



Impact study of school-based interventions among public secondary schools

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ABSTRACT

This study investigates the impact of school-based interventions on teaching performance and student academic outcomes in public secondary schools in Northern Negros, Philippines. Using an explanatory sequential mixed-methods approach, it integrated both quantitative and qualitative analyses to assess the implementation and impact of targeted initiatives, that includes that includes Project SHARE, Project SHINE, Project ReWal, E-CARE, Project PPST, Project LERI, Project V-EXTRA, and Physics in Minecraft. Stratified sampling was employed to ensure adequate representation with 288 junior high school respondents in DepEd. Results revealed significant improvements in student proficiency across key domains—literacy, numeracy, science conceptual understanding, and environmental awareness. Notably, Physics in Minecraft yielded the most substantial increase, with average accuracy scores rising from 24% to 50%, demonstrating the effectiveness of gamified instruction. Across all interventions, student engagement, teaching effectiveness, stakeholder participation, and resource utilization also improved, as reflected in mean ratings nearing 4.00 (*“Somewhat Positive”*). The success of the initiatives was largely enabled by teacher collaboration, contextualized instruction, and active community involvement. But there are problems like not having enough resources, not getting enough training, worrying about workload, and not being able to fully implement plan. The study highlights the potential of evidence-based, context-sensitive interventions to enhance educational equity and learner outcomes. Recommendations were offered to inform with Policymakers, school leaders, and educators to optimize, scale, and sustain such interventions for broader impact.

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INTRODUCTION

Education is the foundation of social progress, giving people the knowledge and skills, they need to deal with a world that is becoming more complicated (Bisht, A. 2024). In the Philippines, the Department of Education emphasizes that pursuing educational excellence is not merely a goal but a core commitment (Mendoza, A., & Reyes, L. 2021).

Over the past three decades, several reforms have sought to improve equity and quality in education (OECD). However, persistent gaps remain, as evidenced by the 2022 Programme for International Student Assessment (PISA), which highlighted wide disparities in reading, mathematics, and science performance among Filipino learners. Many of these gaps are linked to socio-economic and geographic inequalities that limit access to quality instruction (Harris et al., 2023). While programs such as the Philippine Informal Reading Inventory (Phil-IRI) and the Electronic Reading and Numeracy Test (E-RuNT) have provided diagnostic tools, there is still insufficient empirical data on the effectiveness of school-based interventions in addressing these disparities, particularly in public secondary schools.

Globally, numerous studies have demonstrated that structured interventions—ranging from personalized learning and gamified instruction to stakeholder collaboration—can improve student outcomes (Hattie, 2019 [Oceania]; McCallum et al., 2020 [Europe]; Darling-Hammond, 2019 [North America]; Spaul 2020 [Africa]; Yamamoto & Karaman. 2021 [Asia]; Trevino et al., 2019 [South America]). Yet, in the Philippine context, most evidence remains fragmented, with few large-scale studies examining their impact in resource-constrained and diverse school settings (Mendoza & Reyes, 2021; Bautista et al., 2023). This gap underscores the need for contextually grounded research that does not only measures academic outcomes but also considers teacher performance, community engagement, and resource utilization.

To address this gap, the present study *Impact of School-Based Interventions on Teaching Performance and Student Academic Outcomes among Public Secondary Schools*, investigates the impact of school-based interventions implemented in public secondary schools in Northern Negros from School Year 2020–2025. Specifically, the study evaluates their effects on teaching performance, student academic achievement, stakeholder engagement, and innovation/resource utilization. It also compares in selected large secondary schools in the 2nd district of Negros Occidental. to determine school-specific impacts. Finally, the study explores teachers' experiences and reflections to generate evidence-based recommendations for scaling and sustaining effective interventions.

OBJECTIVES OF THE STUDY

This study aimed to investigate the impact of School-Based Interventions among Public Secondary Mega Schools in the second district of Northern Negros from School Year 2020-2021 to School Year 2024-2025. Specifically, this study sought to answer the following questions.

1. What is the impact of various school-based interventions on school performance in terms of:
 - 1.1 Teachers' Performance
 - 1.2 Students' Academic Performance
 - 1.3 Stake holder's Engagement
 - 1.4 Innovation Resource Utilization
2. What is the impact of the various interventions on the school performance of various schools?
 - a. Sagay National High School
 - b. Manapla National High School
 - c. Dr. Vicente F. Gustilo Memorial National High School
3. Are there statistically Significant Differences on the Impact of Various School-Based Interventions on School-Performance in terms of Teacher's Performance, Students' Academic Performance, Stakeholders' Engagement,

and Innovation Resource Utilization

4. What are the experiences and reflections of teachers regarding the implementation of school-based interventions?
5. What evidence-based recommendations can be proposed to enhance the design and implementation of future school-based interventions?

LITERATURE REVIEW

A wide range of interventions has been introduced in public secondary schools worldwide to address diverse student needs. These interventions generally fall into three domains: academic support, behavioral management, and mental health promotion. While designed with distinct objectives, their implementation and effectiveness are contingent upon contextual factors, including resource availability, stakeholder engagement, and socio-economic conditions.

Academic Support Interventions

Evidence consistently highlights academic support as a crucial means of addressing learning gaps, particularly in underperforming schools. McCallum et al. (2020) demonstrated that structured tutoring and small-group instruction enhance academic performance and student motivation, though their findings are largely derived from resource-rich, urban contexts. This raises concerns about their applicability in low-resource environments such as rural Philippine schools, where shortages of qualified tutors, inadequate learning materials, and limited technological infrastructure persist. Complementing this, Brown and Taylor (2021) emphasized the role of socio-economic disparities in shaping intervention outcomes, advocating for low-cost, community-based strategies such as peer tutoring. Together, these findings suggest that while evidence supports academic interventions, their design and delivery must be adapted to local resource and socio-economic constraints.

Behavioural Interventions

Research further indicates that behavioural frameworks, particularly Positive behavioural Interventions and Supports (PBIS), contribute to reducing classroom disruptions and improving student behavior (Turner & Simonsen, 2021). However, the limited consideration of cultural adaptability in such frameworks raises questions about their transferability to contexts like the Philippines. Martinez and Alvarado (2022) addressed this gap by examining culturally grounded behavioral interventions rooted in Filipino values, such as pakikisama (harmony) and bayanihan (community spirit). Their findings underscore that cultural relevance enhances both acceptance and effectiveness, suggesting that successful implementation requires not only structural fidelity but also socio-cultural sensitivity.

Mental Health Interventions

Growing attention has also been given to school-based mental health initiatives. Harris et al. (2023) reported that structured programs—including counselling services, psychological support, and peer-based interventions—reduce anxiety, depression, and trauma-related symptoms. Yet, most evidence originates from developed countries, limiting generalizability to resource-constrained settings. In the Philippine context, Bautista et al. (2023) found that while programs for mental health exist in some schools, systemic challenges remain, including insufficient trained personnel and inadequate funding. This highlights a pressing need for cost-effective, community-driven mental health strategies that leverage local resources and cultural practices.

Personalized Learning Approaches

Finally, literature suggests that personalized learning approaches, including adaptive software and individualized lesson plans, foster higher academic engagement (Smith, 2020). Although Smith's study focused on

elementary students, its implications extend to secondary education, where learners face unique developmental and motivational challenges. This indicates a gap in empirical evidence regarding the efficacy of personalized learning for adolescents.

Synthesis

Overall, the literature provides robust evidence that school-based interventions can improve academic, behavioural, and psychosocial outcomes. However, limitations emerge in terms of contextual adaptability, cultural responsiveness, and resource feasibility, particularly in low- and middle-income settings. These gaps justify further investigation into how targeted interventions—when adapted to the Philippine educational landscape—can effectively enhance learning and holistic student development.

METHODS

Research Design

This study employed an explanatory sequential mixed-methods design, which begins with quantitative analysis of intervention outcomes followed by qualitative exploration of teacher experiences (Creswell & Creswell, 2019). This design was selected because it aligns with the study's objectives: to measure the impact of school-based interventions on performance indicators and to contextualize these results through teachers' reflections. Quantitative findings provided the baseline and post-intervention comparisons, while the qualitative phase explained how and why these outcomes were achieved. Integration of both strands occurred during interpretation to generate comprehensive, evidence-based conclusions.

Participants of the Study

The respondents were 288 junior high school teachers in DepEd from the second district of Northern Negros. They represented three large public secondary schools. Demographic details were collected to contextualize findings: the majority had 6–15 years of teaching experience, while others ranged from early-career (1–5 years) to tenured teachers (16+ years). Teachers came from a variety of subject areas including English, Science, Mathematics, Filipino, and Social Studies, ensuring broad representation of instructional contexts.

Sampling Technique

Stratified sampling was employed to ensure adequate representation of teachers across school types and contexts (Bisht, 2024). Within each school, participants were further grouped based on teaching experience and subject specialization, enabling comparisons across subgroups. The sample consisted of 288 teachers, with 89 (30.9%) from Cadiz NHS, 78 (27.1%) from Manapla NHS, and 121 (42.0%) from Sagay NHS. Their teaching experience ranged from 1 to more than 20 years, with the majority clustered between 6 and 15 years. Respondents' ages varied from 21 to over 50 years, reflecting both early-career and senior teachers. Subject distribution covered all major areas (Science, Mathematics, English, Filipino, Araling Panlipunan, TLE, and MAPEH), ensuring representation across the curriculum. This detailed profiling highlights the diversity of the teaching workforce and strengthens the validity of the sample in reflecting the realities of public secondary education in Northern Negros.

Research Instrument

Data were collected through a researcher-developed questionnaire and semi-structured interview guide. Questionnaire: Included 40 Likert-scale items (5-point scale), grouped into four constructs: (1) Teacher Performance, (2) Student Academic Performance, (3) Stakeholder Engagement, and (4) Innovation Resource Utilization. Example indicators included lesson preparation and delivery, student participation, parental involvement, and use of ICT tools.

Qualitative Guide: Comprised 10 open-ended questions focusing on teachers' reflections, challenges, and recommendations regarding intervention implementation.

1. Can you share which school-based interventions are currently being carried out in your school?
2. Were you involved in planning, carrying out, or evaluating these interventions? If yes, can you tell me more about your role?
3. From your perspective, how have these interventions affected your students' academic performance?
4. Do you have any examples or observations that stand out?
5. Have these interventions influenced the way you teach or how you perform your duties? If so, how?
6. Do you feel that these interventions were designed to match your students' needs and your capacity as a teacher?
7. What have been the main factors that helped make these interventions successful in your school?
8. What obstacles or challenges have you faced while trying to implement these interventions?
9. How have these challenges affected how well the interventions worked?
10. Based on your experience, what would you suggest to make future school-based interventions more effective?

The instrument was validated by nine experts in Educational Management and Curriculum Development, with all items exceeding Lawshe's CVR threshold of 0.78. Pilot testing was conducted with a group of teachers similar to the target respondents but not part of the actual respondents, yielded a KR-21 reliability coefficient of 0.80, indicating high reliability.

Data Collection Procedure

Data gathering was carried out in three phases:

1. **Pre-implementation** – Baseline data were collected on teaching performance, student outcomes, and stakeholder participation. Data will be gathered from three schools—Sagay National High School, Manapla National High School, and Dr. Vicente F. Gustilo Memorial National High School using validated tools. Post-intervention data will be collected using the same parameters to ensure consistency and comparability. The fidelity of intervention implementation will be monitored through regular teacher feedback and adherence to established protocols.
2. **Implementation** – Validated questionnaires were administered, and qualitative interviews were conducted with purposively selected teachers. The interview was conducted on-site at each school in a quiet and comfortable environment conducive to open discussion. Each session lasted about 60 to 90 minutes. All participants signed informed consent forms prior to the discussions. A semi-structured interview guide was used to make sure consistency while allowing flexibility for in-depth responses. The sessions were audio-recorded, transcribed verbatim, and analysed using Braun and Clarke's six-step thematic analysis approach. Anonymity was maintained through coding of responses.
3. **Post-implementation** – Responses were retrieved, verified, and analysed. Quantitative data were subjected to descriptive and inferential statistics, while qualitative data were analysed thematically using Braun and Clarke's six-step thematic analysis approach. Integration occurred at the interpretation stage.

Data Analysis

For Problem 1, Mean and Standard Deviation were used to determine the impact of the school performances among public high schools in terms of Teacher Performance, Students Academic Performance, Stake holders Performance, and Innovation Resource Utilization.

For Problem 2, Percentage Analysis was used to determine the impact of various interventions among different public schools before and after the implementation of the intervention.

For Problem 3, Wilcoxon Signed-Rank Test were employed to test significance in pre/post changes.

Problem 4 & 5: Thematic Analysis of interviews and open-ended responses (Braun & Clarke, 2020).

Ethical Consideration

This study adheres to the ethical guidelines set forth by (SUNN) for research involving human participants, ensuring the protection of participants' rights, confidentiality, and informed consent throughout all stages of the research (State University of Northern Negros). In accordance with university guidelines, informed consent shall be received from all participants, including school administrators, and teachers involved in interviews, surveys, or any form of gathering data.

Participants will get detailed explanations of the study's goal, methods, potential risks, and benefits. They will have the voluntary right to withdraw from the study at any time without any adverse consequences. All data collected will be treated with strict confidentiality and anonymity, as stipulated by State University of Northern Negros. Participants' identities will be protected through the use of pseudonyms, and all data will be securely stored in password-protected files accessible only to authorized researchers. This study prioritizes the well-being of participants by minimizing potential risks associated with participation, as outlined in university ethical guidelines. Researchers will ensure that participants are treated with respect and dignity throughout the research process. The dissertation will uphold research integrity by employing rigorous methods for data collection, analysis, and interpretation, as required by the University. Results will be reported accurately and transparently, adhering to ethical standards and avoiding any form of data manipulation or bias.

RESULTS AND DISCUSSION

This section presents the results of the study based on data collected through surveys and interviews with teachers from three participating public secondary schools: Sagay National High School, Manapla National High School, and Dr. Vicente F. Gustilo Memorial National High School. The data was organized into quantitative and qualitative findings, followed by an analysis and interpretation of these results to address the research questions and objectives.

The quantitative data, derived from teacher surveys, provides insights into the effectiveness of the school-based interventions in improving students' academic performance in reading and numeracy. The survey results also highlight key factors that facilitated or hindered the implementation of these interventions. On the other hand, qualitative data from teacher interviews offers in-depth perspectives on the experiences, challenges, and recommendations for future improvements in intervention practices.

A. Quantitative Data

Table 1. The Impact of Various School Interventions on School-Performance in terms of Teacher's Performance, Students' Academic Performance, Stakeholders' Engagement, Innovation and Resource Utilization

	Before Mean	SD	Interpretation	After Mean	SD	Interpretation
Teaching Performance	3.00	0.27	Neutral	3.99	0.26	Somewhat Positive
Students' Academic Engagement	2.97	0.26	Neutral	4.00	0.27	Somewhat Positive
External Stakeholders' Engagement	3.52	0.37	Somewhat Positive	3.98	0.27	Somewhat Positive

Innovation and Resource Utilization	3.47	0.36	Somewhat Positive	4.00	0.25	Somewhat Positive
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A. Notes: Means were interpreted as follows: 1.00 – 1.80 (Very Negative), 1.81 – 2.60 (Somewhat Negative), 2.61 – 3.40 (Neutral), 3.41 – 4.20 (Somewhat Positive), 4.21 – 5.00 (Very Positive)

Table 1 presents the impact of various school interventions on school performance in terms of teacher's performance, students' academic engagement, stakeholders' engagement, and innovation/resource utilization before and after the implementation of interventions.

Results show that teaching performance improved from a neutral level ($M = 3.00$, $SD = 0.27$) before the interventions to a somewhat positive level ($M = 3.99$, $SD = 0.26$) after the interventions. This suggests that the school-based programs effectively enhanced teachers' instructional practices and professional engagement.

Similarly, students' academic engagement shifted from neutral ($M = 2.97$, $SD = 0.26$) to somewhat positive ($M = 4.00$, $SD = 0.27$), indicating that the interventions, such as Physics in Minecraft and other gamified approaches, positively influenced students' motivation and participation in learning activities.

In terms of external stakeholders' engagement, the mean score improved from somewhat positive ($M = 3.52$, $SD = 0.37$) to a higher somewhat positive level ($M = 3.98$, $SD = 0.27$). This implies that stakeholders—including parents, community members, and educational partners—became more actively involved in supporting school initiatives.

Finally, innovation and resource utilization increased from somewhat positive ($M = 3.47$, $SD = 0.36$) to somewhat positive but higher ($M = 4.00$, $SD = 0.25$), showing that the interventions enhanced the schools' capacity to adopt innovative practices and maximize available resources.

Overall, the findings reveal positive gains across all four performance domains after the implementation of school-based interventions. These improvements highlight the effectiveness of integrating innovative teaching strategies, promoting student engagement, strengthening stakeholder participation, and ensuring efficient resource utilization.

Table 2. Significant Difference on the Impact of Various School-Based Interventions on School-Performance in terms of Teacher's Performance, Students' Academic Performance, Stakeholders' Engagement, Innovation and Resource Utilization

	t-value	p-value	Interpretation	Decision
Teaching Performance	-13.103	0.000	Significant	Reject H_0
Students' Academic Performance	-13.133	0.000	Significant	Reject H_0
Stakeholders' Engagement	1756.500	0.000	Significant	Reject H_0
Innovation and Resource Utilization	779.500	0.000	Significant	Reject H_0

Note: Level of Significance at 0.05

Table 2 confirms that the improvements across all four performance domains were statistically significant at the 0.05 level.

Teaching Performance ($t = -13.103$, $p = 0.000$): This improvement indicates that interventions strengthened instructional effectiveness. It supports Hattie's (2019) Visible Learning framework, which emphasizes teacher development and feedback as critical drivers of student achievement.

Student Academic Performance ($t = -13.133$, $p = 0.000$): Gains validate that targeted strategies such as Physics in Minecraft and Project ReWal effectively enhanced comprehension and mastery. These results echo McCallum et al. (2020), who showed that contextualized support programs significantly improve learning outcomes.

Stakeholder Engagement ($t = 1756.500$, $p = 0.000$): The highly significant difference reflects the strengthened involvement of parents, LGUs, and communities. This finding is consistent with Epstein's (2021) Overlapping Spheres of Influence, which highlights the role of family-school partnerships in improving student success.

Innovation and Resource Utilization ($t = 779.500$, $p = 0.000$): The rise in innovative practices such as gamified learning and ICT use shows that adaptive strategies can thrive even in resource-limited contexts. This aligns with Korpershoek et al. (2023), who found that technology-enhanced interventions foster engagement and instructional efficiency.

Overall, the results demonstrate that school-based interventions were not only statistically effective but also consistent with established educational theories. The convergence of evidence underscores their potential as sustainable strategies to improve equity and quality in Philippine secondary education.

Table 3. Impact of the Various Interventions in Sagay National High School

School Name	Intervention Project	Focus Area	Before	After	Remarks
Sagay National High School	Project SHARE	Reading	Frustration Level Readers: 52%	Frustration Level Readers: 30%	Decrease in frustration
			Instructional Level Readers: 36%	Instructional Level Readers: 50%	Major increase in instructional level readers
			Independent Level Readers: 12%	Independent Level Readers: 20%	Improvement in independent level readers
	Project SHINE	Numeracy	Below Basic Proficiency: 61%	Below Basic Proficiency: 40%	Decrease in below basic proficiency
			Basic Proficiency: 28%	Basic Proficiency: 45%	Major increase in basic proficiency
			Proficient/Advanced: 11%	Proficient/Advanced: 15%	Slight increase
	Physics in Minecraft	Conceptual Understanding	Pre-test Average Accuracy: 24%	Post-test Average Accuracy: 50%	Remarkable improvement in accuracy

The data in Table 3 reveal a considerable improvement in student performance in reading, numeracy, and conceptual understanding following the implementation of targeted school-based interventions in Sagay National

High School. Project SHARE, which focused on reading proficiency, showed a marked reduction in students categorized as frustration-level readers—from 52% before the intervention to 30% after. Simultaneously, there was a significant increase in instructional-level readers, rising from 36% to 50%, and independent-level readers increased from 12% to 20%. These changes suggest that the intervention was effective in elevating the reading capabilities of students and transitioning them toward more autonomous learning.

In terms of numeracy, Project SHINE demonstrated a strong positive effect. The percentage of students performing below basic proficiency dropped from 61% to 40%, while those at the basic proficiency level increased from 28% to 45%, indicating a shift toward more competent mathematical understanding. Proficient or advanced learners also showed a slight increase from 11% to 15%, reflecting the intervention’s reach across different learner proficiencies.

Additionally, the use of Physics in Minecraft, which targeted conceptual understanding in science, led to a significant increase in student accuracy on assessments—from a pre-test average of 24% to a post-test average of 50%. This reflects the effectiveness of gamified and experiential learning in enhancing comprehension of abstract physics concepts.

Table 4. Impact of the Various Interventions in Manapla National High School

School Name	Intervention Project	Focus Area	Before	After	Remarks
Manapla National High School	Project ReWal	Numeracy	Non-Numerate: 58%	Non-Numerate: 30%	Decrease in non-numerate students
			Emerging Numerate: 32%	Emerging Numerate: 45%	Increase in emerging numerate students
			Numerate: 10%	Numerate: 25%	Improvement in numerate students
	E-CARE	Literacy	Below Proficiency: 49%	Below Proficiency: 25%	Decrease in below proficiency
			Developing: 38%	Developing: 50%	Increase in developing readers
			Proficient: 13%	Proficient: 25%	Increase in proficient readers
	Project PPST	Literacy	Frustration Level: 47%	Frustration Level: 25%	Decrease in frustration
			Instructional Level: 39%	Instructional Level: 50%	Increase in instructional level Z
			Independent: 14%	Independent: 25%	Increase in independent readers

Table 4 presents the outcomes of multiple interventions at Manapla National High School aimed at improving literacy and numeracy. Project ReWal, which focused on numeracy, produced a noteworthy reduction in non-numerate students, from 58% to 30%, and an increase in the numerate group from 10% to 25%, suggesting that the project successfully helped a significant number of students transition to higher proficiency levels.

Similarly, the E-CARE project improved literacy by reducing the percentage of students below proficiency from 49% to 25%, while increasing developing readers from 38% to 50% and proficient readers from 13% to 25%. These results indicate a balanced improvement across different proficiency levels, highlighting the intervention's broad applicability.

Moreover, Project PPST, another literacy-focused initiative, reduced frustration-level readers from 47% to 25%. Instructional-level readers increased from 39% to 50%, and independent-level readers rose from 14% to 25%, showcasing a comprehensive improvement in reading skills. The consistency of improvements across multiple literacy initiatives suggested a sustained and school-wide literacy enhancement strategy.

Table 5. Impact of the Various Interventions in Dr. Vicente F. Gustilo Memorial National High School

School Name	Intervention Project	Focus Area	Before	After	Remarks
Dr. Vicente F. Gustilo Memorial National High School	Project LERI	Cross-Curricular Literacy	Below Proficiency: 55%	Below Proficiency: 30%	Decrease in below proficiency
			Partial Proficiency: 33%	Partial Proficiency: 45%	Increase in partial proficiency
			Proficient: 12%	Proficient: 25%	Increase in proficient students
	Project V-EXTRA	Math	Low Proficiency: 62%	Low Proficiency: 35%	Decrease in low proficiency
			Average Proficiency: 27%	Average Proficiency: 45%	Major increase in average proficiency
			Above Average: 11%	Above Average: 20%	Increase in above average students
	ACTION EnviSci Newsletter	Environmental Awareness	High Awareness: 18%	High Awareness: 30%	Increase in high awareness
			Moderate: 41%	Moderate: 50%	Increase in moderate awareness
			Low Awareness: 41%	Low Awareness: 20%	Decrease in low awareness

As shown in Table 5, Dr. Vicente F. Gustilo Memorial National High School also benefited from several intervention programs. Project LERI, which aimed to develop cross-curricular literacy, resulted in a 25-percentage-point reduction in students scoring below proficiency—from 55% to 30%—and a corresponding increase in partially proficient and proficient learners.

Project V-EXTRA targeted mathematics skills and saw a decrease in students with low proficiency from 62% to 35%, while students at average proficiency rose from 27% to 45%, and above-average performers increased from

11% to 20%. This broad shift suggested a successful differentiation of instruction that lifted performance across the proficiency spectrum.

The ACTION EnviSci Newsletter, which aimed to foster environmental awareness, was also successful. Students with low awareness decreased significantly from 41% to 20%, while those with moderate and high awareness levels increased.

These results underscore the impact of project-based, content-integrated strategies in enhancing student engagement with environmental and sustainability issues.

Table 6. Significant Difference on the Impact of Various School-Based Interventions on School-Performance in terms of Teacher's Performance, Students' Academic Performance, Stakeholders' Engagement, Innovation and Resource Utilization.

	t-value	p-value	Interpretation	Decision
Teaching Performance	-13.103	0.000	Significant	Reject Ho
Students' Academic Performance	-13.133	0.000	Significant	Reject Ho
Stakeholders' Engagement	1756.500	0.000	Significant	Reject Ho
Innovation and Resource Utilization	779.500	0.000	Significant	Reject Ho

Note: Level of Significance at 0.05

Table 6 presents the results of a statistical analysis (specifically, paired t-tests or their equivalent) that measured whether the observed improvements in key school performance indicators before and after the interventions were statistically significant. The performance indicators analyzed include Teaching Performance, Students' Academic Performance, External Stakeholders' Engagement, and Innovation and Resource Utilization.

The decision criterion used was a 0.05 level of significance. A p-value below this threshold indicates that the difference observed was unlikely due to chance, and thus statistically significant.

Teaching Performance; t-value: -13.103 p-value: 0.000

Interpretation: Significant Decision: Reject Ho The results show a highly significant improvement in teaching performance following the interventions.

The negative t-value indicated that the post-intervention scores were higher than the pre-intervention scores (based on how the test was set up). This statistically confirms that the interventions made a real, measurable impact on teacher effectiveness and pedagogical practices.

Students' Academic Performance; t-value: -13.133 p-value: 0.000 Interpretation: Significant Decision: Reject Ho Stakeholders' Engagement; t-value: 1756.500 p-value: 0.000 Interpretation: Significant Decision: Reject Ho

The extremely high t-value and corresponding p-value of 0.000 indicate a strong significant difference in stakeholders' engagement before and after the interventions. This suggested that school-community partnerships and the involvement of parents, local government, and other stakeholders were significantly enhanced—possibly due to more inclusive communication, shared projects, and visible impacts of intervention outcomes.

Innovation and Resource Utilization; t-value: 779.500 p-value: 0.000 Interpretation: Significant Decision: Reject Ho The difference in innovation and resource utilization was also found to be statistically significant. The large t-value supports the conclusion that the interventions substantially improved how schools integrate new strategies, tools, and resources into instruction and management. Programs like ACTION EnviSci and gamified STEM tools likely contributed to this leap in practice.

The results in Table 6 statistically affirm the effectiveness of the school-based interventions. Each performance area recorded a significant difference between pre- and post-intervention phases, suggesting that the interventions were not only well-designed and implemented but also transformational in nature.

These findings underscore the value of: Evidence-based educational reforms, Continuous professional development for teachers, Community and stakeholder involvement, Resource mobilization and innovation in pedagogy

Moreover, these results justify the continued investment in and scaling of such interventions in similar contexts, especially within public school systems striving for quality and equity.

B. Qualitative Data

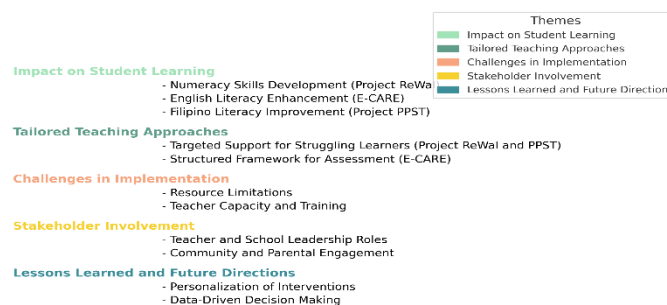
Thematic Analysis of Teacher Perspectives on Educational Interventions: Insights from Interviews with Educators at Manapla National High School, Dr. Vicente F. Gustilo Memorial National High School, and Sagay National High School.

Thematic Analysis Framework for Sagay National High School Interventions



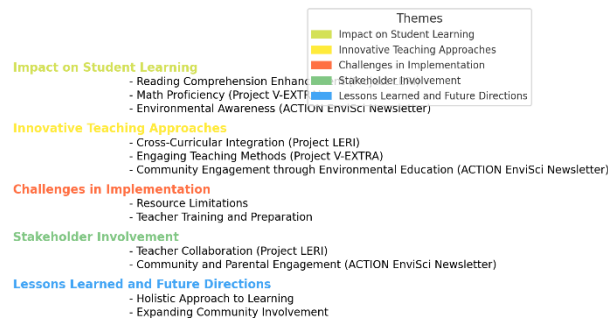
Thematic analysis of teacher interviews revealed five major themes that reflect the impact, challenges, and opportunities associated with school-based interventions at Sagay National High School. These themes provide insights into how projects like Project SHARE, Project SHINE, and Physics in Minecraft influence student learning, teaching practices, and overall program implementation.

Thematic Analysis Framework for Manapla National High School Interventions



The thematic analysis of teacher interviews revealed several key themes reflecting the impact and challenges of the school-based interventions at Manapla National High School. These interventions—Project ReWal, E-CARE, and Project PPST—focused on numeracy and literacy, and the following themes emerged from the data.

Thematic Analysis Framework for Dr. Vicente F. Gustilo Memorial National High School Interventions



The thematic analysis of teacher interviews revealed several key themes reflecting the impact and challenges of the school-based interventions at Dr. Vicente F. Gustilo Memorial National High School. These interventions—Project LERI, Project V-EXTRA, and The ACTION EnviSci Newsletter—focused on improving literacy through cross-curricular integration and promoting environmental education.

Integration of Quantitative and Qualitative Data

The explanatory sequential design highlighted convergence between numerical results and teacher experiences. Gains in student outcomes were explained by themes such as “innovative pedagogy,” “game-based learning,” and “collaborative teaching.” Stakeholder engagement was clarified by accounts of LGU support and parental participation. Challenges, such as resource limitations and workload pressures, contextualized why improvements did not yet reach “very positive” levels.

CONCLUSION

This study demonstrated that school-based interventions in Northern Negros significantly enhanced teaching performance, student academic engagement, stakeholder involvement, and innovation/resource utilization. Collectively, these improvements highlight the potential of evidence-based, context-sensitive strategies to reduce educational disparities and improve overall quality in public secondary schools.

More broadly, the findings contribute to ongoing reforms under the Department of Education’s Basic Education Development Plan (BEDP) 2030, which emphasizes equity, quality, and resilience in Philippine education. By showing that interventions—when supported by teachers, communities, and resources—can yield measurable gains, this research offers timely insights for policymakers and school leaders.

The study acknowledges certain limitations, including its focus on three schools within a single district and the short-term measurement of intervention outcomes. Future studies should examine differences between rural and urban contexts, explore effects across other grade levels, and conduct longitudinal assessments to evaluate sustainability.

In conclusion, school-based interventions represent a promising pathway to strengthen public education in the Philippines. With proper institutional support, continuous teacher development, and active community engagement, these initiatives can be scaled and sustained to ensure more equitable learning opportunities for Filipino students.

RECOMMENDATIONS

The following recommendations are drawn from the study's results, interpretations, and conclusions, and are further supported by focus group discussion (FGD) findings:

1. Expand Gamified and Digital Learning

Build on the success of Physics in Minecraft by integrating more game-based and technology-enhanced interventions across subjects. Evidence suggests that gamification significantly increases student motivation and achievement when properly designed.

2. Strengthen Parental and Community Engagement

Institutionalize structured and sustained involvement of parents and LGUs through learning workshops, mentoring programs, and resource mobilization. Research confirms that family–school partnerships improve student outcomes when guided by clear frameworks.

3. Integrate Socio-Emotional Learning (SEL)

Include SEL activities alongside academic interventions to strengthen student resilience, well-being, and engagement. Evidence shows that SEL programs enhance academic performance and social-emotional skills across diverse school contexts.

4. Embed Interventions into School Improvement Plans (SIPs)

Ensure sustainability by institutionalizing interventions (e.g., Project SHARE, SHINE, and ReWal) into school action plans and DepEd's SIP frameworks. Whole-school approaches are shown to be more sustainable and scalable than isolated programs.

5. Establish Monitoring and Evaluation (M&E) Systems

Develop school-level M&E tools to track the outcomes of interventions annually. This will ensure accountability and facilitate data-driven refinements. International models highlight that continuous improvement frameworks with strong feedback loops are essential for scaling reforms.

Proposed Design and Implementation Framework for Effective School-Based Interventions

This framework provides a structured approach for designing and implementing effective school-based interventions, aligned with key DepEd policies such as DepEd Order No. 43, s. 2015 on School-Based Management, DepEd Order No. 14, s. 2023 on Learning Recovery, and related guidelines.

Design Phase				Implementation Phase			
Needs Assessment and	Situational Analysis:	Capacity	Building	and	Orientation:		
- Analyze student data and resource gaps	-	- Conduct	-	LAC	sessions		
- Align with DepEd priorities		- Orient all stakeholders					

Stakeholder Involvement and Participatory Planning: - Engage teachers, parents, students - Form an intervention committee	Pilot Testing and Roll-Out: - Pilot with selected grade levels - Adjust based on feedback
SMART Goal Setting: - Define Specific, Measurable, Achievable, Relevant, Time-bound objectives	Monitoring and Supervision: - Use structured tools and observations
Intervention Strategy Development: - Design context-based programs (e.g., Project SHARE, Physics in Minecraft)	Midterm Review and Adaptive Feedback: - Analyze early results and revise plans
Resource Mobilization and Planning: - Allocate MOOE funds, seek community/private support	Evaluation and Documentation: - Measure outcomes, document best practices Institutionalization and Scaling: - Include in SIP, recommend policy adoption

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