responses	Mean (m) of Correct Responses
Identify early atomic models and basic atomic structure.	1	14	93.33	98.33
	7	15	100	
	8	15	100	
	9	15	100	
Recognize and describe the properties of subatomic particles.	2	15	100	95
	3	14	93.33	
	4	14	93.33	
	6	14	93.33	
Determine atomic composition (number of protons, neutrons, electrons)	5	15	100	98.67
	11	15	100	
	13	15	100	
	14	14	93.33	
	15	15	100	
Distinguish between atoms, ions, and isotopes.	10	14	93.33	96.67
	12	15	100	
	16	13	86.67	
	17	15	100	
	18	15	100	
	20	15	100	
	19	15	100	
	21	14	93.33	
	22	14	93.33	
	23	14	93.33	
	24	14	93.33	
	25	15	100	
	26	14	93.33	
	27	15	100	
	28	15	100	
Infer atomic relationships and similarities among elements.	29	15	100	98.33
	30	15	100	
	31	15	100	
	32	15	100	
	33	15	100	
	34	15	100	
	35	15	100	
	36	15	100	
	37	15	100	
	38	15	100	
	39	15	100	
	40	15	100	

Quest board game in enhancing academic performance, but also underscores its potential to foster deeper comprehension and long-term retention of scientific concepts in chemistry.

Table 3: Comparative Analysis of the Learners' Performance Before and After the Innovation

Learning Objectives	Mean (m) of the Correct Responses (Pretest)	Mean of the Correct Responses (Post-test)
Identify early atomic models and basic atomic structure.	38.335	98.33
Recognize and describe the properties of subatomic particles.	34.9175	95
Determine atomic composition (number of protons, neutrons, electrons)	21.6675	98.67
Distinguish between atoms, ions, and isotopes.	31.6675	96.67
Infer atomic relationships and similarities among elements.	40.64	98.33

The greatest improvement from 21.67 to 98.67 is evident in the objective for determining atomic composition (number of protons, neutrons, and electrons). This improvement implies that learners acquired the ability to calculate and identify the components of atoms.

An increase from 31.67 to 96.67 for distinguishing between atoms, ions, and isotopes marks an increase in scores which manifests that learners were able to clearly differentiate between neutral atoms, charged ions, and isotopes of the same element. The board game likely helped clarify the distinctions through scenario-based challenges and visual cues, promoting deeper understanding of atomic variation.

These findings carry significant implications emphasizing the value of employing innovative instructional approaches, such as game-based learning, that effectively connect abstract scientific concepts with students' real-world experiences and cognitive frameworks. Furthermore, this implies that consistent and significant improvements across all objectives confirm the effectiveness of the Atomic Quest board game as an instructional innovation. It not only enhanced factual recall but also promoted conceptual understanding, analytical thinking, and learner engagement. These results support the integration of game based learning tools in science education to improve academic outcomes and make complex topics more approachable.

CONCLUSIONS, RECOMMENDATIONS, AND REFLECTIONS

Teaching atomic concepts in chemistry, particularly determining the number of protons, neutrons, and electrons, is challenging due to their abstract nature, which often leads to low engagement and poor mastery among learners at Bunga National High School. Traditional teaching methods centered on rote memorization and passive instruction were insufficient in addressing these difficulties as it failed to spark curiosity or foster meaningful understanding. This persistent issue prompted the development and integration of the Atomic Quest board game, which is designed to contextualize scientific learning through interactive play. The implementation of the board game significantly improved learners' understanding of protons, neutrons, and electrons, as shown by the increase in post-test scores. The game effectively transformed abstract concepts into engaging and meaningful learning experiences.

Game-based learning strategies like the Atomic Quest board game should be integrated into chemistry lessons, especially for abstract topics. This approach promotes immersive environments where learners actively construct knowledge, collaborate, and think critically. Reflecting on this experience, innovative and student-centered strategies are vital in improving science instruction and rekindling students' interest in chemistry.

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