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Editor's Note

We are delighted to introduce the first edition of **Asia-Pacific Journal for the Liberal Arts**, published by Inkwell Publishing. The first edition of this journal opens a venue for scholarly work inspired by the ideals of serious, creative, and humane exploration that is central to the liberal arts, especially as located in the plurality of intellectual traditional and modern circumstances that characterize the Asia-Pacific region.

The liberal arts tradition has enabled critical inquiry, ethical consideration, and cultural literacy for centuries. Today, we confront quickening technological progress, geopolitical intricacy, and ecological instability; interdisciplinary conversation and historically aware viewpoints are urgently required. This journal emerged in consideration of the need-the need to initiate communication between the scholarship in the humanities, social sciences, and creative fields that cross the borders of disciplines, methodologies, and legacies.

One of the most commendable features of the Asia-Pacific region is its linguistics, philosophical, historical, and artistic plurality. However, the discourse about the liberal arts is sometimes limited to geography or discipline. The Asia-Pacific Journal for the Liberal Arts aims to break such boundaries. We invite manuscripts that are locally attentive and globally responsive; that are not afraid to destabilize dominant paradigms, retrieve the suppressed narratives, and rethink what the liberal arts can do and be for public life.

Inkwell Publishing is a boutique publication house that believes in considerate curation, editorial stewardship, and intellectual autonomy. This journal is an extension of this particular belief. The articles in the inaugural issue are chosen for their academic value but also for their potential to stir conversations and contemplation. The essays brought together in this issue represent the liberal arts spectrum of disciplines: philosophy, history, literature, cultural studies, and flexible boundaries of academia but they are also sensitive to the realities and emergent issues surrounding this region.

We would like to express our deep appreciation to the authors, reviewers, and advisors whose kindness and wisdom credited this first volume. We trust that

the fruit of their labor will help to create a journal that will flourish as an enduring space for exchange.

We call upon our readers, those who support and advance the public good-including scholars, students, educators, and active citizens-to read carefully to question daringly and to help us nurture a liberal arts ethos that is grounded yet nimble, local yet cosmopolitan.

---Executive Editor

BETWEEN CODE AND CONSEQUENCE: A QUALITATIVE INQUIRY ON ETHICAL POLICY IMPLICATIONS OF GENERATIVE AI USE THROUGH THE LENS OF DEONTOLOGY AND CONSEQUENTIALISM

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Abstract

This study examines the ethical and policy implications of generative artificial intelligence (AI) in graduate education, with particular attention to its use in thesis writing, content generation, and data analysis. Anchored in the ethical frameworks of deontology and consequentialism, the study explores how faculty members perceive their moral responsibilities and the potential consequences associated with AI integration in academic work. Its objective is to generate empirically grounded and ethically informed recommendations to guide institutional policy development.

A qualitative phenomenographic research design was employed to capture the varied ways faculty members conceptualize the ethical dimensions of generative AI. Twelve graduate school faculty members from San Pablo Colleges, representing multiple academic disciplines, were purposively selected. Data were collected through written interviews using open-ended questions and analyzed thematically following Marton and Booth's phenomenographic framework. Ethical safeguards included informed consent, confidentiality, and voluntary participation.

Analysis yielded five categories of description: (1) AI as an ethical risk, (2) AI as a pedagogical support tool, (3) academic integrity as a non-negotiable duty, (4) ethical AI use as context-dependent, and (5) policy as a moral and institutional imperative. Faculty perspectives varied, with some adopting strict deontological positions grounded in academic honesty, while others expressed more consequentialist or situational reasoning. A shared concern across participants was the absence of clear institutional guidelines governing responsible AI use.

The findings underscore the urgent need for inclusive, ethically grounded institutional policies that balance technological innovation with academic integrity. The study recommends faculty capacity-building initiatives, integration of AI ethics into graduate curricula, and the collaborative development of institutional guidelines to ensure responsible and transparent AI use in graduate education.

Keywords: Generative AI; ethics in education; deontology; consequentialism; academic integrity

Introduction

The rapid advancement and increasing integration of generative artificial intelligence (AI) in graduate education have prompted an urgent need for ethical reflection and institutional policy response. As generative AI tools are increasingly employed in thesis writing, literature synthesis, programming, data analysis, and academic content generation, their growing presence in postgraduate scholarly practice raises fundamental concerns related to authorship, academic integrity, and intellectual responsibility (Holmes et al., 2022). Within a context where originality, rigor, and scholarly accountability are non-negotiable, the unregulated or opaque use of AI technologies risks undermining not only academic standards but also the moral obligations of graduate students, faculty advisers, and higher education institutions.

This study examines the ethical policy implications of generative AI use in graduate education through the complementary ethical frameworks of deontology and consequentialism. Deontological ethics emphasizes adherence to moral duties and principles, such as academic honesty, intellectual ownership, and the human-centered pursuit of knowledge,

regardless of outcomes. In contrast, consequentialism evaluates ethical actions based on their outcomes, weighing the potential benefits of AI integration—such as efficiency, accessibility, and innovation—against possible harms, including dependency, inequity, misrepresentation of authorship, and erosion of scholarly effort (Selwyn, 2019). Together, these ethical perspectives provide a robust analytical lens for examining how academic stakeholders negotiate responsibility and consequence in the use of generative AI.

The relevance of this inquiry lies in its policy-oriented focus on ethical governance within graduate education. While universities are beginning to formulate institutional guidelines on AI use, many existing policies remain either overly restrictive, inconsistently applied, or insufficiently grounded in empirical evidence and ethical theory. Consequently, faculty members and graduate students are often left to rely on personal judgment when navigating AI-related ethical dilemmas, increasing the risk of inconsistency and ethical ambiguity. This study seeks to address this gap by eliciting and analyzing the perspectives of graduate faculty members—who serve as mentors, evaluators, and policy influencers—on how duty-based and outcome-based ethics shape their perceptions and practices regarding generative AI.

By thematically interpreting faculty narratives through a phenomenographic approach, the study aims to uncover ethical tensions, divergent interpretations, and shared concerns that inform institutional expectations and policy needs. Anchored in the moral philosophies of deontology and consequentialism, this research contributes to a deeper understanding of how graduate education can adapt to technological disruption without compromising its ethical foundations. As higher education institutions confront the dual challenge of embracing innovation while safeguarding academic integrity, there is a growing need for ethically grounded frameworks that guide policy development in ways that are both principled and pragmatic (Williamson & Eynon, 2020).

Method

Research Design
This study employed a qualitative research design using phenomenography to examine the qualitatively different ways graduate school faculty members conceptualize the ethical use of generative artificial intelligence (AI) in academic contexts. Phenomenography is particularly appropriate for this inquiry as it focuses on identifying variations in how individuals understand, experience, and assign meaning to a specific phenomenon—in this case, the ethical dimensions of generative AI viewed through the lenses of deontology (duty-based ethics) and consequentialism (outcome-based ethics) (Marton, 1981).
Rather than describing individual experiences in isolation, phenomenography seeks to map the collective range of conceptions held by a group and to structure these understandings into a logically related set of categories. This approach enabled the study to surface both shared and divergent ethical perspectives among faculty members and to examine how these perspectives inform expectations for institutional policy and academic practice.

Participants and Sampling
The participants consisted of twelve (12) graduate school faculty members from San Pablo Colleges, selected through purposive sampling to ensure representation across multiple academic disciplines and graduate programs. Participants were drawn from the following programs: Master of Arts in Education (MAEd), Master of Arts in English, Master of Arts in Filipino, Master of Arts in Counseling, Master of Arts in Nursing, Master of Business Administration (MBA), Doctor of Education (EdD), and Doctor of Business Administration (DBA).
Faculty members were selected based on their active involvement in graduate instruction, thesis supervision, research mentoring, and academic policy engagement. These roles positioned them as key stakeholders with direct experience in evaluating graduate-level scholarly work and navigating ethical concerns related to emerging academic technologies. The diversity of disciplinary backgrounds allowed for a broader range of ethical interpretations and policy expectations regarding generative AI use in graduate education.

Data Collection

Data were collected through a written interview protocol consisting of open-ended questions designed to elicit faculty members' conceptions of ethical responsibility, academic integrity, and perceived consequences associated with generative AI use in graduate-level academic work. The written format allowed participants sufficient time for reflection and encouraged thoughtful, well-articulated responses grounded in their professional experience.

The interview questions prompted participants to reflect on: (1) acceptable and unacceptable uses of generative AI in graduate education, (2) perceived ethical risks and benefits of AI integration, (3) responsibilities of faculty and institutions in regulating AI use, and (4) the role of institutional policy in guiding ethical decision-making.

This method supported depth of reflection while maintaining consistency across participant responses.

Data Analysis

The collected data were analyzed using thematic analysis guided by phenomenographic principles, following the framework articulated by Marton and Booth (1997). Analysis began with repeated readings of the written responses to achieve familiarity with the data and to identify meaningful units related to ethical reasoning and AI use.

These meaning units were then compared, grouped, and refined through iterative coding to generate categories of description—each representing a distinct way of understanding the ethical implications of generative AI in graduate education. The categories were not treated as individual opinions but as collective conceptions that reflect variation in awareness across participants.

An outcome space was subsequently constructed to illustrate the logical relationships among the identified categories and to map the structural variation in faculty ethical perspectives. This outcome space provided an integrated representation of how deontological and consequentialist reasoning intersected in faculty interpretations of AI use, offering a foundation for policy-oriented ethical analysis.

Ethical Considerations

Ethical safeguards were strictly observed throughout the research process. Participation was voluntary, and informed consent was obtained from all participants prior to data collection. Faculty members were assured of confidentiality and anonymity, with identifying information removed from all transcripts and reports.

Participants were encouraged to provide honest and reflective responses without fear of institutional reprisal. All data were used solely for academic research purposes and were handled in accordance with established ethical standards for qualitative research.

Results and Discussion

Overview of the Outcome Space

Consistent with the principles of phenomenography, analysis of the faculty members' written responses yielded a set of five categories of description, each representing a qualitatively distinct way of understanding the ethical implications of generative AI use in graduate education. These categories collectively form an outcome space that illustrates the variation and structural relationships among faculty conceptions of ethical responsibility, academic integrity, and institutional governance.

The five categories identified were: (1) AI as an ethical risk, (2) AI as a pedagogical support tool, (3) academic integrity as a non-negotiable duty, (4) ethical AI use as context-dependent, and (5) policy as a moral and institutional imperative.

Together, these categories reflect a continuum of ethical reasoning, ranging from rigid duty-based interpretations rooted in deontological ethics to more flexible, outcome-oriented perspectives aligned with consequentialism.

Theme (Category) 1: AI as an Ethical Risk

Several respondents conceptualized generative AI primarily as a threat to academic integrity and authentic learning. From this perspective, AI

was associated with increased risks of plagiarism, intellectual dependency, and superficial engagement with scholarly work.

Participants expressed concern that reliance on AI tools could undermine the cognitive struggle essential to graduate-level learning.
One respondent noted, *"We are in danger of raising a generation of students who outsource thinking to machines. The struggle is part of learning, and AI removes that struggle."* Another participant reflected, *"When a thesis reads too perfectly, we now question authorship. That doubt did not exist before AI."*

These views align closely with a deontological ethical stance, in which the morality of an action is judged based on adherence to ethical principles rather than outcomes. From this standpoint, the unethical use of AI constitutes a violation of academic duty regardless of potential benefits. This conception resonates with Holmes et al. (2022), who emphasize the responsibility of higher education institutions to preserve originality and intellectual accountability, particularly at advanced levels of scholarship.

Theme (Category) 2: AI as a Pedagogical Support Tool
In contrast, some respondents viewed generative AI as a legitimate pedagogical aid when used transparently and responsibly. Participants within this category emphasized that AI could support learning by assisting with grammar refinement, idea organization, and preliminary brainstorming—provided that it did not replace independent thinking or scholarly judgment.

As one respondent explained, *"If AI helps students clarify their ideas without doing the thinking for them, then it becomes a support tool, not a shortcut."* Another participant remarked, *"AI is similar to a calculator—it should assist cognitive work, not replace it."*

This conception reflects a consequentialist orientation, wherein ethical acceptability is evaluated based on outcomes. Faculty members adopting this view focused on the potential benefits of AI integration, including improved efficiency, accessibility, and learner confidence. This aligns with Selwyn's (2019) assertion that digital technologies, when used judiciously, can enhance academic performance and inclusivity without compromising educational values.

Theme (Category) 3: Academic Integrity as a Non-Negotiable Duty

Despite divergent views regarding AI's utility, nearly all participants emphasized academic integrity as a foundational and non-negotiable principle of graduate education. Respondents underscored their ethical obligation to cultivate honesty, originality, and accountability among graduate students.

One respondent asserted, *"Even if AI makes work easier, submitting AI-generated content as one's own violates the essence of graduate scholarship."* Another stated, *"We are not just producing theses—we are forming ethical professionals."*

This category reflects a strong deontological commitment to moral duty and professional responsibility. Academic integrity was viewed not merely as a rule to be enforced, but as a core value intrinsic to the identity of graduate education. These findings echo Williamson and Eynon's (2020) argument that ethical scholarship must remain central to academic practice amid technological change.

Theme (Category) 4: Ethical Use as Context-Dependent

Some respondents articulated a more nuanced and situational understanding of ethical AI use, arguing that acceptability depends on context, purpose, and level of disclosure. From this perspective, the ethical implications of AI use vary across tasks, disciplines, and stages of the research process.

A respondent noted, *"Using AI to get unstuck during early drafting is different from generating entire sections of a thesis."* Another explained, *"Ethics in AI use is not black and white—it depends on how, why, and where it is used."* Several respondents emphasized transparency, suggesting that disclosure of AI assistance allows for fairer ethical evaluation.

This category reflects a hybrid ethical stance, integrating deontological concerns with consequentialist reasoning. Ethical judgment, in this view, requires attention to both moral principles and contextual outcomes. Floridi and Cowls (2021) similarly argue that ethical governance of AI

must account for situational complexity while maintaining normative boundaries.

Theme (Category) 5: Policy as a Moral and Institutional Imperative

Across all categories, faculty members consistently expressed the need for clear, institution-wide policies governing the ethical use of generative AI in graduate education. Participants emphasized that the absence of formal guidelines results in inconsistent practices, ethical uncertainty, and uneven enforcement across programs.

As one respondents stated, *"Without a clear policy, faculty and students are left to guess what is acceptable."* Another warned, *"What is tolerated in one program may be penalized in another—that is ethically problematic."*

This category positions policy not merely as a regulatory mechanism, but as a moral and institutional responsibility. Respondents advocated for policies that prioritize guidance, transparency, and ethical education rather than punitive surveillance. These views align with international calls for proactive AI governance in higher education, including UNESCO's (2021) Recommendation on the Ethics of Artificial Intelligence.

Integrative Discussion

The findings reveal a spectrum of faculty ethical reasoning regarding generative AI use in graduate education, ranging from strict deontological interpretations to more flexible, outcome-oriented perspectives. This variation underscores the value of employing a dual ethical framework, as neither deontology nor consequentialism alone sufficiently captures the complexity of ethical decision-making in AI-mediated academic contexts.

More importantly, the convergence of perspectives around the need for institutional policy highlights a shared recognition that individual ethical reflection is insufficient in the absence of structured guidance. Without coherent and ethically grounded policies, responsibility is

unevenly distributed, increasing the risk of inconsistency and ethical ambiguity (Holmes et al., 2022). Consequently, policy development must be participatory, context-sensitive, and anchored in both ethical theory and empirical evidence.

Implications for Policy and Practice

The findings of this study carry significant implications for graduate education policy, faculty practice, and institutional governance. First, the diversity of faculty ethical perspectives underscores the necessity for clear, institution-wide policies that articulate acceptable and unacceptable uses of generative AI in graduate-level academic work. Policies should move beyond binary prohibitions and instead provide nuanced guidance that distinguishes between supportive, assistive, and substitutive uses of AI across different stages of the research process.

Second, institutions must recognize ethical literacy in AI use as a core component of graduate education. Faculty development programs should be designed to equip advisers and instructors with the conceptual tools needed to evaluate AI-assisted work consistently and ethically. This includes shared understandings of disclosure requirements, authorship accountability, and appropriate boundaries between human intellectual labor and technological assistance.

Third, the findings suggest that policy enforcement should prioritize educative rather than punitive approaches. Faculty members expressed concern that surveillance-oriented or purely disciplinary frameworks risk fostering fear, concealment, and inequitable treatment. Instead, institutions should adopt policies that emphasize transparency, reflective ethical decision-making, and shared responsibility among students, faculty, and administrators.

Directions for Future Research

While this study offers valuable insights into faculty conceptions of ethical AI use, several avenues for future research are recommended. Subsequent studies may examine graduate students' perspectives to explore how ethical expectations are interpreted and enacted by those most directly affected by AI policies. Comparative studies across

institutions or national contexts would also deepen understanding of how cultural, disciplinary, and regulatory factors shape ethical reasoning.

Additionally, future research may adopt mixed-methods or longitudinal designs to investigate how ethical perceptions evolve as AI technologies become more sophisticated and institutional policies more established. Examining the effectiveness of specific policy interventions or ethics-based training programs could further inform evidence-based governance in graduate education.

Conclusion

The integration of generative artificial intelligence into graduate education presents both profound opportunities and ethical challenges. Through a phenomenographic analysis grounded in deontological and consequentialist ethics, this study revealed varied yet intersecting faculty conceptions of AI as a risk, a pedagogical tool, a challenge to academic integrity, and a catalyst for institutional responsibility.

Despite differing ethical orientations, faculty members shared a common recognition that unregulated AI use threatens the moral foundations of graduate scholarship. Academic integrity emerged as a non-negotiable value, while ethical flexibility was acknowledged as necessary in navigating complex, context-dependent academic practices. These findings highlight the inadequacy of ad hoc decision-making and the urgent need for ethically grounded institutional policies.

Ultimately, responsible integration of generative AI in graduate education requires more than technological adaptation; it demands moral clarity, institutional accountability, and collaborative governance. By anchoring policy development in ethical theory and empirical faculty insights, higher education institutions can ensure that innovation proceeds without compromising the integrity, rigor, and human purpose of graduate scholarship.

Table 1. Outcome Space Summary

Category of Description	Description of Conception
AI as an Ethical Risk	AI viewed as undermining learning and promoting dishonesty
AI as a Pedagogical Support Tool	AI as a legitimate tool when transparently and thoughtfully used
Academic Integrity as a Non-Negotiable Duty	Core ethical principles must not be compromised, regardless of AI use
Ethical Use as Context-Dependent	Acceptability varies with context, purpose, and disclosure
Policy as a Moral and Institutional Imperative	Institutional policies must define responsible AI use and prevent ethical ambiguity

Theme 1. AI as an Ethical Risk

Several faculty members expressed deep concern that generative AI, while powerful, could be easily misused for academic dishonesty. They associated the technology with risks of plagiarism, intellectual laziness, and superficial learning, particularly when students use AI tools to bypass cognitive effort. "We are in danger of raising a generation of students who outsource thinking to machines," wrote one MAEd faculty member. "Some students use AI as a shortcut, not going through the struggle that is essential to the learning process. That's a serious ethical concern." – MA Filipino Faculty "When a thesis reads too perfectly, we now wonder, 'Was this truly written by the student?' That doubt wasn't there before. AI has blurred the lines of ownership." – EdD Faculty. These views align with a deontological stance, which sees the act of using AI unethically—regardless of outcome—as a moral violation. According to Holmes et al. (2022), educators have a duty to uphold integrity, especially in advanced academic levels where original thought and intellectual rigor are core values.

Theme 2. AI as a Pedagogical Support Tool
In contrast, other faculty members perceived generative AI as a value-added assistant—a tool that can scaffold student learning when used appropriately. Faculty in the MA in Nursing and MBA programs described AI as helpful for improving grammar, generating outlines, or

simulating feedback. "If students are transparent and use AI to improve, not replace, their thinking, then it becomes a tool—not a threat," shared one MBA professor. "We just need to teach them how to use it well. AI is like a calculator—it should help, not replace, cognitive effort." – MBA Faculty "I let students use AI for paraphrasing or brainstorming ideas, but they must cite it and discuss how it helped. That's responsible use." – MA Nursing Faculty These perspectives reflect a consequentialist orientation, evaluating the potential benefits of AI integration in graduate studies. Selwyn (2019) noted that digital tools, when responsibly used, can enhance accessibility and performance.

Theme 3. Academic Integrity as a Non-Negotiable Duty

Despite differing views on AI's utility, nearly all faculty members upheld academic integrity as a moral cornerstone of graduate education. Several participants emphasized their duty to teach students about ethical authorship, originality, and truthfulness. "Even if AI use is efficient, if the work submitted is not the student's own, it violates the very spirit of graduate scholarship. Generative AI can't replace authentic insight. If the student didn't go through the process, it's not their work." explained a faculty member from the MA English program. "We're not just training researchers—we're forming ethical professionals. That's the duty we carry." – DBA Faculty "Even with the latest tools, students must still be responsible for their ideas and words. That's the baseline of graduate scholarship." – MAEd Faculty These claims reflect a deontological emphasis on moral duty, echoing the normative function of graduate education as a site for cultivating intellectual honesty (Williamson & Eynon, 2020).

Theme 4. Ethical Use as Context-Dependent

Some respondents offered more situational conceptions of ethical AI use. A few believed that the type of task matters—e.g., using AI to help refine language might be acceptable in certain contexts (e.g., MA English coursework), but generating thesis chapters would be clearly unethical. "It depends. AI shouldn't think for the student, but it can help them think better," one MA English professor noted. "If a student uses AI to get unstuck in the early stages of writing, that's different from copying an entire paragraph and submitting it as their own." – MA Counseling

Faculty "Ethics in AI use isn't black and white. It depends on how, why, and where it's used—and whether the student reflects on that use." – MA Filipino Faculty "What matters most is disclosure. If the student explains how AI assisted them, we can evaluate its impact more fairly." – MBA Faculty These variations reflect a blending of deontological and consequentialist ethics. Contextual ethics acknowledges the reality that tools are morally neutral—it is their use, purpose, and disclosure that matter (Floridi & Cowls, 2021).

Theme 5. Policy as a Moral and Institutional Imperative

Most participants expressed the need for clear institutional policies to define the ethical use of generative AI, especially for thesis writing and research. Faculty from doctoral programs (EdD and DBA) emphasized that without policy guidance, both students and mentors may rely on inconsistent interpretations. "We need a published AI policy—not just for detection and punishment, but for guidance, mentorship, and transparency," urged a DBA professor. "We're left to our own discretion now, but that's dangerous. We need a formal policy that protects both students and faculty." – EdD Faculty "Without clear guidelines, we risk inconsistency—what's acceptable in one program might be punished in another. That's unjust." – MA Nursing Faculty "AI is here to stay. We need policies that are proactive—not just about punishment, but about responsible integration." – MA in Education Faculty These statements affirm literature calling for AI governance frameworks in higher education that are aligned with ethical, educational, and developmental goals (Holmes et al., 2022; UNESCO, 2021).

The results reveal a compelling spectrum of faculty perspectives on the ethical use of generative AI in graduate education—ranging from stringent, duty-bound interpretations anchored in deontological ethics to more flexible, outcome-oriented and situationally aware conceptions aligned with consequentialism. This variation underscores the indispensable value of a dual-framework lens, wherein deontological ethics foreground moral imperatives such as academic honesty and intellectual authorship (Floridi & Cowls, 2021), while consequentialist reasoning allows for pragmatic evaluation of AI's benefits and risks in real academic contexts (Selwyn, 2019). Such pluralistic ethical reasoning is not merely philosophical; it is essential for grappling with the complex

moral terrain that AI technologies introduce in the graduate-level academic sphere.

More critically, the participants' strong call for explicit institutional policies signals a collective recognition that ethical reflection alone is inadequate without structured guidance. In the absence of clear protocols, the burden of ethical decision-making unfairly falls on individual faculty members and students, potentially resulting in inconsistencies, inequities, and ethical confusion (Holmes et al., 2022). Thus, policy development must be co-designed with academic stakeholders, and go beyond restrictive prohibitions to include affirmative guidelines on transparency, responsible use, and instructional support. This approach aligns with global policy frameworks, such as UNESCO's Recommendation on the Ethics of Artificial Intelligence (2021), which urges higher education institutions to balance technological innovation with accountability, inclusivity, and integrity. As generative AI becomes increasingly embedded in academic work, safeguarding the moral and scholarly foundations of graduate programs demands not only critical reflection—but also proactive, ethically grounded governance.

Implications

This study illuminated the diverse and deeply considered ways in which graduate school faculty members perceive the ethical dimensions of generative AI use. The findings reveal that while some educators adopt a deontological perspective—upholding non-negotiable principles of academic integrity and authorship—others take a more consequentialist or context-sensitive approach, weighing the potential benefits and harms of AI-assisted academic work. These conceptual variations carry critical implications for institutional leadership, policy development, and academic practice in graduate education. The study reinforces the urgent need for institutions to develop comprehensive, ethical, and inclusive policies that go beyond prohibitions and provide clear guidance for responsible, transparent, and pedagogically sound use of generative AI. Graduate schools must take the lead in fostering ethical AI literacy by offering structured training, guidelines, and mentoring that prepare both faculty and students to engage with these tools in ways that preserve academic rigor. Additionally, faculty members play a vital role as ethical gatekeepers, modeling the values and standards that sustain

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the scholarly mission of graduate education. Without coherent institutional direction, however, inconsistent interpretations and practices may arise across programs, resulting in inequities and confusion.

Future Directions

In the light of these findings, future research, policy, and practice should focus on several key areas. First, the development of program-specific AI use guidelines is essential. These must be tailored to each discipline's research conventions and ethical considerations, incorporating clear criteria for acceptable use, citation protocols, and accountability measures. Second, cross-institutional benchmarking studies should be pursued to identify shared challenges and successful practices, particularly within the Philippine graduate education context. Third, AI ethics should be integrated directly into graduate curricula—especially in research methods and academic writing courses—through case-based and scenario-driven learning. Fourth, the institution must foster continuous stakeholder dialogue among faculty, students, administrators, and ethics boards to ensure that policies remain inclusive, reflective, and responsive to rapid technological changes. Lastly, implemented AI-related policies should be periodically monitored and evaluated, with mechanisms for review and revision based on actual cases, stakeholder feedback, and emerging ethical standards. These directions collectively aim to uphold the integrity of graduate education while responsibly navigating the transformative impact of generative AI.

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MAKING EVERY PESO COUNT: NARRATIVE OF TEACHERS' EXPERIENCES IN MANAGING CLASSROOM FUNDS THROUGH THE LENS OF FINANCIAL LITERACY

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Abstract

This qualitative study explores the experiences and perspectives of faculty members from the College of Industrial Technology at Laguna State Polytechnic University (LSPU) regarding the management of classroom funds and the influence of financial literacy on their teaching practices. Using purposive sampling, 10 instructors both full-time and part-time responded to a written interview questionnaire focusing on their strategies, confidence levels, challenges, and support needs related to classroom fund management. Thematic analysis of the responses revealed that faculty members employ various strategies such as detailed record-keeping, delegation, and collaboration to manage funds effectively, despite challenges including fund discrepancies and budget constraints. Financial literacy was identified as a critical factor that enhances confidence and decision-making ability, yet some respondents expressed a need for further training. The study also highlighted the importance of transparency, accountability, and participatory fund management involving students to build trust and promote financial responsibility. Recommendations include integrating financial management training in faculty development, providing clear institutional guidelines, and utilizing digital tools to improve fund oversight. The findings underscore the dual role of financial literacy in supporting effective resource management and modeling responsible financial behavior to students. This research contributes valuable insights into how business management faculty navigate classroom

financial challenges and suggests pathways for enhancing financial literacy education within academic institutions.

Introduction

Teachers are increasingly expected to administer classroom resources with the same rigor applied to their pedagogy. Financial literacy defined as the knowledge, skills, and dispositions required to make informed financial choices has therefore become a core professional competency (Lusardi & Mitchell, 2014). When teachers lack this competency, budgeting errors, opaque reporting, or underutilization of funds may erode instructional quality.

Conversely, financially literate teachers allocate resources strategically, model responsible behaviour for students, and strengthen school accountability structures.

Two theories frame the present inquiry. Ajzen's Theory of Planned Behavior (1991) posits that attitudes, subjective norms, and perceived behavioral control predict deliberate action; thus, teachers who believe they understand financial processes (high perceived control) should enact more effective fund-management behaviours. Bandura's Social Cognitive Theory (1986) adds that self-efficacy confidence in one's capabilities mediates the translation of knowledge into practice. Both frameworks suggest that improving teachers' financial literacy should elevate their efficacy in managing classroom funds.

Guided by these perspectives, the study examines how faculty members in LSPU's College of Industrial Technology (CIT) experience, enact, and reflect on classroom fund management. Specifically, it asks:
1. How do CIT instructors describe their experience handling classroom funds?
2. Which strategies foster effective allocation and accountability?
3. In what ways does financial literacy shape confidence, decisions, and outcomes?

4. What challenges arise, and what supports do teachers deem necessary?

Methodology

This study utilized a qualitative research design aimed at exploring the experiences and perspectives of faculty members regarding the management of classroom funds and the role of financial literacy in their teaching practice. Qualitative methods were chosen to provide rich, detailed insights into the strategies, challenges, and support needs of instructors in handling financial resources within their classrooms.

The study involved ten (10) faculty members from the College of Industrial Technology at Laguna State Polytechnic University (LSPU). The respondents included both full-time professors and part-time instructors who are actively engaged in managing classroom funds such as student contributions, donations, and school-allocated budgets. These participants were purposively selected based on their experience and willingness to share their financial management practices and challenges.

The research instrument was a semi-structured written interview questionnaire composed of 10 open-ended questions. These questions focused on key areas such as overall experience in managing classroom funds, strategies for fund allocation, confidence in financial decision-making, encountered challenges, influence of financial literacy, and perceived support or training needs. The instrument was developed based on a review of literature related to financial management in educational settings and was reviewed by experts to ensure clarity and relevance.

Data were collected through a written interview questionnaire consisting of open-ended questions designed to capture the respondents' experiences, confidence levels, strategies, and views on financial literacy related to classroom fund management. The questionnaire was distributed electronically and allowed respondents to provide detailed, reflective answers at their convenience. This approach facilitated in-depth responses and encouraged honesty and openness.

The qualitative data gathered from the written responses were analyzed using a thematic analysis approach. This involved systematically reading through each response, identifying recurring themes and patterns, and categorizing them into meaningful clusters.

Thematic analysis allowed for an organized synthesis of diverse perspectives, highlighting common strategies, challenges, and recommendations among the faculty. The findings were presented in themes that reflect the collective experiences of the respondents.

Participation in the study was voluntary, and respondents were assured of the confidentiality and anonymity of their responses. The data collected were used solely for academic research purposes. Informed consent was obtained from all participants before the distribution of the questionnaire.

Result

Theme 1 – Multifaceted Fund-Management Roles
Faculty managed funds for events, instructional materials, logistics, and outreach. Most described their role as "mini-budget manager," blending instructional planning with financial stewardship.

Theme 2 – Accountability through Documentation and Technology
All respondents-maintained ledgers, receipts, or digital dashboards. Half posted expenses in group chats or online sheets, emphasizing "no secrets" to foster trust.

Theme 3 – Collaborative and Student- Centered Practices
Eight teachers delegated tasks to student treasurers or committees, framing the process as a leadership lesson. Weekly reconciliations or class meetings validated expenditures.

Theme 4 – Confidence Spectrum Linked to Financial Literacy
Five instructors with finance, analytics, or grant-management experience reported "very high" confidence; four felt "moderate," and one admitted low confidence but relied on "logic and honesty." Confidence rose with formal financial knowledge and tool familiarity.

Theme 5 – Common Challenges and Adaptive Solutions

- Collection shortfalls (4 cases) → teachers advanced personal funds and improved tracking.
- Student mismanagement or fraud (3) → tighter oversight, dual signatories, mentoring.
- External issues—supplier errors or budget overruns (3) → contract vetting, contingency funds.

Theme 6 – Positive Instructional Impacts

All ten cited instances where prudent spending enhanced learning: winning science-fair awards, launching a student start-up, boosting elective enrolment, or saving 50 % of costs through resource sharing.

Theme 7 – Unmet Support Needs

Respondents advocated for:
- formal financial-management workshops with classroom simulations,
- CHED-endorsed guidelines and toolkits,
- access to budgeting apps, and
- embedding budgeting units in teacher development curricula.

Discussion

Consistent with the Theory of Planned Behavior, teachers who perceived strong control rooted in financial literacy demonstrated deliberate, transparent fund-management behaviours. Bandura's construct of self-efficacy surfaced in the confidence gradient: instructors versed in finance translated knowledge into decisive action, whereas those lacking formal training adopted conservative or collaborative strategies.

The emphasis on documentation and digital transparency mirrors global trends advocating open-book school finance (OECD, 2020). Collaboration with students aligns with experiential-learning literature, turning fund management into a "live case" that cultivates student financial capability.

Challenges mainly involved collection and oversight, echoing Cowan and Hager's (2016) observation that informal fund systems rely heavily on personal integrity. Adaptive measures, dual signatories, contingency funds reflect emerging best practice in small-scale public-sector finance.

Implications
- **Teacher Development:** Embedding financial-literacy modules in in-service training can bolster self-efficacy and align practices with accountability standards.
- **School Leadership:** Principals should model financial leadership by providing clear policies, digital tools, and recognition for transparent fund managers.
- **Policy:** CHED may mandate basic financial-management certification for faculty handling student funds.

Limitations and Future Research
Findings are context-specific, based on a small, self-reported sample. Mixed-methods or multi-campus studies could test whether the identified themes hold across disciplines and quantify the effect of financial-literacy training on fund utilization metrics.

Conclusion
Financial literacy empowers instructors to steward classroom funds transparently, confidently, and innovatively. Where knowledge gaps exist, structured training and supportive leadership can convert accountability challenges into learning opportunities benefiting teachers, students, and the institution alike.

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CULTURAL INTEGRATION IN TEACHING SCIENCE AND ITS EFFECT TO FILIPINO LEARNERS' LEARNING ACHIEVEMENTS

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Abstract

This study explored the cultural integration in teaching science and its effect to Filipino learners' learning achievement. Utilizing mixed-methods research design, 60 Filipino Grade 9 learners in one public school in the School's Division of Manila were the participants of the study. Moreover, the participants were equally divided into two groups, 30 participants from control group and 30 participants from experimental group. The control group were taught science subject by their teacher in traditional approach of teaching (no treatment) while the experimental group were taught culturally integrated teaching strategies. Through inferential statistics particularly t-test and qualitative data analysis mainly thematic analysis techniques, the findings revealed that the learners in experimental group significantly performed better than learners in control group suggesting effectiveness of the culturally integrated strategies in teaching science. Furthermore, learners feedback to the approach revealed their understanding and relatability of lessons, shift in perspective and increased awareness in health, acknowledgement on the importance of teacher-learner connection and real-life examples, addressed misconceptions and traditional beliefs, and overcome apprehension and promoted enjoyment in learning Science. Based on the result of data, culturally integrated strategies in teaching science proposes alignment of learning competencies with learners' cultural backgrounds, integration of indigenous and local knowledge systems, inclusive and culturally relevant learning materials, culturally responsive pedagogy and instructional approaches, and culturally responsive assessment practices. This study added recommendation on further enhancement of the existing curriculum in science subjects within the context of learners' cultural background. Conduct of teachers training on culturally

integrated teaching approaches in science across grade levels. Implementation of culturally responsive teaching strategies in science that is highly encouraged in elementary and high schools, both private and public educational institutions. Further research focusing on the proposed culturally responsive teaching strategies in Science to strengthen the validity of its effectiveness. Finally, replication of this study in other settings is recommended to deepen validation of the current findings.

Introduction

A recent and growing field of research promotes the development of culturally relevant science teaching with a particular focus on engaging all learners in studying science. Cultural integration in science education may pertain to embedding cultural relevance. These include learners' cultural background, traditional knowledge, and community-area-based learning experiences. Learners are more motivated and understand better when scientific concepts connect to their everyday lives, which leads to better academic results. Culturally responsive pedagogy acknowledges that learners understand better if teaching instruction is aligned with their cultural contexts and prior knowledge. Moreover, this pedagogy recognizes teachers who can promote a deeper understanding and appreciation of scientific concepts among Filipino learners (Morales, 2024). However, integration of a culturally relevant approach produces a debate around who benefits from science education that should perpetuate a holistic development transcending boundaries in terms of culture, norms, language, and socioeconomic status. Science in all areas is often taught from a global perspective, nevertheless, science rooted in culture is less emphasized. Furthermore, there has been a practice that integrating culture-relevant teaching must only be applied to subjects such as Arts, Social Studies, and Fine Arts, and not applicable to "hard sciences" (Pejaner and Mistades, 2020).

Overseas, several studies have demonstrated positive impacts of cultural integration on learners' academic performance in science subjects. For instance, Quiao et al. (2024) found that integrating ethnocultural elements in science instruction significantly enhanced student

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achievement, particularly in Biology. Similarly, research by Morales (2024) divulged that using culturally sensitive teaching strategies in physics enhanced concept retention among learners by making lessons more relatable and meaningful. Jumarito and Nabua (2024) emphasized the importance of culturally adaptive instructional materials in chemistry education. Their study on the Subanen community demonstrated that integrating indigenous practices into science lessons preserved cultural heritage, strengthened students' engagement, and enhanced academic outcomes. Furthermore, a systematic review highlighted the need for culturally appropriate interventions in science education, concluding that aligning teaching methods with learners' cultural backgrounds leads to better learning experiences and performance (Ocariza et al., 2023). Notably, embedding traditional knowledge into science lessons allows Filipino learners to appreciate the importance of embracing cultural knowledge applied with scientific principles in their daily lives (Pawilen, 2021). Lastly, the utilization of the CRT in technology-supported learning environments in Marine education for sustainable development was examined and evaluated, and how culturally responsive teaching using experiential learning theory as a framework had a significant impact on enhancing educational technology amongst learners (Cheng et. al., 2021). Thus, integrating cultural elements into science education has been recognized as a medium for enhancing learners' engagement and academic performance.

Locally, diverse educational settings in the Philippines, where incorporating studies have revealed the importance of integrating indigenous knowledge and culturally relevant practices into science curricula, leading to improved learning outcomes among Filipino learners (Ocariza et al, 2023). For instance, the study by Jimenez and Espinosa (2024) examined cross-cultural biology teaching using the Next Generation Science Standards (NGSS), which mainly focuses on collaborative lesson studies between educators from the Philippines and the United States. This leaves a need for more extensive research on the long-term impacts of such integrations on student achievement.

Above all, the research findings overseas and locally on the benefits of integrating culture into the learning process among students in science, there remains a significant research gap concerning the systematic implementation and assessment of culturally integrated science education despite these positive findings. Moreover, it has been

highlighted that the emphasis on culturally relevant pedagogies in science education served as a response to global migration, increasing diversity within classrooms, and accentuating the necessity for more comprehensive research. A critical gap in understanding how cultural integration strategies can be effectively applied in science education to enhance Filipino learners' academic achievement. Addressing these research gaps is essential for developing effective, culturally responsive science education strategies that can be systematically implemented and evaluated within the Philippines and in diverse educational contexts worldwide. In this regard, this research study aimed at attaining its main objectives: a) to analyze the effects of culturally integrated science instruction on learners' learning achievement; b) compare the academic performance of learners taught using culturally relevant pedagogy versus conventional teaching methods, and c) propose evidence-based recommendations for enhancing science education through culturally responsive teaching strategies. Therefore, the present study explored the integration of culturally relevant teaching in science, examining its impact on Filipino learners' academic achievement.

Methodology

This study employed a mixed-methods research design to explore how integrating cultural elements into science teaching affects Filipino learners' learning achievement. A mixed-methods approach was chosen since it allows for a comprehensive examination of quantitative and qualitative data. In this study, it refers to a meaningful integration of both quantitative and qualitative methods to study the impact of cultural integration in science. By combining statistical data with learner's perspectives or experiences, this approach provides a more detailed and purposeful understanding of the research problem. Through these methods, the study aims to provide a well-rounded understanding of the effectiveness of culturally relevant strategies in teaching science.

In particular, the quantitative phase utilized the quasi-experimental design, where learners were divided into two groups. One is the experimental group, which received culturally integrated science lessons, and the other is the control group, which followed traditional science lessons. Pre-assessment and post-assessment were conducted to measure differences in academic performance between the two groups.

On the other hand, the qualitative phase was focused on one-on-one interviews and focused-group discussions with 30 randomly selected participants from the experimental group to determine their feedback on the culturally integrated strategy in teaching science. Data gathered from the quantitative phase were analyzed using statistical methods such as frequency, percentage, and t-test. Meanwhile, the qualitative data were examined through thematic analysis.

This study was conducted in one secondary public school in Manila, Philippines, where the participants are currently enrolled during the 4th quarter of School Year 2024 - 2025.

The respondents of the study are among the Grade 9 learners with various cultural demographics including their cultural background as follows:

Table 1

Demographic Profile of Respondents by Sex

Sex	Control Group		Experimental Group	
	Frequency (n-30)	Percentage	Frequency (n-30)	Percentage
Male	19	63%	20	67%
Female	11	37%	10	33%

Table 1 shows the demographic profile of the respondents by sex. This presents the distribution of respondents according to sex. In the control group, 19 out of 30 respondents (63%) were male, while 11 (37%) were female. Similarly, in the experimental group, male respondents comprised 67% (20), and female respondents made up 33% (10). This indicates that both groups had more male than female participants, suggesting a slightly male-dominated composition in both categories. However, the difference in sex distribution between the two groups is not significant and is unlikely to affect the validity of comparative results.

Table 2

Demographic Profile of Respondents by Age

Age	Control Group		Experimental Group	
	Frequency (n-30)	Percentage	Frequency (n-30)	Percentage
13-14	18	60%	15	50%
15-16	8	27%	12	40%
17-18	4	13%	3	10%
Above 18	0	0%	0	0%

Table 2 shows the demographic profile of the respondents by age. This shows the age distribution of the respondents in both control and experimental groups. Most of the respondents in the control group belonged to the 13–14 age group, comprising 60% (18 out of 30), followed by those aged 15–16 at 27% (8), and those aged 17–18 at 13% (4). The same trend is reflected in the experimental group, where 50% (15) were aged 13–14, 40% (12) were aged 15–16, and only 10% (3) were aged 17–18. No respondents were above 18 years old. These figures indicate that the sample population largely consists of early to mid-adolescents, which is typical for the grade level targeted in this study.

Table 3

Demographic Profile of Respondents by Residency

Residency	Control Group		Experimental Group	
	Frequency (n-30)	Percentage	Frequency (n-30)	Percentage
Rural	0	0%	0	0%
Urban	30	100%	30	100%

Table 3 shows the demographic profile of the respondents by residency. This summarizes the respondents' places of residency. It shows that 30 (100%) of the participants in both the control and experimental groups resided in urban areas. None of the respondents came from rural locations. This uniformity in residency suggests that the respondents were all exposed to similar urban educational environments, resources, and experiences, which contributes to minimizing variability due to geographic differences in learning context.

Table 4

Demographic Profile of Respondents by Regional Affiliation

Regional Affiliation	Control Group		Experimental Group	
	Frequency (n-30)	Percentage	Frequency (n-30)	Percentage
Luzon	23	77%	19	63%
Visayas	6	20%	8	27%
Mindanao	1	3%	3	10%

Table 4 shows the demographic profile of the respondents by regional affiliation. This presents the regional affiliation of the respondents. In the control group, the majority were from Luzon, accounting for 77% (23), followed by 20% (6) from the Visayas and 3% (1) from Mindanao. The experimental group showed a similar trend: 63% (19) were from Luzon, 27% (8) from the Visayas, and 10% (3) from Mindanao. Although the sample is predominantly composed of respondents from Luzon, the presence of participants from the Visayas and Mindanao regions provides cultural and regional diversity that can enrich the study's findings, especially in examining contextual learning differences.

Table 5

Demographic Profile of Respondents by Cultural Background

Cultural Background	Control Group		Experimental Group	
	Frequency (n-30)	Percentage	Frequency (n-30)	Percentage
Bicolano	5	17%	1	3%
Bisaya	3	10%	1	3%
Ilocano	6	20%	4	13%
Muslim	1	3%	2	7%
Pangasinense	2	7%	3	10%
Tagalog	13	43%	19	64%

Table 5 shows the demographic profile of the respondents by cultural affiliation. This provides the cultural backgrounds of the respondents. Among the control group, the largest segment identified as Tagalog (43%), followed by Ilocano (20%), Bicolano (17%), Bisaya (10%), Pangasinense (7%), and Muslim (3%). In the experimental group, the dominance of Tagalog was even more pronounced at 64%, followed by Ilocano (13%), Pangasinense (10%), Muslim (7%), and both Bicolano and Bisaya at 3% each. The diversity in cultural backgrounds among

respondents highlights the multicultural makeup of the student population and is relevant to the study, particularly since it explores cultural integration in science teaching. Understanding these cultural identities provides deeper insight into how learners may relate to culturally contextualized science instruction.

To effectively measure the impact of cultural integration in teaching science on Grade 9 learners, the researcher employed a quantitative approach using a teacher-made achievement test consisting of a 50-item multiple choice test as the primary source for data gathering. Test administration has two phases: pre-test and a post test. The primary purpose of the pre-test is to establish the data on the prior knowledge of the learners before the integration of CRT, while the post test was designed to measure any significant academic improvement and understanding after the implementation of the CRT. Both pre-test and post-test were constructed aligned with the MELCs prescribed by the Department of Education for Grade 9 science. The tests were intentionally aligned with the principles of Higher Order Thinking Skills (HOTS) and the Structure of Observed Learning Outcomes (SOLO) Taxonomy where it encourages measuring analysis, application, and conceptual understanding relevant to CRT integration. The questions varied from unistructural to multi structural type of questions as well as relational and extended abstract level that shows a more comprehensive evaluation of learner's academic progress. While the content components and the level of difficulty were kept consistent and relevant between the two administered tests, the structure and the phrasing were varied to avoid familiarity and ensure that any gains in performance could be associated with the actual learning rather than to rote memorization. Hence, to ensure reliability of the test items, those are reviewed by master teachers and the department head in science and pilot-tested with a similar group of learners but not related to the conduct of the study. This procedure is essential to validate clarity, relevance, and cognitive skills prior to the actual administration. Moreover, this method helped in confirming that the test items accurately reflected both learning competencies on Grade 9 science first quarter and their thinking process during the integration of cultural teaching.

 The researcher sought authorization to conduct a study by sending a letter to the Schools Division Superintendent. After signing approval of the letter, the researcher secured a permission from the School Head and

the Grade 9 Curriculum chairman to conduct cultural integration in teaching science. Following administrative approvals, an orientation session was conducted with Grade 9 learners and their parents or legal guardians. During the orientation, the objectives, scope, ethical considerations, and voluntary nature of the research were clearly explained to ensure transparency and informed decision-making among participants. Informed consent forms were distributed and signed by the learners' parents or guardians afterwards. This step emphasized the protection of participants' rights, as well as the confidentiality and ethical handling of all data collected. After this important process, the actual data collection was done in three phases. First, the administration of a 60-item pre-test to both the experimental and control groups. This test was intended to establish baseline data on the learners' prior knowledge in Science. The administration was carried out in a controlled environment, coordinated by the researcher and the Science master teachers to ensure fairness and standardized testing conditions. Second, the experimental group was exposed to culturally integrated teaching strategies within their Science classes. These lessons were aligned with the Grade 9 Most Essential Learning Competencies (MELCs), and the instructional materials used were validated prior to implementation. Classroom observations were also conducted to monitor fidelity of implementation and instructional quality. After the intervention period, a post-test was administered to both the experimental and control groups under similar standardized conditions. The post-test was designed to match the cognitive level and scope of the pre-test, but with different items, to reliably assess any learning gains. Following the tests, qualitative feedback was gathered from the learners to gain insights into their experiences with culturally integrated instruction. This feedback contributed to a more holistic understanding of the intervention's impact. Lastly, all quantitative and qualitative data were encoded, tabulated, and analyzed. Statistical tools were used to measure the effectiveness of the intervention, and learners' responses were examined to assess the educational value of cultural integration in Science. The results of this process served as the basis for proposing culturally integrated teaching strategies, which are expected to enrich and contextualize Science education for all Filipino learners. The data gathering procedures are illustrated in Figure 2.
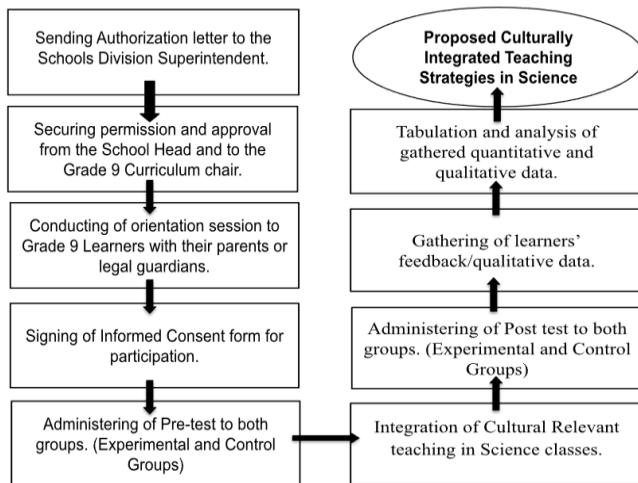
Figure 2. *Data Gathering Procedures*

The data gathered from the control and experimental group was analyzed using the following:

1. Descriptive statistics such as frequency, percentage, and weighted mean are utilized in describing the respondents' demographic profile, and pre-post assessments.

2. Inferential statistics such as t-test to conclude on the hypothesis if there's significant difference on the performance of control and experimental group following the treatment.

Moreover, the experimental group was interviewed after the treatment to determine their feedback on the utilization of cultural integration in teaching science. The qualitative data obtained from the interview was treated as thematic analysis as follows:

3. Open coding, where the researcher carefully analyzes learner's written and verbal responses related to their experiences with cultural integrated lessons.

4. Axial coding, where the researcher arranged the generated codes based on its meanings and put categories into it. This helped determine relationships and connections between emerging themes.

5. Selective coding, where the researcher transmuted assigned categories into themes, thereby explaining how cultural integration influenced the learner's motivation and participation.

Results and Discussion

Level of Learners' Learning Achievement in Science Before and After the Culturally Integrated Teaching Strategies

Table 6

Learners' Pre-test Scores

Control Group				Experimental Group			
Rating	f	%	Adjectival Rating	Rating	f	%	Adjectival Rating
76-80	2	7	Fair	76-80	1	3	Fair
Below-75	28	93	Poor	Below-75	29	97	Poor

Legend: 96 – 100 Excellent; 91 – 95 Outstanding; 86 – 90 Very Satisfactory; 81 – 85 Satisfactory; 76 – 80 Fair; and Below - 75 Poor

Table 6 shows the pre-test scores of the learners from both the control and experimental groups before the implementation of culturally integrated teaching strategies in science. It is evident from the table that a vast majority of the learners from both groups were performing poorly at the start of the study. In the control group, 28 (93%) of the learners scored below 75, which falls under the adjectival rating of "Poor." Similarly, the experimental group reflected a comparable trend, with 29 (97%) of learners also falling within the "Poor" category. Only a very small number of learners achieved a slightly better rating of "Fair" (76–80), with 2 (7%) from the control group and 1 (3%) from the experimental group. No learners in either group reached the higher adjectival ratings such as "Satisfactory," "Very Satisfactory," "Outstanding," or "Excellent." Adjectival Rating is adapted from the

Transmutation table provided by the Schools Division to all schools in Manila. This indicates that both groups started at nearly the same low level of academic performance in science and at the same level of aptitude which stresses the need for an improved teaching strategy that can better engage students and address their learning gaps through integrating culturally responsive teaching in science lessons. Having equal learning aptitudes between the control and experimental groups before the intervention is an important aspect of research design. It ensures that any improvement observed after the use of culturally integrated teaching strategies can be fairly credited to the intervention itself not to differences in students' prior knowledge or abilities. When both groups begin at the same level, the comparison becomes more accurate and meaningful. As Creswell and Creswell (2023) point out, establishing baseline equivalence enhances the internal validity of experimental study, allowing researchers to make more reliable inferences about the effect of the intervention. It allows researchers to draw valid conclusions about the effect of the independent variable.

Table 7

Learners' Post-test Scores

Control Group				Experimental Group			
Rating	f	%	Adjectival Rating	Rating	f	%	Adjectival Rating
96-100	0	0	Excellent	96-100	2	7	Excellent
91-95	0	0	Outstanding	91-95	12	40	Outstanding
86-90	0	0	Very Satisfactory	86-90	10	33	Very Satisfactory
81-85	1	3	Satisfactory	81-85	6	20	Satisfactory
76-80	2	7	Fair	76-80	0	0	Fair
Below-75	27	90	Poor	Below-75	0	0	Poor

Legend: 96 – 100 Excellent; 91 – 95 Outstanding; 86 – 90 Very Satisfactory; 81 – 85 Satisfactory; 76 – 80 Fair; and Below – 75 Poor

Table 7 shows the post-test results of the learners after integrating culturally responsive teaching strategy. A clear difference in performance is observed between the control and experimental groups. In the control group, performance remained mostly unchanged, with 27 (90%) of learners still scoring in the "Poor" category. Only minor improvements were seen, with 2 (7%) achieving a "Fair" rating and 1 (3%) attaining a "Satisfactory" rating. No learners in the control group reached the higher adjectival ratings. On the contrary, the experimental group, which was exposed to culturally integrated teaching strategies, showed significant improvement in performance. Only 6 (20%) of learners remained in the "Poor" category. A considerable number of learners achieved higher scores, 12 (40%) reached the "Outstanding" level (91–95), 10 (33%) attained a "Very Satisfactory" rating (86–90), and 2 (7%) reached the "Excellent" level (96–100). Additionally, 6 (20%) of learners were rated "Satisfactory" (81–85). These results strongly suggest that the culturally integrated teaching strategies had a positive impact on learners' academic performance. Unlike the control group, the experimental group showed a more balanced distribution across higher achievement levels, indicating that contextualized and culture-based instruction can effectively enhance learners' understanding and mastery of science concepts.

Difference in the Learners' Learning Achievement in Science After the Treatment Between the Control and Experimental Group

Table 8

Learning Achievement Between Control Group and Experimental Group

Group	Mean	Standard Deviation	t-value	Sig. value	Interpretation	Decision to Ho
Control	72.24	27.69	-13.82	0.05	Significant	Rejected
Experimental	90.24	21.48				

α = 0.05 Level of Significance

Table 8 shows the difference in learning achievement in science between control group and experimental group. A t-test of independent means

was utilized to determine if there is a significant difference on learning achievement in science of the respondents from control group and experimental group. Based on the table, a t-value -13.82, is higher than the $\alpha = 0.05$ level of significance, led to the rejection of the null-hypothesis. This result suggests that there is significant difference in the learners' learning achievement in science following the treatment between the control and experimental group. The further proves that the learners perform better when the teacher applies culturally integrated teaching strategies in science. This finding indicates that there is significant variation in the learners' learning achievement in science after treatment between the control and experimental groups. This further demonstrates that learners perform better when teachers use culturally integrated teaching practices in science. This discovery corresponds with recent studies that emphasize the advantages of culturally responsive instruction. Hammond and Jackson (2021) highlighted that connecting science teaching to students' cultural contexts enhances cognitive engagement and leads to improved academic performance. Moreover, Alim et al. (2020) discovered that when students recognize their cultural identities in the curriculum, their belonging and motivation rise, resulting in enhanced performance.

Additionally, research by Reyes and Dizon (2022) in public schools in the Philippines showed that using local cultural references in science education enhanced engagement and test performance among junior high school students. Likewise, Cabrera and Sta. Maria (2023) emphasized that incorporating indigenous knowledge systems into science lessons greatly improved students' comprehension and memory retention. Nonetheless, although these studies highlight the possible advantages of culturally integrated approaches, some researchers advocate for a more prudent implementation. For instance, Kirschner and Hendrick (2020) emphasize that the effectiveness of instruction, especially in demanding subjects such as science, should focus on organized content delivery and the management of cognitive skills rather than solely on cultural contextualization. Willingham's concerns are reflected in recent studies, like the review by Li and Yuan (2021), indicating that excessive cultural embedding may compromise fundamental scientific principles and could inadvertently support cultural narratives instead of universal scientific objectivity. According to Mathis et al. (2023), science is by its very nature objective and culturally neutral. As a result, they contend that highly contextualized

techniques may inadvertently favor cultural viewpoints, so weakening the universality of scientific principles that is agreed on the meta-analysis by Schmidt et al. (2021) revealed that although culturally responsive interventions demonstrate moderate effectiveness in small settings, their impact tends to lessen in more extensive applications, highlighting the necessity for balanced and thoroughly assessed implementation. These results warn that while cultural integration is advantageous, it should be intentionally structured to uphold the integrity, impartiality, and precision of science education.

Summary of Findings

1. The level of learners' learning achievement in Science before the implementation of culturally integrated teaching strategies found to be nearly the same low level of academic performance in science, both control and experimental group. The result suggests the same level of aptitudes which stresses the need for an improved teaching strategy. After the utilization of culturally integrated strategies in teaching science with experimental group, performance remained mostly unchanged in the control group while significant improvement was observed with experimental group. This observation suggests that learners in experimental group who received culturally integrated teaching strategies in science performed better than the control group who were taught by their teacher in their usual way of teaching.

2. There is a significant difference in learning achievement in science among respondents from control group and experimental group (t-value -13.82 > α = 0.05), which led to the rejection of the null-hypothesis. There is significant difference in the learners' learning achievement in science following the culturally integrated strategies in teaching science.

3. The learners revealed that through culturally integrated teaching strategies, their learning outcome in Science enhanced their understanding and reliability to the subject matter. They also experienced a shift in perspective and increased their health awareness as culturally integrated teaching strategy put importance on the connection between teacher and learner and real-life examples. Moreover, through this strategy, the misconceptions and traditional beliefs of learners were addressed that helped them to overcome apprehension promoted enjoyment in learning

4. Based on the result of data, the proposed culturally responsive teaching strategies in Science are focused on the alignment of learning competencies with learners' cultural backgrounds, integration of indigenous and local knowledge system, inclusive culturally relevant learning materials, culturally responsive pedagogy and instructional approach, and culturally responsive assessments and practices.

Conclusion

Based on the foregoing findings and hypothesis testing, the learners who received culturally integrated teaching strategies in science performed better than those learners who received the traditional approaches in teaching science. This results further conclude that cultural integration in teaching Science offers significant positive effects among learners as it addresses various challenging aspects. A more personalized approach in teaching as the culturally integrated teaching strategy offers, learners become motivated, abreast, and connected to the lesson.

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EFFECTIVENESS OF TEACHING STRATEGIES FOR CROSS-CURRICULAR INTEGRATION ACROSS STRANDS

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Abstract

This study explored the effectiveness of teaching strategies for cross-curricular integration across strands and the instructional issues encountered by teachers in the Ibajay East District for school year 2024-2025. Recognizing the increasing demand for holistic and interdisciplinary learning, the research examined how strategies such as Project-Based Learning, Inquiry-Based Learning, Cooperative Learning, Differentiated Instruction, Experiential Learning, Simulation and Role Playing, and ICT Integration are being implemented in basic education classrooms. The study also aimed to identify challenges—including absenteeism, academic performance gaps, lack of resources, time constraints, and classroom management issues—that may affect the success of these strategies.

Using a descriptive-correlational quantitative design, data were gathered from 30 teachers through a validated survey questionnaire. Descriptive statistics were used to analyze teacher profiles, strategy effectiveness, and the extent of challenges encountered, while Spearman's rho was applied to determine the relationship between strategy effectiveness and instructional issues.

Findings revealed that all seven teaching strategies were perceived as very effective, with Simulation and Role Playing, Experiential Learning, and ICT Integration receiving the highest mean scores. Despite the effectiveness, teachers reported that key instructional issues moderately affected their ability to fully implement integrated lessons. The correlation analysis indicated a positive but statistically insignificant relationship between the effectiveness of teaching strategies and the challenges encountered.

The study concludes that while instructional issues persist, they do not significantly diminish the perceived effectiveness of cross-curricular strategies. Teachers' professional competence and adaptability play a vital role in sustaining integrated instruction. Based on the results, the study recommends strengthened professional development, improved access to resources, and institutional support to enhance the implementation of cross-curricular integration in basic education.

Keywords: *Cooperative Learning. Experiential Learning. Teaching Strategies. Cross-Curricular Integration. Project-Based Learning*

Introduction

The concept of cross-curricular integration has gained increasing attention in the field of education, particularly at the elementary and secondary levels, which serve as the foundation of students' academic development. Cross-curricular integration is an instructional approach that connects learning objectives, concepts, and skills across multiple subject areas, enabling students to gain a more holistic and meaningful understanding of what they are learning. By linking disciplines—such as science, mathematics, language, and social studies—this approach encourages students to apply knowledge across different contexts, thereby deepening comprehension and making learning more relevant to real-life situations.

Recent research highlights the major advantages of cross-curricular integration. Reyes and Tan (2021) noted that cross-curricular strategies not only increase student involvement but also enable students to link information from other disciplines, hence fostering deeper awareness. They underlined that combining subjects, such as science with math or social studies with language, lets students observe practical uses of their education, hence enhancing memory and critical thinking. This strategy also motivates students to apply multidisciplinary abilities, which are vital for success in the modern world (Reyes & Tan, 2021).

In the Ibajay East District, teachers have increasingly adopted cross-curricular strategies as part of their instructional practices, aiming to enhance student engagement, improving academic performance, and fostering the development of critical life skills. However, despite the potential benefits, the implementation of cross

curricular integration faces several challenges. These challenges are not only rooted in pedagogical concerns but are also linked to practical issues such as absenteeism, low levels of academic performance, limited resources and facilities, time constraints, and classroom management difficulties. The implementation of these integrated learning methods is successful, as teachers could support each other in overcoming resource-related challenges.

Despite these challenges, Lopez's (2023) research showed that when cross curricular integration is implemented effectively, it can lead to improved student outcomes. Lopez found that Grade 6 students who engaged in cross-curricular learning exhibited higher levels of problem-solving abilities and critical thinking compared to those in traditional, subject-specific classrooms. However, Lopez also pointed out that success in these methods relies heavily on teacher preparedness and the availability of teaching resources, such as integrated lesson plans and interdisciplinary projects.

This study aims to assess the effectiveness of cross-curricular integration in Grade 6 classrooms in the Ibajay East District, focusing specifically on how these instructional issues influence the success of cross-curricular strategies. By exploring the relationship between teaching methods and the challenges that teachers face, this

research seeks to provide a deeper understanding of how cross-curricular integration can be optimized in local educational settings.

This study is grounded in the belief that the integration of subjects can offer numerous advantages for students, including fostering a deeper understanding of content, enhancing problem-solving skills, and promoting collaborative learning. However, the effectiveness of this approach is contingent upon addressing the instructional issues that hinder its full implementation. As such, this research will explore how teachers in the Ibajay East District navigate these challenges and how their strategies influence student outcomes. The findings of this study will not only contribute to the academic literature on cross-curricular integration but will also provide valuable insights for educators and policymakers aiming to improve teaching practices in the district.

Methodology

A quantitative research strategy using a descriptive correlation approach will be used in this investigation. In addition to describing the efficacy of several teaching strategies for cross-curricular integration, the study will look at the connections between teacher profiles, the success of the strategy, and the difficulties faced. Finding patterns and connections between the variables is made possible by the descriptive correlation design, which provides a thorough grasp of the elements influencing instructional strategies and student results. This study examined various cross curricular integration strategies and their impact on student learning. According to Silius, H., & Kallio, T. (2020) the findings showed that integrated teaching approaches significantly enhanced critical thinking, problem-solving, and creativity in students. Teachers who adopted a holistic view of curriculum integration, focusing on making connections across disciplines, were more successful in improving student engagement and achievement.

The study included thirty (30) Grade 6 teachers from ten (10) complete public elementary schools in the Ibajay East District for School Year 2024-2025 in addition to the sample.

The study selected teachers who had practical knowledge of guiding grade 6 students and using cross-curricular initiatives, using purposeful sampling. This assured that the acquired data was relevant and helpful for answering the research survey questions.

Table 2: Number of Respondents in each School

Complete Elementary School of Ibajay East	Male	Female	Total
Agdugayan Elementary School	1	4	5
Aparicio Elementary School	0	3	3
Bugtongbato Elementary School	0	1	1

Mina-a Elementary School	0	2	2
Naile Elementary School	0	2	2
Naisud Central School	2	3	5
Regador Elementary School	2	2	4
Rizal Elementary School	1	2	3
San Isidro Elementary School	0	3	3
San Jose Elementary School	0	1	1
Unat-Bagacay Elementary School	0	1	1
Total	6	24	30

This study uses purposive sampling to select a specific group of individuals or units for analysis. The researcher used 30 participants from the 10 complete elementary schools of Ibajay East. Patton, M. Q. (2020) work highlights the strength of purposive sampling, particularly in education, where understanding specific phenomena, such as teaching strategies and classroom management, is crucial. The study underlines that purposive sampling allows researchers to select participants based on characteristics that directly influence the research outcomes, thus enhancing the richness and relevance of the data collected by selecting teachers who meet predefined criteria:

1. Currently teaching Grade 6 in any subjects of the complete elementary schools

2. With at least one year of teaching experience to ensure familiarity with pedagogical practices and classroom issues.

3. Actively involved in classroom instruction and curriculum implementation.

The main instrument for data collection was a structured survey questionnaire developed by the researcher and validated by education experts. McMillan, J. H., & Schumacher, S. (2021) highlight the effectiveness of structured surveys in educational research, noting their ability to provide a comprehensive overview of educational phenomena across a broad population. They stress the importance of ensuring that survey questions are precise and measure what they intend to, and this can be achieved through expert validation. The study also discusses the advantages of using structured surveys over other data collection methods, particularly when the aim is to gather data from a large sample of participants, as in the case of surveying Grade 6 teachers across multiple schools. It consisted of two parts:

Respondents rated the effectiveness of the following strategies using a 5-point Likert scale: 5 – Very Effective 4– Effective 3 – Slightly Effective 2 – Ineffective 1 – Not Effective at All.

The following teaching strategies assessed with 5 questions in each item includes:

Project-Based Learning (PBL)

Inquiry-Based Learning (IBL)

Cooperative Learning (CL)

Differentiated Learning

Experiential Learning

Simulation and Role Playing

ICT Integration

This section assesses the frequency or severity of common issues faced by teachers in implementing the above strategies. Respondents rated the following issues using a 5-point Likert scale from 5 – Highly Affected 4 – Affected 3 – Moderately Affected 2 – Slightly Affected 1 – Not Affected

The issues examined includes:

-Student absenteeism

-Low academic performance

-Inadequate equipment and facilities

 constraints

-Classroom management difficulties

1. Approval and Permissions

Gaining approval from entities such as the Office of the Schools Division Superintendent and school principals ensures the research adheres to ethical standards and educational policies. Salazar, M., & Lee, J. (2020) states the importance of obtaining formal approvals and permissions from relevant authorities before conducting educational research. The authors emphasize that such approvals not only validate the legitimacy of the research but also help maintain transparency and cooperation from educational institutions.

2. Distribution of Survey

This research explores the use of electronic surveys, particularly Google Forms, in collecting data for educational studies. The researcher found that Google Forms provides a convenient and efficient platform for survey distribution, especially when reaching large numbers of participants. Wang, Y., & Hsu, C. (2021) stress effectiveness of online survey in educational research. The survey's flexibility, accessibility, and ease of use make it an ideal tool for electronic data collection in education. It also facilitates automatic data recording, reducing the potential for data entry errors.

3. Data Collection

This study emphasizes the importance of providing clear instructions and contact information to participants during data collection. Johnson, R. B., & Christensen, L. (2020) highlight that clear instructions are crucial for ensuring that participants understand the purpose of the study and how to complete the survey accurately. They also stress the need for providing researcher contact details to address any potential clarifications or concerns, which helps maintain participant engagement and improves the quality of data collected to give teachers time, one week was allotted to complete the survey. Braun, V., & Clarke, V. (2020) discuss how the response time allotted for surveys can affect the

quality and quantity of data collected. Their study suggests that providing a clear deadline, such as one week, helps to ensure timely responses without overburdening participants. They found that when sufficient time is given, participants are more likely to provide thoughtful and complete responses, contributing to richer data for analysis.

4. Collection and Safekeeping

Completed surveys were collected and automatically recorded on the response sheets online. All responses were coded to ensure participant confidentiality. Leech, N. L., & Onwuegbuzie, A. J. (2020) highlight the need to code responses and implement privacy measures, such as anonymizing data, to protect participant identities. By ensuring confidentiality, researchers can build trust with participants, encouraging them to provide honest and open responses. The research emphasizes that online survey tools, like Google Forms, offer built in features for secure data handling, but additional measures, such as coding responses, further ensure participant confidentiality.

This study used a correlational research design to determine the relationship between the effectiveness of cross-curricular integration strategies and the instructional issues encountered by Grade 6 teachers in the Ibajay East District during the school year 2024–2025. A correlational design is appropriate when the goal is to examine the nature and strength of relationships between variables without manipulating them. In this context, the research aimed to identify whether significant associations exist between teaching strategies, instructional challenges.

Based on the Statement of the Problem presented in Chapter I, data were collected through a structured survey questionnaire. The responses were encoded, organized, and submitted to a professional statistician for analysis. The statistician applied appropriate statistical methods to analyze the data in alignment with the study's objectives and hypotheses. The following statistical treatments were used:

Descriptive statistics were used to summarize and describe the characteristics of the respondents and their responses. These statistics provided a foundational understanding of the dataset, highlighting trends and patterns that informed the inferential analyses. Means and standard deviations were employed to assess the level of effectiveness of

various cross-curricular teaching strategies and the degree to which teachers perceived the impact of instructional challenges such as absenteeism, time constraints, low academic performance, classroom management, and resource limitations.

As discussed by Koutsoukos and Adams (2020), descriptive statistics are useful for evaluating educational practices and strategies, especially in large-scale surveys. These measures help policymakers and educators understand central tendencies and variability, enabling data-driven decisions in educational planning and reform.

To examine the relationships between variables, Spearman's rank-order correlation coefficient (Spearman's rho) was implemented. This non-parametric test is suitable for ordinal data, such as those obtained through Likert-scale questionnaires and measures the strength and direction of association between two ranked variables.

Spearman's rho was used to analyze:

1.The relationship between respondents' demographic profiles (e.g., years of teaching experience, educational attainment) and the perceived effectiveness of teaching strategies.

2. The relationship between respondents' profiles and the instructional issues encountered.

3. The association between the perceived effectiveness of cross-curricular teaching strategies and the challenges faced during implementation.

According to Sharma (2020), Spearman's rho is widely applied in educational research due to its appropriateness for ordinal data and its capacity to reveal meaningful relationships that inform instructional improvements.

A significance level of **α = 0.05** was used as the basis for hypothesis testing. If the computed p-value was **less than or equal to 0.05**, the null hypothesis was rejected, indicating a statistically significant relationship between the variables.

Results and Discussion

In this part, the study examined how Grade 6 teachers in the Ibajay East District perceive the effectiveness of various teaching strategies employed in cross-curricular settings.

Table 3: Effectiveness of Teaching Strategies for Cross-Curricular Integration

Teaching Strategy	Mean	Std. Deviation	Interpretation
Simulation and Role Playing	4.68	0.43	Very Effective
Experiential Learning	4.67	0.44	Very Effective
Differentiated Learning	4.65	0.43	Very Effective
Information and Communication Technology	4.64	0.47	Very Effective
Cooperative Learning	4.63	0.55	Very Effective
Project-Based Learning	4.50	0.52	Very Effective
Inquiry-Based Learning	4.48	0.56	Very Effective

Legend:

1.00 - 1.80: Not Effective at All

1.81 - 2.60: Ineffective

2.61 - 3.40: Slightly Effective

3.41 - 4.20: Effective

4.21 - 5.00: Very Effective

Table 3 presents the mean scores and standard deviations for the effectiveness of various teaching strategies used in cross-curricular integration among Grade 6 teachers in the Ibajay East District. Results show that all seven strategies were rated as "Very Effective", with mean scores ranging from 4.48 to 4.68, reflecting strong teacher confidence in their application.

Among the strategies, Simulation and Role Playing received the highest rating (M = 4.68, SD = 0.43), highlighting their effectiveness in promoting active, experiential learning. This was followed closely by Experiential Learning (M = 4.67) and Differentiated Instruction (M = 4.65), indicating that approaches centered on real-life tasks and learner diversity are highly valued in integrated instruction.

Notably, ICT Integration also received a high rating (M = 4.64), underscoring the growing importance of technology in facilitating interdisciplinary learning. The effectiveness of ICT in cross-curricular instruction can be better understood through the TPACK framework, which stands for Technological Pedagogical Content Knowledge. According to Koehler et al. (2020), TPACK emphasizes the interconnectedness of three essential teacher knowledge domains: content knowledge (what to teach), pedagogical knowledge (how to teach), and technological knowledge (what tools to use). When effectively combined, these domains support teachers in designing lessons that are not only content-rich and pedagogically sound but also technologically relevant, thereby enhancing student engagement and deeper learning.

For instance, integrating ICT tools such as simulations, digital presentations, and interactive platforms enables teachers to deliver content across subjects in a more meaningful and engaging way. This aligns with Nguyen, Bower, and Campbell (2021), who found that the integration of TPACK-aligned strategies led to improved interdisciplinary understanding and student motivation.

Meanwhile, other strategies such as Cooperative Learning (M = 4.63), Project Based Learning (M = 4.50), and Inquiry-Based Learning (M = 4.48) also received very positive evaluations. Although these had slightly lower scores, they remain highly effective tools, especially when used in well-supported environments with manageable class sizes and proper scaffolding.

In conclusion, the findings in Table 3 affirm that teachers view all seven teaching strategies as very effective in implementing cross-curricular integration. The integration of ICT through the TPACK framework further enhances these strategies, providing a strong foundation for innovative, student-centered, and technology enhanced teaching practices in Grade 6 classrooms.

This section explores how absenteeism affects teaching strategies in the context of integrated learning, backed by quantitative data and aligned with current educational literature on the subject.

Table 4: Level of Influence of Absenteeism on Teaching Strategies

Issue	Mean	Std. Deviation	Interpretation
Interrupts lesson flow	3.83	1.05	Affected
Affects group consistency	3.73	1.01	Affected
Requires re-teaching	3.67	1.03	Affected
Delays project submissions	3.83	1.05	Affected
Reduces participation	3.70	1.21	Affected

Overall Absenteeism Mean	3.75	1.03	Affected

Legend:

1.00 - 1.80: Not Affected

1.81 - 2.60: Slightly Affected

2.61 - 3.40: Moderately Affected

3.41 - 4.20: Affected

4.21 - 5.00: Highly Affected

This table 4 reveals how student absenteeism affects the implementation of cross-curricular teaching strategies in Grade 6 classrooms. The overall mean score is 3.75, which falls under the category of "Affected", indicating that absenteeism poses a moderate but consistent challenge to effective instruction.

Among the listed indicators, the most affected area is the incomplete participation in group activities (M = 3.87, SD = 1.04). This suggests that when students are frequently absent, their peers may struggle to complete collaborative tasks, which are essential in strategies like Project-Based Learning, Cooperative Learning, and Inquiry-Based Learning. These approaches rely heavily on teamwork, continuity, and the steady contribution of each group member.

Similarly, missed foundational lessons (M = 3.80) and reduced learning continuity (M = 3.77) were rated as highly affected. These findings highlight that students who miss classes often fall behind and are unable to make meaningful connections between topics across different subjects—a key element in cross-curricular integration. Such gaps in understanding not only hinder individual learning progress but also impact group dynamics and the overall pace of the class.

Another significant concern is that absenteeism requires teachers to spend extra time re-teaching or catching up learners (M = 3.67). This adjustment can affect the flow of planned interdisciplinary lessons and

may force teachers to simplify or repeat previous content, leading to delays in curriculum coverage. As Maguire and Laming (2022) pointed out, frequent absenteeism can widen academic gaps and place added pressure on teachers, especially in classrooms with diverse learner needs.

This aligns with the findings of Flores et al. (2020), who stressed that cross curricular strategies are most effective when students are present consistently, as these strategies often involve building on prior knowledge across subjects.

In conclusion, Table 4 clearly demonstrates that student absenteeism negatively influences the delivery and effectiveness of cross-curricular strategies, particularly those requiring active and continuous participation. These findings emphasize the need for effective attendance-monitoring systems, parental engagement, and support mechanisms to minimize absenteeism and ensure that all learners can fully participate in integrative learning experiences.

Table 5: Level of Influence of Academic Performance on Teaching Strategies

Issue	Mean	Std. Deviation	Interpretation
Students struggle with integrated content	3.77	0.94	Affected
Requires re-teaching basics	3.80	0.89	Affected
Creates performance gaps	3.73	1.01	Affected
Affects group output	3.77	1.07	Affected

Needs frequent support	3.80	0.92	Affected
Overall Mean Academic Performance	**3.77**	**0.93**	**Affected**

Legend:

1.00 - 1.80: Not Affected

1.81 - 2.60: Slightly Affected

2.61 - 3.40: Moderately Affected

3.41 - 4.20: Affected

4.21 - 5.00: Highly Affected

The table presents the descriptive statistics for the level of influence of academic performance on various aspects of teaching strategies for cross-curricular integration in Grade 6 classrooms within the Ibajay East District. All the issues evaluated have mean scores between 3.41 and 4.20, indicating that they are "Affected" by academic performance according to the mean scale interpretation. Specifically, the need for re-teaching basics and frequent support both have the highest mean scores of 3.80 (SD = 0.89 and SD = 0.92, respectively), suggesting these issues are affected by academic performance. Students struggling with integrated content and group output are also notably impacted, both with mean scores of 3.77 (SD = 0.94 and SD = 1.07, respectively). The creation of performance gaps has a mean score of 3.73 (SD = 1.01), indicating it is affected by academic performance. The overall mean score for academic performance is 3.77 (SD = 0.93), suggesting that academic performance generally affects the teaching strategies for cross-curricular integration.

This finding demonstrates that differentiated instruction is essential for effectively implementing cross-curricular strategies in classrooms characterized by diverse academic abilities. Educators often adjust

pacing, group configurations, and instructional aides to accommodate the diverse needs of learners.

The findings align with recent studies indicating that students lacking academic preparedness may encounter difficulties with instructional approaches that integrate various skills and disciplines (Maguire & Laming, 2022). Cross-curricular integration offers benefits for enhancing critical thinking and establishing real-world connections; however, if not carefully organized, it could exacerbate gaps between high- and low performing pupils. School administrators and curriculum planners need to prioritize continuous professional development focused on differentiated instruction and adaptive approaches within various curricular contexts. Programs created to improve students' foundational skills in reading and mathematics can reduce the need for repetitive instruction, thereby allowing the integration of diverse lessons.

The data highlight the importance of learning readiness as an essential element for successful integration. Addressing performance disparities is crucial for attaining equitable and effective cross-curricular learning.

Table 6: Level of Influence of Equipment and Facilities on Teaching Strategies

Issue	Mean	Std. Deviation	Interpretation
Limits hands-on activities	3.77	1.04	Affected
Lacks ICT access	4.03	1.07	Affected
Hinders resource planning	3.73	1.08	Affected
Inadequate learning tools	3.77	1.19	Affected

Poor classroom infrastructure	3.47	1.22	Affected
Overall Mean Equipment and Facilities	3.75	1.05	Affected

Legend:

1.00 - 1.80: Not Affected

1.81 - 2.60: Slightly Affected

2.61 - 3.40: Moderately Affected

3.41 - 4.20: Affected

4.21 - 5.00: Highly Affected

The table presents the descriptive statistics for the level of influence of equipment and facilities on various aspects of teaching strategies for cross-curricular integration in Grade 6 classrooms within the Ibajay East District. All the issues evaluated have mean scores between 3.41 and 4.20, indicating that they are "Affected" by equipment and facilities according to the mean scale interpretation. Specifically, the lack of ICT access has the highest mean score of 4.03 (SD = 1.07), suggesting this issue is significantly affected by equipment and facilities. Limits on hands-on activities and inadequate learning tools both have mean scores of 3.77 (SD = 1.04 and SD = 1.19, respectively), indicating they are notably impacted. Hinders resource planning has a mean score of 3.73 (SD = 1.08), showing it is affected by equipment and facilities. Poor classroom infrastructure has the lowest mean score of 3.47 (SD = 1.22), but it is still within the "Affected" range. The overall mean score for equipment and facilities is 3.75 (SD = 1.05), suggesting that equipment and facilities generally affect the teaching strategies for cross-curricular integration.

These findings highlight the urgent need for educational leaders to invest in digital technologies, instructional materials, and infrastructure

enhancements to create a more supportive environment for cross-curricular teaching. Insufficient equipment and facilities limit teacher creativity and could exacerbate learning disparities if not addressed in a timely manner. Additionally, professional development that focuses on effective teaching strategies in low-resource settings can empower teachers to adapt and sustain integration practices despite challenges.

Recent research backs these claims. Alomari and Hallinger (2021) noted that the availability of both physical and digital resources is essential for implementing innovative and interdisciplinary approaches. Likewise, Thibaut et al. (2019) and Dousay et al. (2020) pointed out that a lack of ICT tools directly restricts the execution of integrated and inquiry-based teaching. UNESCO (2022) echoed this worry in its global education report, indicating that unequal access to educational infrastructure continues to perpetuate discrepancies in education quality, particularly in blended and recovery-focused learning environments. In developing areas, Kafyulilo and Faustin (2023) reported that inadequate laboratory and classroom resources significantly impede the implementation of curriculum integration, emphasizing the need for systemic support in resource allocation.

Table 7: Level of Influence of Time Constraints on Teaching Strategies

Issue	Mean	Std. Deviation	Interpretation
Insufficient time for integrated Lessons	3.73	1.11	Affected
Rushed lesson delivery	3.70	1.15	Affected
No time for reflection or feedback	3.57	1.14	Affected

Hard to balance content and Activities	3.63	1.00	Affected
Affects preparation of differentiated tasks	3.77	1.07	Affected
Overall Mean Time Constraints	**3.68**	**1.04**	**Affected**

Legend:

1.00 - 1.80: Not Affected

1.81 - 2.60: Slightly Affected

2.61 - 3.40: Moderately Affected

3.41 - 4.20: Affected

4.21 - 5.00: Highly Affected

The table presents the descriptive statistics for the level of influence of time constraints on various aspects of teaching strategies for cross-curricular integration in Grade 6 classrooms within the Ibajay East District. All the issues evaluated have mean scores between 3.41 and 4.20, indicating that they are "Affected" by time constraints according to the mean scale interpretation. Specifically, the preparation of differentiated tasks is most affected by time constraints, with the highest mean score of 3.77 (SD = 1.07). Insufficient time for integrated lessons (M = 3.73, SD = 1.11) and rushed lesson delivery (M = 3.70, SD = 1.15) are also notably impacted. Balancing content and activities (M = 3.63, SD = 1.00) and the lack of time for reflection or feedback (M = 3.57, SD = 1.14) are affected as well. The overall mean score for time constraints is 3.68 (SD = 1.04), suggesting that time constraints generally affect the teaching strategies for cross-curricular integration.

This study indicates that time limits greatly affect how cross-curricular integration strategies are carried out in Grade 6 classrooms in the Ibajay East District, with an average score of 3.68. The preparation of differentiated tasks is among the most affected areas, accompanied by inadequate time for providing integrated courses and the need to expedite instruction. These results highlight the important need for good time management and planning of lessons when trying to combine different subjects in limited school time. Beane (2021) asserts that effective cross-curricular instruction necessitates sufficient time for cooperation, innovative planning, and the structuring of intricate concepts, which becomes challenging under constrained schedules. Hall and Schultz (2020) assert that time limitations frequently result in superficial learning experiences, compromising the depth of subject integration in favor of breadth of coverage. The lack of time for feedback and reflection makes teaching less effective and prevents students from fully understanding what they've learned, as Wang et al. (2023) point out that reflecting on lessons is important for improving understanding in subjects that connect. Consequently, schools should contemplate structural modifications, such as block scheduling or collaborative planning times, to alleviate time-related obstacles and enhance teachers' ability to implement cross curricular ideas more efficiently.

Table 8: Level of Influence of Classroom Management on Teaching Strategies

Issue	Mean	Std. Deviation	Interpretation
Behavior issues in group work	3.67	1.12	Affected
Noise during active learning	3.67	1.12	Affected
Difficulties managing large groups	3.43	1.04	Affected

Struggles in maintaining routines	3.50	1.07	Affected
Needs better behavior systems	3.63	1.03	Affected
Overall Mean Classroom Management	**3.58**	**0.99**	**Affected**

Legend:

1.00 - 1.80: Not Affected

1.81 - 2.60: Slightly Affected

2.61 - 3.40: Moderately Affected

3.41 - 4.20: Affected

4.21 - 5.00: Highly Affected

The results indicate that classroom management moderately affects the implementation of cross-curricular teaching strategies in Grade 6 classrooms in the Ibajay East District, with an overall mean score of 3.58, interpreted as "Affected." Among the identified issues, behavioral problems during group work and noise during active learning were the most prevalent, both receiving a mean of 3.67. These suggest that while cross-curricular approaches encourage collaboration and student interaction, they also introduce behavior management challenges. The need for better behavior systems (M = 3.63), struggles in maintaining classroom routines (M = 3.50), and difficulties managing large groups (M = 3.43) were also noted, further supporting the notion that integrated teaching environments demand effective and adaptive classroom management strategies.

These findings affirm that while cross-curricular strategies are beneficial for learner engagement and interdisciplinary understanding, their execution can be hindered by classroom behavior issues if not properly

addressed. As noted by Flores et al. (2020), group-based and active learning strategies must be supported by clearly defined behavior expectations and routines to prevent instructional disruptions. Similarly, Darling-Hammond et al. (2020) emphasized the critical role of positive behavior support systems and consistent classroom routines in maintaining instructional flow, particularly during collaborative or project-based activities.

The lower mean score for "difficulties managing large groups" (M = 3.43), while still categorized as "affected," suggests the presence of organizational challenges in managing group activities within the context of integrated instruction. Beane (2021) observed that cross-curricular lessons often lack the rigid structure of traditional subject teaching, which may increase classroom noise, peer conflicts, or inattentiveness if not carefully managed. Hattie (2023) further supported this by identifying classroom management as one of the most influential factors on instructional effectiveness, especially when innovative or student-centered teaching methods are applied.

The implication of this result is the need for sustained professional development focused on behavior management within integrated and interactive learning contexts. Teachers must be equipped with strategies such as assigning structured group roles, using peer mediation techniques, setting collaborative norms, and employing positive reinforcement. Additionally, school administrators should ensure that classroom environments—particularly in large or mixed-ability settings—are supported through reasonable class sizes and access to learning aides or co-teachers during high engagement activities.

In conclusion, while classroom management issues do not critically hinder cross-curricular integration, they do pose a moderate challenge that requires proactive attention. Ensuring that educators have the tools, training, and institutional support necessary to manage collaborative and interdisciplinary tasks is essential for maximizing the effectiveness of cross-curricular strategies in basic education settings in the grade 6 classrooms of Ibajay East District.

Table 9: Correlation Between Level of Effectiveness of Teaching Strategies and   Level of Influence of Issues

Variables	Correlation Coefficient	Sig. (2-tailed)
Level of Effectiveness of Teaching Strategies	1.000	-
Level of Influence of Issues on Teaching Strategies	0.302	0.105

The findings presented in the table reveal a Spearman's rho correlation coefficient of 0.302 between the level of effectiveness of teaching strategies and the level of influence of issues encountered in implementing cross-curricular integration in Grade 6 classrooms within the Ibajay East District.

Although this result indicates a positive relationship, the p-value of (Sig. 2- tailed) 0.105 exceeds the conventional alpha level of 0.05, suggesting that the correlation is not statistically significant. This means that while there is a tendency for higher levels of issue influence to be associated with lower effectiveness of teaching strategies, the evidence is insufficient to establish a meaningful or reliable relationship. Consequently, the null hypothesis—that there is no significant relationship between the two variables—cannot be rejected. This outcome implies that other contextual or instructional variables may be playing a greater role in shaping the effectiveness of cross-curricular teaching strategies. According to Darling-Hammond et al. (2020), instructional success is often shaped not only by perceived obstacles but also by teacher expertise, instructional design, and ongoing professional development. Similarly, Fullan and Hargreaves (2021) argue that effective teaching practices often remain resilient despite systemic challenges, due to the adaptability and innovation

of teachers. This suggests that while challenges like absenteeism, lack of resources, or time constraints are recognized, they may not directly or significantly diminish the effectiveness of teaching strategies if educators are equipped with the appropriate pedagogical skills and institutional support. Therefore, the insignificant correlation highlights the complexity of educational settings and reinforces the importance of equipping teachers with adaptive strategies that transcend situational difficulties.

Summary of Findings

Findings revealed that a significant number of respondents held advanced academic qualifications, with most having more than ten years of teaching experience and occupying higher teaching ranks. All seven teaching strategies were rated as "Very Effective," with Simulation and Role Playing (M = 4.68), Experiential Learning (M = 4.67), and Differentiated Instruction (M = 4.65) receiving the highest mean scores. Furthermore, all five instructional issues were rated as "Affected," with academic performance (M = 3.77), absenteeism (M = 3.75), and equipment and facilities (M = 3.75) identified as the most prevalent concerns.

Despite these challenges, the correlation analysis using Spearman's rho revealed a positive but statistically non-significant relationship (ρ = 0.302, p = 0.105) between the level of effectiveness of teaching strategies and the extent of influence of the instructional issues. This suggests that while these issues are present, they do not significantly diminish the perceived effectiveness of cross-curricular integration strategies as implemented by the teachers.

Conclusions

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

1. The teaching force in the Ibajay East District is academically prepared and professionally experienced. The majority of Grade 6 teachers possess graduate-level qualifications and long years of service, contributing to their capacity to implement innovative teaching strategies, such as cross-curricular integration, with a high degree of competence.

2. Cross-curricular teaching strategies are perceived as highly effective across the district. All seven identified strategies were evaluated as "Very Effective," highlighting their perceived value in enhancing student learning outcomes, engagement, and interdisciplinary understanding.

3. Instructional issues such as absenteeism, academic performance disparities, lack of facilities, time constraints, and classroom management difficulties moderately affect strategy implementation. These issues interrupt instructional flow, require repeated teaching efforts, and create challenges in collaborative settings.

4. The absence of a statistically significant relationship between instructional issues and strategy effectiveness suggests strong teacher resilience and adaptability. Despite facing multiple classroom-level and systemic barriers, teachers maintain a high level of effectiveness, possibly through creative planning, collaboration, and effective classroom leadership.

5. The successful implementation of cross-curricular integration is influenced not only by structural and resource factors but also by teacher agency, instructional expertise, and institutional support. This highlights the importance of investing in professional development and supportive educational environments.

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TAILORING TEACHING: EFFECTIVENESS OF DIFFERENTIATED INSTRUCTION IN ENGLISH AS PERCEIVED BY GRADE 4 TEACHERS IN IBAJAY WEST DISTRICT

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Abstract

This study investigated how Grade 4 English teachers in the Ibajay West District perceived the effectiveness of differentiated instruction (DI) during the 2024–2025 school year. In light of learner diversity and the latest educational reforms, it assessed teachers' understanding of DI, the instructional strategies they applied, their judgments of DI's impact, the challenges they encountered, and their proposed measures for improvement.

A descriptive quantitative design was adopted. Data were collected from 17 female teachers (no male teachers instructed Grade 4 English) using a validated structured survey questionnaire. Descriptive statistics were used to analyze teachers' levels of understanding, strategy effectiveness, perceived effectiveness, and the extent of challenges encountered, with frequency and percentage calculations applied to summarize key recommendations.

Results indicated that teachers demonstrated a significantly high level of understanding of DI and a strong theoretical foundation to support classroom implementation. They consistently utilized a variety of strategies—most notably group work, peer-assisted learning, and tutoring activities to promote collaboration and support, and they believed DI had been effective in their classrooms. However, teachers also reported substantial challenges; the overall instructional process was described as demanding. Time constraints, limited professional development opportunities, and insufficient instructional resources were identified as major obstacles to effective DI planning and delivery.

Based on their perceptions and experiences, the study concluded by recommending targeted professional development, structured

collaboration sessions, strengthened institutional support, the creation of localized DI manuals to improve resource access, and future research integrating classroom observations and student performance data to validate self-reported perceptions and assess actual outcomes of DI.

Introduction

English, considered a second language in the Philippines, serves as a medium of instruction for core subjects. Due to its importance, learners must develop strong comprehension and proficiency. However, learners often enter Grade 4 classrooms with varying levels of language proficiency, learning styles, and background knowledge. Pritchard (2017) emphasizes that learners differ in how they absorb and process information, some learn best through direct involvement or hands-on experiences, while others benefit from connections to prior knowledge.

This diversity poses a significant challenge for teachers striving to teach English effectively. Differentiated instruction (DI) addresses this challenge by allowing teachers to modify content, process, product, and learning environment to meet varied learner needs ensuring each student is engaged and appropriately challenged. Research by Magayon & Tan (2016) found that DI improves learner engagement, promotes positive attitudes, and enhances academic performance.

Under the Department of Education's MATATAG Curriculum, Grade 4 marks the start of Key Stage 2, a phase where learners transition from foundational literacy to more complex, discipline-based content. DepEd Order No. 010, s. 2024, underscores this shift by encouraging teachers to design tiered learning tasks and employ varied instructional and assessment strategies to address diverse learner needs. Yet, many public elementary schools especially in rural areas face resource constraints and large class sizes that hinder effective DI implementation.

Although there is increasing interest in DI across the country, research remains heavily centered in urban or non-Visayas regions. Talain & Mercado (2023) surveyed 160 elementary English teachers in Quezon Province (Luzon) and reported strong DI practices, but their study did

not extend to Visayas regions. Meanwhile, Casalmer (2018) documented DI's effectiveness in improving numeracy among kindergarten learners in rural Iloilo, yet this work was also geographically limited. In response to this research gap, the present study examines the perceptions of Grade 4 English teachers in Ibajay West, Aklan, offering valuable localized insight. Grade 4 educators were intentionally selected as respondents because this grade level lies at a critical pedagogical transition point. The study explores five aspects: (1) teachers' understanding of DI; (2) strategies used in differentiation; (3) perceptions of its effectiveness; (4) challenges faced; and (5) recommendations for enhancing DI practice to better meet the needs of diverse learners.

While numerous studies have demonstrated DI's effectiveness, few have addressed teacher perceptions in rural Visayan contexts. The findings from Ibajay West District will serve as a foundational benchmark, enabling future studies to compare and correlate teachers' perception, contextual factors, and implementation outcomes across both rural and urban districts.

Methodology

The study employed a quantitative descriptive research design to investigate Grade 4 English teachers' perceptions of the effectiveness of DI in their classrooms. Quantitative research involves systematically collecting and analyzing numerical data to measure trends and relationships and to confirm the accuracy of observed phenomena. In contrast, descriptive research which Siedlecki (2020) defines as the observation and description of individuals, events, or conditions in their natural state does not involve manipulating variables. By combining these approaches, the researchers administered structured surveys to gather measurable data on teachers' knowledge of DI principles, implementation strategies, perceived outcomes, and encountered challenges.

This methodology allowed for an objective assessment of teachers' skills and perspectives and yielded valuable insights to inform the development of instructional strategies tailored to individual learners. Specifically, the study explored (1) teachers' understanding of DI, (2) actual classroom practices, (3) perceptions of DI effectiveness, (4)

barriers to implementation, and (5) suggestions for improvement. Integrating quantitative measurements with descriptive observations ensured both accuracy and validity, capturing numerical trends while authentically depicting the classroom context. Ultimately, findings from this comprehensive approach provided actionable recommendations for enhancing teacher readiness and implementing responsive, data-informed DI strategies that can bridge learning gaps in diverse Grade 4 English classrooms.

The study was conducted in both primary and elementary schools within the Ibajay West District, located in Ibajay, Aklan under the Schools Division of Aklan School Year 2024-2025. The Ibajay West district is composed of 19 schools, 17 of which have Grade 4 classes. These schools are categorized as small, medium and big schools, providing variation and diversity that contribute to a more dynamic study. Medium to big schools often followed a departmentalized structure, meaning each school may have subject-specialist teachers. In contrast, small schools typically used a self-contained setup, where one teacher handles multiple learning areas for the same class. This setup limited the potential respondents for the study. The district was selected as the research setting due to its accessibility, and the results of the study may serve as a basis for strengthening teaching methodologies and practices, as well as informing future research in the district.

Figure 1. *Map of Aklan Province showing Ibajay in the northwest, indicating the study site*.

The research aimed to gather data solely from teachers who handle English in Grade 4 classes. This ensured that the study remained focused and aligned with the statement of the problem. By concentrating on selected respondents, the study can yield relevant insights into teachers' perception of differentiated instruction and its effectiveness in

Ibajay West District. Also, the findings helped guide tailored teaching practices based on the learners' individual differences and learning needs.

The study surveyed Grade 4 English teachers in Ibajay West District. Departmentalized staffing in larger schools and self-contained models in smaller ones limited eligible participants. Grade 4 was selected because it marks learners' transition to more advanced language skills, making their teachers ideal for assessing perceptions of differentiated instruction (DI).

Table 1. Respondents

School	Male	Female	Total
Antipolo ES	0	1	1
Agutay PS	0	1	1
Agbago ES	0	1	1
Aquino ES	0	1	1
Batuan PS	0	1	1
Capilijan PS	0	1	1
Laguinbanwa ES	0	1	1
Ibajay CS	0	1	1
Ibajay IS	0	1	1
Malindog PS	0	1	1
Maloco ES	0	1	1
Mabusao ES	0	1	1
Ondoy ES	0	1	1
Tagbaya ES	0	1	1
Tul-ang ES	0	1	1
Sta. Cruz ES	0	1	1
Yawan PS	0	1	1
Total	**0**	**17**	**17**

The researcher utilized total population sampling, which included all 17 female Grade 4 English teachers in the district, as no male teachers taught the subject. By including every eligible participant, the study minimized selection bias and ensured comprehensive representation of perspectives. Etikan et al, (2016) explain that total population sampling is appropriate when the target population is small and well defined, allowing researchers to include the entire group in their investigation.

By surveying the full population of Grade 4 English teachers, the study gathered comprehensive data on their knowledge, classroom practices, perceptions of effectiveness, encountered challenges, and suggestions for improvement. This inclusive approach maximized the depth and validity of the insights related to differentiated instruction in the district's classroom context.

The researcher utilized a structured questionnaire composed of 25 Likert-scale items and a checklist section with six items for recommendations. This instrument aimed to explore Grade 4 teachers' insights and practices related to differentiated instruction. The questionnaire was divided into five key subfactors: (1) level of understanding, (2) strategies used, (3) perceived effectiveness of differentiated instruction, (4) challenges encountered, and (5) recommendations for improvement.

To measure responses, the study employed a 5-point Likert-type scale ranging from "Strongly Disagree" to "Strongly Agree." The descriptive interpretation of mean scores was as follows: 1.00–1.80 (Strongly Disagree), 1.81–2.60 (Disagree), 2.61–3.40 (Neutral), 3.41–4.20 (Agree), and 4.21–5.00 (Strongly Agree). In addition, the checklist section on recommendations was analyzed using frequency counts and percentage distributions.

To ensure the instrument's validity, a panel of subject-matter experts reviewed the questionnaire. These experts' review helped confirm that the questionnaire items were clear, relevant, and aligned with the study's Statement of the Problem (SOP) thereby strengthening the tool's credibility and appropriateness. According to Mora et al. (2016), the validation process is a crucial step that must be completed prior to administration, as it ensures that the questions are clear and aligned with the research objectives. The expert reviewed the questionnaire to determine whether it appropriately addressed the research problems and maintained content reliability, thus enhancing the credibility of the data collected.

Upon approval of the request letter addressed to the Division Superintendent of Division of Aklan and School District Supervisor of Ibajay West District, the researcher proceeded with the preparation of the necessary research instruments. The main tool for data collection

was a structured questionnaire survey form, which was divided into two parts.

The first part of the survey gathered the demographic profile of the respondents reflecting their undertaking and willingness to be part of this study. This information helped identify schools' readiness for any form of innovation for the near future. The second part of the survey assessed the teachers' understanding DI and the strategies they employed revealing their knowledge and practices done. Additionally, this part also determined their implementation, differences in perceptions of its effectiveness, and their suggested enhancements for improving its use in English Grade 4 classes.

The survey was administered digitally via Google Forms, enabling efficient data collection through an easy-to-use interface, automatic integration with Google Sheets, and secure, encrypted data storage. Respondents provided informed consent at the beginning of the form, explaining the study's purpose, voluntary nature, and confidentiality measures. To protect privacy, the link was distributed personally under strict confidentiality protocols, and all responses were encoded to ensure accuracy and anonymity. The researcher monitored incoming data to maintain integrity. Once collection was complete, a statistician analyzed the data using descriptive statistics. Results, presented in tables based on the statistician's guidance, will aid clarity and coherence in reporting.

Based on the identified Statement of the Problem (SOP) in Chapter I, the researcher used descriptive statistics to interpret the data collected and address the stated questions. The study aimed to describe the teachers' understanding, strategies, perceived effectiveness, and challenges in using differentiated instruction.

In the final part of the study, the researcher utilized frequency counts and percentages distribution. The frequency count identified the number of times each suggested recommendation was selected for better implementation of differentiated instruction. The percentage, on the other hand, will determine which recommendation received the highest selection rate.

Furthermore, each part will have its own verbal interpretation based on the gathered data. By using this method, the researcher gained a clearer

understanding of each aspect and provide a comprehensive conclusion for the study.

1. Assess the level of understanding of Grade 4 teachers in Ibajay West regarding the differentiated instruction in English.

Mean Scale and Interpretation

4.21-5.00 Comprehensive Understanding

3.41-4.20 Good Understanding

2.61-3.40 Moderate Understanding

1.81-2.60 Limited Understanding

1.00-1.80 Low Understanding

2. Determine the strategies used by Grade 4 teachers in implementing differentiated instruction in English.

Mean Scale and Interpretation

4.21-5.00 Uses the strategy consistently

3.41-4.20 Uses the strategy regularly

2.61-3.40 Uses the strategy occasionally

1.81-2.60 Uses the strategy infrequently

1.00-1.80 Uses the strategy

3. Examine the perceived effectiveness of Grade 4 teachers on differentiated instruction in improving students learning outcomes in English.

Mean Scale and Interpretation

4.21-5.00 Highly Effective

3.41-4.20 Effective

2.61-3.40 Moderately Effective

1.81-2.60 Slightly Effective

1.00-1.80 Not effective

4. Identify the challenges faced by Grade 4 teachers in implementing differentiated instruction in English.

Mean Scale and Interpretation

4.21-5.00 Significant Challenge

3.41-4.20 Considerable Challenge

2.61-3.40 Moderate Challenge

1.81-2.60 Minor Challenge

1.00-1.80 Not a challenge

5. Suggestions of Grade 4 teachers in enhancing the implementation of differentiated instruction in English.

	Percentage	Frequency Count
Personal and Professional Development Trainings		
Instructional Materials and Resources		
Administrative and Additional Teaching Aides/Assistants		
Collaborative planning Time and More Time in Preparing Lesson		
Small Class Sizes		
Learner Assessment Tool		

Results and Discussion

A thorough discussion and interpretation of the findings were also provided, along with references to existing studies, to ensure a comprehensive understanding of research on differentiated instruction.

Level of Understanding of Grade 4 Teachers in Ibajay West Regarding Differentiated Instruction in English Table 2. Level of Understanding of Grade 4 Teachers in Ibajay West Regarding Differentiated Instructions in English

Table 2. Level of Understanding of Grade 4 Teachers in Ibajay West Regarding Differentiated Instructions in English

Variable	Mean	Interpretation	Std. Deviation
Level of Understanding	4.40	Comprehensive understanding	0.86

Mean Scale	Interpretation
4.21-5.00	Comprehensive understanding.
3.41-4.20	Good understanding.
2.61-3.40	Moderate understanding.
1.81-2.60	Limited understanding.
1.00-1.80	Low understanding.

The table 2 shows the level of understanding among the Grade 4 teachers. The mean score for the level of understanding is 4.40, which falls within the range of 4.21-5.00, interpreted as "Comprehensive understanding." This suggests that the teachers have an in-depth understanding of differentiated instruction in English. The standard deviation of 0.86 indicates that there is some variability in the teachers' understanding, but overall, the understanding is consistently high.

In this regard, the results revealed that Grade 4 teachers in the public elementary schools of Ibajay West District, who teach English, have sufficient knowledge and a strong theoretical foundation to 29 implement differentiated instruction effectively in their respective classes. Furthermore, their comprehensive understanding about differentiated instruction significantly contribute to their ability to design and tailor suitable approaches to address the diverse needs of Grade 4 learners leading to a better learning outcome.

This finding is aligned with the study of Calabazaron-Ocampo (2023), indicated that a comprehensive understanding of differentiating instruction in terms of content, process, and product is essential for effectively addressing the diverse needs of English language learners.

This approach can be optimized through deliberate lesson planning, the use of varied assessment methods, and the integration of students' interests into instructional practices. Another study of Ismajli and Imami-Morina (2018) asserted that due to instructors' satisfactory knowledge and lack of training, differentiated instruction was not fully implemented. Ultimately, the comprehensive understanding of teachers regarding the application, recognized benefits and strategies contribute to the effective implementation of differentiated instruction.

The findings of this study are also supported by the Constructivist Learning Theory, which says that students learn best through meaningful and personalized experiences. Teachers who understand differentiated instruction (DI) well can create these experiences by adjusting what and how they teach based on students' needs. The Multiple Intelligences Theory also supports this, as it explains that learners have different strengths, like being good with words, numbers, movement, or working with others. Teachers with strong knowledge of DI can plan lessons that match these different strengths, making learning easier and more interesting. Lastly, Vygotsky's Sociocultural Theory and Zone of Proximal Development (ZPD) show that teachers help students learn more by giving the right support at the right time. Teachers who understand DI can recognize what each student can do and provide help to move them to the next level. Overall, the teachers' strong understanding of DI fits well with these theories and shows that they can respond well to their students' different learning needs.

Table 3. Strategies used by Grade 4 Teachers in Implementing Differentiated Instruction in English.

Strategies Used in Implementing Differentiated Instruction	Mean	Interpretation	Std. Deviation
I utilize group work to encourage cooperative learning and develop social skills.	4.53	Uses the strategy consistently	0.51
I use peer-assisted learning and tutoring activities to promote learners' collaboration and support.	4.53	Uses the strategy consistently	0.51
I incorporate interactive and gamified learning activities to increase student engagement and motivation.	4.47	Uses the strategy consistently	0.51
I use variety of strategies to support differentiated instruction in English.	4.47	Uses the strategy consistently	0.62
I use real-life applications and examples to help learners connect lessons to their everyday experiences.	4.47	Uses the strategy consistently	0.51
I implement personalized learning paths using technology to address individual needs and paces.	4.41	Uses the strategy consistently	0.62
I use differentiated instruction strategies in my teaching.	4.41	Uses the strategy consistently	0.62

Mean Scale	Interpretation
4.21-5.00	Uses the strategy consistently.
3.41-4.20	Uses the strategy regularly.
2.61-3.40	Uses the strategy occasionally.
1.81-2.60	Uses the strategy infrequently.
1.00-1.80	Does not use the strategy.

The table 3 shows the strategies used by Grade 4 teachers in implementing differentiated instruction in English. The results indicate that the teachers consistently use a variety of strategies to implement differentiated instruction.

The mean scores for all the strategies listed are above 4.21, which falls within the range interpreted as "Uses the strategy consistently." This suggests that the teachers are not only aware of these strategies but also apply them consistently in their teaching practices.

The highest mean scores (4.53) were observed for the use of group work to encourage cooperative learning and develop social skills, as well as peer-assisted learning and tutoring activities to promote learners' collaboration and support. This result was consistent with the findings of Cagape et al. (2023), particularly under the theme of teachers' practices in differentiated instruction. The use of strategies such as flashcards, think-pair-share, and scaffolding were identified as

differentiated activities that contributed to a deeper understanding of student needs, the enhancement of instructional approaches, and increased student engagement. Wilson et al. (2018) emphasized that collaborative group work aimed at achieving shared learning goals has been shown to enhance student achievement, boost persistence, and improve overall attitudes toward learning. This emphasized that a variety of strategies are employed in differentiated instruction to better address learners' diversity.

Other strategies with high mean scores (4.47) include incorporating interactive and gamified learning activities to increase student engagement and motivation, using a variety of strategies to support differentiated instruction, and using real-life applications and examples to help learners connect lessons to their everyday experiences. These strategies are effective in making learning more engaging and relevant for students.

The results implied that teachers use interactive and gamified learning activities because these strategies boost students' interest and increase their curiosity, ultimately leading to better learning outcomes. Similarly, using real-life examples promotes student engagement and strengthens their connection to the material, contributing to improved learning outcomes.

The findings are the same with Ismajli and Imami-Morina (2018), many schools today utilize a variety of interactive methods such as active learning, class discussions, group work, and the delivery of clear instructions. These strategies position the learner at the center of the educational process and are particularly well-received by students who prefer active learning environments. In the same way, in the study of Saguin et al. (2020) emphasized the use of contextualized real-life situations to help learners understand ideas and make learning meaningful. This highlights the importance of sustaining dynamic, incorporating game-based activities and relatable instructional materials to maintain learners' interest and foster active participation in the classroom.

The use of personalized learning paths using technology and the teachers' general use of differentiated instruction strategies both had mean scores of 4.41. This suggests that teachers are utilizing technology consistently to address pupils' individual needs and generally apply

differentiated instruction strategies in their teaching practice. In connection with this, a study of Hatmanto and Rahmawati (2023) highlighted that participant incorporated technology as a strategy to accommodate various learning styles when creating lesson plans. Evident in the study of Pasubillo, M. A. C., & Asio, J. M. R. (2023), where virtual differentiated instruction was used to continue the learning and teaching process. This highlights the role of technology in effectively delivering instructions.

These findings support the Constructivist Learning Theory, which says that learning is best through hands-on and meaningful experiences. When teachers use real-life examples, group activities, and interactive methods, they help learners understand better by doing and exploring. The Multiple Intelligences Theory also supports these strategies because they match different learning strengths like working with others, using movement, solving problems, or learning through visuals. Finally, Vygotsky's Sociocultural Theory and the Zone of Proximal Development (ZPD) highlight that learner further learn with the right help at the right time. Strategies like peer tutoring and group work give learners the support they need to reach the next level of learning. Overall, the strategies used by Grade 4 teachers match these theories, showing that their teaching is effective, student-centered, and based on proven educational practices.

Table 4. Perceived Effectiveness of Grade 4 Teachers on Differentiated Instruction in Improving Students' Learning Outcomes in English

Variable	Mean	Interpretation	Std. Deviation
Perceived Effectiveness	4.34	Highly Effective	0.96

Mean Scale	Interpretation
4.21-5.00	Highly effective.
3.41-4.20	Effective.
2.61-3.40	Moderately effective.
1.81-2.60	Slightly effective.
1.00-1.80	Not effective.

Table 4 shows the perceived effectiveness of Grade 4 teachers on differentiated instruction in improving students' learning outcomes in English.

The result of the study reveals that the mean score for perceived effectiveness is 4.34, which falls within the range of 4.21-5.00, interpreted as "Highly effective." This suggests that the teachers believe differentiated instruction significantly improves students' learning outcomes in English. The standard deviation of 0.96 indicates some variability in the responses, but overall, the perception of effectiveness is high. When teachers perceive an instructional strategy as highly effective, they are more likely to implement it consistently, which can lead to better educational outcomes for pupils.

The positive results regarding the effectiveness of differentiated instruction indicate that Grade 4 teachers value it as a tool for improving learning in English classes. The teachers' responses, interpreted as "Highly Effective," imply that professional development programs should be considered to continuously enhance teachers' knowledge and deepen their existing skills for the implementation of differentiated instruction. Moreover, the results suggest that differentiated instruction should be consistently utilized and sustained as one of the teachers' approaches to improving the learning outcomes. Based on the outcome, school administrators might also consider the institutionalizing differentiated instruction, not as optional or occasional strategy for teachers but required component of schools' curriculum framework.

The findings were in line with Magableh and Abdullah (2020) concluded that differentiated instruction positively influenced the learners overall learning outcome. Similarly, Pasira (2022) stated that differentiated instruction is a proven effective approach for meeting the diverse needs of learners. Improvements in students' attention and enthusiasm, improved time on task, enhance sense of responsibility, self-efficacy were some positive outcomes linked to the use of effective differentiated instruction. This reveals that the perceived effectiveness of differentiated instruction confirms its value and usefulness as one of the approaches employed by teachers.

In conclusion, the positive views of teachers about differentiated instruction are supported by important learning theories. Constructivist

Learning Theory says that students learn best when they are actively involved in meaningful activities. Differentiated instruction supports this by allowing teachers to plan lessons based on learners' readiness, interests, and learning styles. While Multiple Intelligences Theory adds that students have different strengths so using different teaching strategies helps meet those needs. Vygotsky's Sociocultural Theory, especially the Zone of Proximal Development (ZPD), explains that learners learn better with help and guidance. Teachers use strategies like scaffolding and peer learning to support students and help them do tasks they can't yet do alone.

To sum up, Grade 4 teachers' strong belief in the effectiveness of differentiated instruction fits well with these theories, showing that it is a useful and proven way to improve student learning in English.

Table 5. Challenges Faced by Grade 4 Teachers in Implementing Differentiated Instruction in English.

Challenges Faced in Implementing Differentiated Instruction	Mean	Interpretation	Std. Deviation
I encountered challenges when implementing differentiated instruction.	4.06	Considerable challenge	0.83
I struggle with time constraints when preparing the materials needed to implement Differentiated Instruction (DI) in my class.	3.76	Considerable challenge	0.83
I feel that I have insufficient trainings on Differentiated Instruction (DI) and lack of opportunities for professional development.	3.65	Considerable challenge	0.86
I find it challenging to assess individual needs and address the diverse needs of my students.	3.65	Considerable challenge	0.86
I lack instructional resources that are necessary for effective implementing of Differentiated Instruction (DI).	3.53	Considerable challenge	0.87
I observed that learners show resistance to new methods, which makes it difficult for me to move away from traditional teaching methods.	3.47	Considerable challenge	0.94
I am handling large class sizes, which hinders my ability to use differentiated instruction effectively in the classroom.	3.18	Moderate challenge	1.13

Mean Scale	Interpretation
4.21-5.00	Significant challenge.
3.41-4.20	Considerable challenge.
2.61-3.40	Moderate challenge.
1.81-2.60	Minor challenge.
1.00-1.80	Not a challenge.

The table 5 shows the challenges faced by Grade 4 teachers in implementing differentiated instruction in English.

The results revealed that teachers face several considerable challenges in implementing differentiated instruction. The mean scores for most of the challenges fall within the range of 3.41-4.20, interpreted as "Considerable challenge." This means that these issues significantly influence the teachers' ability to effectively implement differentiated instruction.

The highest mean score (4.06) was observed for the general challenge of implementing differentiated instruction, indicating that teachers find the overall process challenging. Time constraints (mean score of 3.76) and insufficient training and professional development opportunities (mean score of 3.65) are also considerable challenges. These factors can hinder teachers' ability to prepare and deliver differentiated instruction effectively.

This implies that preparing materials for differentiated instruction in each classes requires an ample amount of time. Given the multiple responsibilities teachers manage inside the classroom, implementing differentiated instruction often consumes time that could be otherwise used for other tasks. On the other hand, contrary to the comprehensive understanding of teachers in differentiated instruction, the result suggested that teachers struggle in insufficient training and professional development opportunities. Their existing knowledge may not be as efficient as it is hindering them to deliver an effective differentiated instruction to their lesson.

These findings are associated with Melesse (2016), which exposed teachers were lacked sufficient trainings and professional development opportunities that prevented them to practice differentiated instruction effectively. Equally, Lavania & Faizah (2020), emphasized that effective implementation of differentiated instruction requires ongoing training and professional development. Teachers' current knowledge may not be sufficient and may hinder their ability to effectively

implement differentiated instruction in their lessons. Also, time constraint emerged as one of the primary challenges raised by most teachers in this study. This also aligns with the findings of Aftab (2015), who described participants identified a lack of planning and instructional time as the main challenges they encountered implementing and designing differentiated instruction. Finally, to effectively improve learners' academics outcomes through differentiated instruction, teachers must be given enough time for lesson preparation and planning. At the same time, they should be supported through targeted training programs aligned specific skills they need to work on.

Assessing individual needs and addressing the diverse needs of students (mean score of 3.65) and the lack of instructional resources (mean score of 3.53) are additional considerable challenges. These issues suggested the need for better support and provision of resources to help teachers meet the diverse needs of their students.

This result implied that teachers face difficulties in assessing and addressing the individual needs of learners. It highlights the need for professional training focused on effective learner assessment. Additionally, appropriate assessment methods should be introduced. Furthermore, school should provide teachers with sufficient support and resources for individualized learning, ensuring they can effectively identify and respond to the diverse learner profiles within the classroom. This is similar to Jager (2016, as cited in Lavania & Faizah, 2020), found that teachers lacked the knowledge to identify students learning difficulties and to adopt the curriculum to meet their needs. Findings were also aligned with Melesse (2016), stated that the hindering factor to the implementation of differentiated instruction include shortage of material and resources, time constraint, classroom diversity, lack of parental involvement and insufficient support from school administration. In conclusion, this finding underscores the need for comprehensive support for teachers, particularly in providing adequate instructional materials and training. Such support is vital to help teachers identify and use appropriate assessment tools that address individual differences and meet the diverse needs of learners.

Learners' resistance to new methods (mean score of 3.47) and handling large class sizes (mean score of 3.18) are also notable challenges. Resistance from students can make it difficult for teachers to move away

from traditional teaching methods, while large class sizes demand efforts to manage differentiated instruction.

This shows that teachers were afraid to integrate innovative approaches and continue to hold back from using differentiated instruction with their leaners. Most likely, teachers assumed that using different approaches might cause resistance among learners rather than meeting needs or improving their learning. This relates with the study of Tharayil et al. (2018), instructors often hesitate to modify their teaching methods due to various factors, including concerns about potential student resistance to active learning strategies. Furthermore, another challenge with the lowest mean score was the large class sizes, likely because most schools in Ibajay West are small and medium schools. However, this still indicates that when class sizes are large, teachers must exert more effort in classroom management particularly when implementing differentiated instruction, as they have to address the needs of a greater number of learners. The more pupils in the class, the greater the need to implement differentiated instruction yet the more challenging it becomes to apply differentiated instruction strategies effectively. This is supported with the study of Suprayogi et al. (2017), which suggests that the larger the class size, the greater the need to implement differentiated instruction in order to effectively accommodate student diversity. Additionally, class size is a significant concern for teachers when implementing differentiated instruction. Survey data revealed that both primary schools identified large class sizes as a challenge in addressing the wide diversity of student needs, Wan (2016). This finding emphasizes that while various factors can hinder teachers from implementing differentiated instruction, providing appropriate support and addressing their specific needs and challenges can lead to positive outcomes through its effective utilization.

In summary, the reported challenges faced by Grade 4 teachers in Ibajay West directly conflict with Vygotsky's Zone of Proximal Development (ZPD) framework. Effective ZPD-based teaching requires educators to identify learners' current capabilities and provide just enough support to help them progress toward independence. However, without manageable class sizes, proper training, reliable assessment tools, sufficient materials, and ample time, it becomes nearly impossible for teachers to deliver the individualized support that ZPD demands. Similarly, learners progress through their ZPD toward deeper understanding with guidance from a knowledgeable expert. Yet,

without a clear structure, this essential interactive, scaffolded learning process breaks down, impeding their ability to move forward effectively.

Table 6. Proposed Recommendations for Enhancing the Implementation of Differentiated Instruction Based on the Perceptions and Experiences of Grade 4 Teachers in English

Proposed Recommendations	Frequency	Percentage
Instructional Materials and Resources	16	94.1
Personal and Professional Development Trainings	14	82.4
Administrative Support and Additional Teaching aides/ Assistants	13	76.5
Learner Assessment Tool	11	64.7
Collaborative Planning Time and More Time in Preparing Lesson	11	64.7
Small Class Sizes	10	58.8

The results in table 6 reveals that to enhance the implementation of differentiated instruction, several key recommendations that were identified based on the perceptions and experiences of Grade 4 teachers. The highest percentage, 94.1%, indicated a need for more instructional materials and resources to support engaging and effective instruction.

The need for more instructional materials and resources indicates that teachers should be supported by ensuring the availability of these materials. When instructional materials are easily accessible. Teachers can focus more on the teaching process, spend more time delivering lessons and ultimately achieve more effective instruction. According to Koko and Nkpolu-Oroworuko (2016), utilizing essential and varied instructional materials is one of the most effective strategies for teaching learners; however, the teacher remains the central factor in achieving successful instructional outcomes. This finding is also supported by the study of Wang et al. (2021), which reported that the majority of teachers across various subgroups preferred easily accessible materials particularly digital resources that offer learning activities or quizzes for independent student use.

A significant 82.4% of teachers emphasized the need for ongoing professional development trainings focused on differentiated instruction, which are essential for developing the necessary skills and knowledge. Existing knowledge is enhanced through continuous professional development, opening opportunities for greater utilization of various approaches other than differentiated instruction that can improve learning. This was clearly stated in the study of (Gudadur, 2023) continuous professional development plays a vital role in enhancing teacher performance, improving student outcomes, and strengthening instructional practices. By providing educators with the necessary knowledge, skills, and resources for ongoing growth, such initiatives significantly contribute to the overall quality of education and student success. However, to achieve the greatest impact, these training programs must be carefully designed, regularly assessed, and aligned with the specific needs of both teachers and their learners. Similarly, Pozas et al., (2020), emphasized that without proper training teachers are naturally limited in their ability to deliver meaningful and effective instruction. Therefore, it is essential and urgent that differentiated instruction be given adequate emphasis particularly in on-going training programs.

Additionally, 76.5% of teachers expressed the need for increased administrative support and additional teaching aides or assistants. This implied that strengthening institutional support structures is crucial for effective implementation of differentiated instruction. The adequate administrative backing and provision of additional aides for teachers lessen their workloads, help them manage a diverse classroom, allocate time for individualized instruction and improve overall instruction quality. This highlights the importance of collaborative environment, where teachers are supported with sufficient human resources enhancing the implementation of differentiated instruction. This aligns to Haycock & Smith (2011, as cited to Sharma and Salend ,2016), stressed that Teaching Assistants (TA) play a significant role in promoting student learning, teaching, and inclusion. It revealed that teachers observed a positive impact on student learning progress due to the presence of TAs. This is also evident to the study of Lang (2019), which uncovered that instructional support from school leaders significantly influences teachers' motivation to adopt challenging teaching methods, such as differentiated instructions. Ultimately, with sufficient support, teachers, can manage diverse classrooms effectively.

The use of learner assessment tools, collaborative planning time and more time for lesson preparation were recommended by 64.7% of teachers, suggesting the importance of providing time for planning and collaboration for technical assistance. This implied that teachers should be given structured time for planning, preparation of lessons and professional collaboration. This leads to effective tailoring of instruction based on the learners' needs and successful implementation of differentiated instruction. This relates to the study of Peters et al., (2021) which stated that equipping teachers with Learning Progress Assessment (LPA) tool and prepared materials to support differentiated instruction positively influences implementation outcome, such in assessment-based instruction and students' reading competence. Also, with the study of Melesse (2016) which emphasized that time is a critical factor in the successful implementation of differentiated instruction. This includes time for lesson planning and preparation, collaboration with colleagues and adequate student contact time to effectively assess and instruct learners. Additionally, consistent with Wan (2016), who stated time as a critical concern particularly the need for sufficient time to prepare materials, understand their students' individual needs and collaborate with fellow educators. The use of learner assessment tools, collaborative planning time and more time for lesson preparation highlighted that successful implementation of differentiated instruction requires careful to achieve desired learning outcomes.

Reducing class sizes was suggested by 58.8% of teachers to make differentiated instruction more manageable. The result implied that when the size of the class is small, it is feasible for teachers to handle various learners, provide more focused instruction, monitor the progress and effectively implement differentiated instruction. This result highlighted the need for structural adjustments in terms of class size to support more responsive and inclusive teaching. Moreover, this aligns with the findings of Wright et al. (2017), who described that faculty members also viewed the reduction in class size in a positive light. This is also consistent with the study of Nakamura and Dev (2022), which revealed the two-period model demonstrates that Class Size Reduction (CSR) can significantly enhance students' academic performance, particularly at the elementary level. This finding aligns with the result of previous empirical studies referenced in the research. In conclusion, class sizes reduction contributes significantly to the overall teaching and learning process of both teachers and pupils. It allows teachers to focus

on the more essential aspect of instruction, while pupils benefit from improved learning outcomes.

To sum up, all the findings underscore the need for a constructivist learning environment. Learners cannot engage deeply without hands-on materials and proper support. Professional development enables teachers to create dynamic, responsive lessons. Additional aides and smaller classes foster the collaborative, interactive settings central to constructivist classrooms. Continuous assessment and dedicated planning time ensure lessons evolve based on students' current understanding. Together, these recommendations create a classroom culture centered on active learning, collaboration, reflection, and adaptive teaching, bringing constructivist theory into practical reality

Summary of the Findings

This study investigated the perception of Grade 4 English teachers regarding their understanding, strategies, implementation, perceived effectiveness and suggested recommendations for the effective use of differentiated instruction in their respective classroom. Based on the analysis in Chapter IV, the following finding answer the research questions:

1. Level of Understanding of Grade 4 Teachers in Ibajay West Regarding Differentiated Instruction in English

Teachers have an in-depth understanding of differentiated instruction in English. They are knowledgeable about its benefit for learners, as well as the strategies used to implement it. Their level of understanding is consistently high.

2. Strategies Used in Implementing Differentiated Instruction

Grade 4 teachers in Ibajay West District consistently implement a variety of differentiated instruction strategies, with group work, peer-assisted learning, interactive and gamified learning activities being the most commonly used. Moreover, the use of real-life applications and examples were also consistently used. Although the use of personalized learning paths using technology and the teachers' confidence in regularly applying differentiated instruction strategies ranks the lowest, their consistent

application indicates a determination to address individual needs.

3. Perceived Effectiveness of Grade 4 Teachers on Differentiated Instruction

The perception of Grade 4 English Teachers toward differentiated instruction was significantly positive. They believe that it improves learning outcomes in English and leads to better educational outcomes for learners.

4. Challenges Faced by Grade 4 Teachers in Implementing Differentiated Instruction

The challenges faced by Grade 4 English Teachers in Ibajay West significantly influence their ability to effectively implement differentiated instruction. Teachers find the overall process demanding, with major challenges including time constraint, insufficient training and professional development. Likewise, assessing diverse needs of learners and along with the lack of instructional resources pose further difficulties. Learners' resistance to new methods and handling large class sizes are also notable challenges that hinder the effective implementation of differentiated instruction.

5. Proposed Recommendations for Enhancing the Implementation of Differentiated Instruction

Several key recommendations were identified based on the perception and experiences of Grade 4 English teachers in Ibajay West District. These mainly include the need for more instructional materials and resources to support engaging and effective instruction. Teachers also emphasized the need for ongoing professional development trainings focused on differentiated instruction and expressed the need for increased administrative support and additional teaching aides or assistants. Similarly, the use of learner assessment tools, collaborative planning time and more time for lesson preparation were suggested. Reducing class sizes was least recommended to make differentiated instruction more manageable.

Conclusions

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

1. The teachers as respondents showed a strong level of understanding in differentiated instruction, empowering them to implement it effectively. Furthermore, their comprehensive understanding significantly contributes to their ability to design and tailor instructional approaches that address the diverse needs of Grade 4 learners leading to a better learning outcome.

2. The overall interpretation for the strategy aspect was teachers consistently use a variety of strategies to implement differentiated instruction. This suggests that the teachers are not only knowledgeable about these strategies but also apply them consistently in their teaching practices.

3. The findings revealed that teachers believe differentiated instruction can significantly improve learners' learning outcomes in English. Teachers value it as a tool for improving learning in English classes.

4. Teachers encountered several challenges in implementing differentiated instruction. These issues can significantly influence the teachers' ability to effectively implement differentiated instruction. However, with adequate support and guidance from the school administrators, educational authorities and government, these can be overcome.

5. Based on the teachers' perceptions and experiences, several recommendations were suggested. This implies that teacher believe addressing these properly will address the implementation of differentiated instruction.

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EFFECTIVENESS OF AKLATECH: AN INTERACTIVE OFFLINE-BASED APP IN ENHANCING SENIOR HIGH SCHOOL LEARNERS' PERFORMANCE IN GENERAL MATHEMATICS

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Abstract

The widespread use of digital technology in Philippine education is limited by the unreliable connectivity found in many public schools. Lack of sufficient infrastructure posed challenges for delivering necessary online resources during blended learning. The researcher created AKLATECH, an offline interactive platform compatible with the K-12 curriculum and aimed at easing understanding of the subject of exponential functions. The goal was to measure how AKLATECH impacts student academic achievement and to determine whether it is useful and easy to use according to the learners' perspectives. Information from 38 Grade 11 HUMSS learners was gathered by conducting surveys and conducting end-user interviews. Results indicated that learners attained high scores, and many reached the maximum score on the evaluation criteria. Learners used AKLATECH sporadically and no one reported using it every day. Overall, learners used AKLATECH in short bursts of time for focused learning instead of extended or continuous study. Though only occasionally used, AKLATECH was praised for its simplicity, ability to hold learners' attention and notable improvements in learners' math learning. Results showed no clear link between how often or for how long learners used AKLATECH and their academic performance. Academic results demonstrated that AKLATECH boosts efficiency by harnessing the principles of technology acceptance, cognitive load and constructivism in its instructional design. AKLATECH maximizes it's potential when it becomes a routine part of instruction and daily learning for learners. The findings suggest the potential role of offline edtech in increasing fair opportunities for excellent math instruction in under-resourced regions.

Introduction

The technological progress of the 21st century and Industry 4.0 are interconnected, and the recent technologies are modifying every aspect of human life. Technologies and their impacts have already changed the world and social structures. In particular, the school is associated with the effects and is considered as the school to turn to and use its advantages. The growth of digital technology, especially information and communication technology (ICT), in the 21st century has threatened the old educational setting and has resulted in a new way of teaching learning process (Ince-Muslu & Erduran, 2021). The advancement of educational technology in mathematics education has become more and more popular in the last few years, this makes it an essential part of the teaching learning process to optimize learning by using the interactive approach.

Instructional technology is the collection of tools that serve educational purposes and emerges from the transformation of technologies (Commission on Instructional Technology, Washington, 1970). The adoption of technology in the classroom has stimulated the innovation in the teaching. A lot of educational technologies emerged and grew such as learning management system, open educational resources (OER), gamified learning resources, and advanced hardware and software that are designed for learning.

The Department of Education (DepEd) of the Philippines has begun to encourage the integration of ICT in the basic education system as a conflict resolution to 21st century learning. Included in this was DepEd Order No. 78, s. 2010, introducing the ICT for Basic Education (ICT4BE) framework, which created the use of ICT for not only improved pedagogy and student engagement but also for the modernization of institutional and administrative education. This policy outlines a foundational commitment in the development of learners' digital literacy and technological fluency in all learning area. On this note, DepEd Order No 18, s. 2020, issued critical guidelines in the COVID 19 pandemic through the Basic Education Continuity Plan (BECP), which enjoined that the use

of digital, as well as printed and broadcast learning resources are employed to bring educational continuity under the instances of school closure and mobility restrictions. As a paradigm shift from old traditional, teacher centered delivery to flexible, technological supported delivery these mandates are in line with (Gocotano et al., 2021) .

Furthermore, the DepEd's Digital Rise Program aimed at the implementation of ICT in education that provides for the transformation of schools into technology enabled ecosystems, through which inclusive, quality, and equitable education will be provided (*July 20, 2020 DO 018, s. 2020 – Policy Guidelines for the Provision of Learning Resources in the Implementation of the Basic Education Continuity Plan | Department of Education*, n.d.). Nevertheless, actual implementation is not consistent across regions except for infrastructural disparities, limited internet connectivity, and inadequate preparation for the teachers. As reported by Que (2021), schools in such geographically disadvantaged and poor economic situations are unable to comply with all ICT integration directives due to a lack of technological infrastructure. Moreover, Republic Act No. 10929 or the Free Internet Access in Public Places Act prods the digital inclusion in education front by requiring the accessibility of public wireless internet access at schools and learning centers. The national initiatives presented here demonstrate that there is a determination to improve the educational system, and to make learning more accessible by means of technology.

Therefore, the gap between policy and practice remains wide, especially in secondary schools where stable internet and a variety of digital tools are critical to subjects such as mathematics and science. Given these contextual realities, it underscores the need for localized, offline capable solutions that marries the national mandates particularly with the reality in the country.

Despite these mandates, local implementation remains uneven, particularly in schools with limited infrastructure. Rizal National High School, located in Baguio City, faces a significant challenge in accommodating its approximately 1,300 learners across only 20 classrooms. To address these space constraints, the school adopted a blended learning modality for learners in Grades 10 to 12, combining face-to-face instruction with online distance learning (ODL).

The school's blended learning schedule is strategically structured: Grades 10 to 12 alternate between in-person classes and ODL sessions throughout the week. While this setup maximizes classroom use and allows educational continuity, it also presents unique challenges for both teachers and learners. Many learners have trouble accessing online materials due to poor internet connectivity in their homes and the school premises. Furthermore, not all learners possess digital devices capable of handling the demands of ODL, which hampers their ability to keep up with academic requirements.

In a Basic Education Research funded by DepEd and conducted by the researcher in 2023, it was found that learners at Rizal National High School remained neutral about recommending the blended learning modality to others. This sentiment stemmed from unstable internet connectivity and limited access to suitable devices. These findings underscore the need for ICT solutions that are not internet-dependent yet still aligned with the goals of digital learning.

To address these issues, the researcher developed AKLATECH, an offline e-learning platform that delivers interactive e-modules with audio and video lectures, compatible with mobile phones and computers. AKLATECH is rooted in the competencies of the K–12 curriculum and draws from the content available in the DepEd-Baguio Learning Management System. Its development underwent rigorous validation using Division of Baguio City's official tools, and it was quality assured and approved for instructional use.

Moreover, the context of this research is further illuminated by the performance of Grade 11 learners in Exponential Functions for the 2023-2024 school year, where 70% fell under the developing category. More importantly, the content of AKLATECH specifically addresses one of the least mastered learning competencies in exponential Functions: exponential function. Based on an item analysis conducted by the researcher, this topic yielded a mean score of 43.89%, indicating a "Needs Improvement" level of proficiency among Grade 11 learners. By targeting this weak area, AKLATECH seeks not only to enhance student performance but also to support individualized, self-paced learning outside the limitations of internet connectivity.

Besides, the features of AKLATECH will foster the interactivity which will in turn, promote the learning which is based on the interactions of

the learners to help them to gain the knowledge easily and quickly. As per Al-Ta'ani & Hamadne (2023), the promotion of active learning practices leads to the learners to be the owners of their learning which in turn results in improved academic achievement.

The results of this study can be used to develop the educational methods and policies related to the incorporation of computer technology in mathematics instruction. The project will be to investigate the influence of AKLATECH innovation on student learning outcomes. This investigation might assist in the formation of the evidence-based approaches of the use of digital platforms for the improvement of mathematics education.

The suitability of this intervention is underlined by the fact that nowadays the access to technology happens to be a big problem for the learners and this directly has a negative effect on their academic achievement. AKLATECH overcomes the connection problems in the study area by using the e-modules that are offline-based. This technique is supported by the research that states that the use of offline materials that learners can study in areas with poor internet connection is beneficial for academic achievement (Singh et al., 2021). To find out whether the intervention was successful, the study will examine the test results of both AKLATECH users and non-users at the ending of the instructional time. The main goal of this application is to provide interesting lessons and activities that will give the learners the opportunity to develop analytical skills, decision-making skills, and imaginative thinking in real-world mathematical situations.

The purpose of the research is to improve school performance by using the educational technology, and at the same time, to deal with the problems in the local areas which are faced by the learners. This research is intended for the purpose of giving the detailed information about the relation between technology, connection, and educational results in math education using the relevant studies.

Methodology

This study employed a correlational research design to examine the relationship between the use of AKLATECH and the academic performance of Grade 11 learners in Exponential Functions. Specifically,

it sought to determine whether the frequency and duration of AKLATECH usage significantly influenced learners' mastery of exponential functions. Unlike experimental designs, correlational research does not involve manipulation of variables or random assignment to control and experimental groups; instead, it focuses on identifying relationships among naturally occurring variables.

The research involved 38 Grade 11 Humanities and Social Sciences (HUMSS) learners at Rizal National High School, Pacdal, Baguio City, during the second semester of the 2024–2025 academic year. The learners came from an existing class section and were not randomly assigned. All participants used AKLATECH as a supplementary learning tool in their Exponential Functions subject, focusing on the most challenging competencies identified through item analysis. These competencies include representation of real-life situations using exponential functions (M11GM-Ie-3), distinguishing among exponential functions, equations, and inequalities (M11GM-Ie-4), solving exponential equations and inequalities (M11GM-Ie-f-1), identifying domain, range, intercepts, zeroes, and asymptotes (M11GM-If-3 and M11GM-If-4), and solving related problems (M11GM-Ig-2).

To measure academic performance, the researcher used a validated teacher-made test embedded in the adapted module, which was approved and quality-assured by the Schools Division of Baguio City. A pre-test was administered prior to the use of AKLATECH, followed by a post-test after the one-month intervention period. Additionally, interviews were conducted to gather qualitative data on the frequency and duration of AKLATECH use, as well as learners' experiences and perceptions.

The research procedure followed a structured sequence: (1) administration of the pre-test, (2) one-month implementation of AKLATECH-integrated instruction, and (3) administration of the post-test. Throughout the intervention, learners accessed the platform offline, engaging with multimedia learning content that targeted their identified areas of difficulty.

Data analysis involved calculating descriptive statistics (mean, standard deviation) and conducting linear regression to determine the relationship between AKLATECH usage patterns and academic

performance. This method was selected to explore linear relationships between variables without inferring causality.

Ethical standards were rigorously followed. Informed consent was obtained from all participants and their guardians. Learners were briefed on the purpose of the study and assured of the confidentiality, anonymity, and voluntary nature of their participation. The study was conducted in accordance with ethical guidelines set by the Department of Education.

Rizal National High School aimed to reduce the complexity of its Grade 11 curriculum for the academic year 2024-2025 by concentrating on the Humanities and Social Sciences (HUMSS) academic track. So, there will be a single section for all HUMSS learners. There are 38 learners that have enrolled for the HUMSS strand at the school. These learners will be the ones who are going to be the participants for this study.

This study employed two sets of instruments to assess the efficacy of AKLATECH on test score performance in Exponential Function.

The first instrument was a validated survey that gathered data on learners' usage patterns of AKLATECH as well as their perceptions of its efficacy. The survey collected information on the duration and frequency of AKLATECH usage. Usage duration was categorized into five groups: Less than 5 minutes (very brief usage), 5–15 minutes (short usage), 16–30 minutes (moderate duration), 31–60 minutes (extended usage), and more than 60 minutes (prolonged and extensive usage). Usage frequency was categorized as follows: Rarely (less than once a week), Occasionally (approximately once a week), Regularly (multiple times a week but not daily), Frequently (daily), and Very Frequently (multiple times per day).

In addition to usage, the survey also included four components to assess the efficacy of AKLATECH. Content and Learning Support focused on the relevance, clarity, and alignment of the learning materials with the curriculum. Usability and Accessibility measured how easily learners could navigate and access the platform across various devices. Engagement and Interactivity examined how well the platform-maintained student interest and promoted active participation during learning sessions. Perceived Learning and Performance assessed the learners' own evaluation of how much they learned and how effectively AKLATECH contributed to their academic performance.

Lastly, the second instrument will be the adopted Department Order Number 8, Series of 2015, titled 'Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program.' This document delineates the grading scale and associated descriptors used for evaluating test scores: Outstanding (90-100), Very Satisfactory (85-89), Satisfactory (80-84), Fairly Satisfactory (75-79), and Did Not Meet Expectations (Below 75).

The study will commence with the necessary preparatory procedures. The researcher will initiate the process by obtaining approval and clearance from the school principal of Rizal National High School and the Schools Division Superintendent of Baguio City to conduct the study at Rizal National High School for the School Year 2024-2025. Additionally, the content of the AKLATECH app will be validated by experts, including the school Information, Communication, and Technology (ICT) coordinator, Learning Resource (LR) coordinator, as well as master and head teachers. Furthermore, permissions from parents/guardians will be secured for student participation in the study.

Following the preliminary preparations, the researcher will conduct an orientation for the respondents to familiarize them with the study objectives and procedures. The respondents will then complete validated pre-tests on exponential functions.

Subsequently, post-test administration will be conducted for both groups, accompanied by a descriptive survey in the post-test for the intervention group, focusing on the frequency and duration of AKLATECH usage. The researcher will prepare the necessary raw data for subsequent data analysis.

This study utilized a blend of descriptive and inferential statistical techniques to analyze the research data. Descriptive statistics were used to describe and convey the attributes of the research population. It is done using numerical computations, graphs, and tables to visually depict the important aspects of the data.

Inferential statistics enable the process of drawing conclusions and generating predictions about the larger population based on a smaller sample of data taken from the studied population.

The following statistical methodologies were used in the study using the JAMOVI application:

Charts (Bar and Pie). The study utilized bar and pie charts to visually represent the extent of AKLATECH usage among learners. These charts illustrated the distribution of usage duration and frequency, as well as the level of proficiency of learners in General Mathematics. This visual approach facilitated clearer interpretation and easier comparison of patterns in AKLATECH usage and student performance.

Weighted Mean. In research studies employing Likert-scale survey instruments—particularly those utilizing a five-point scale to assess perceptions, attitudes, or levels of efficacy—the weighted mean is a widely accepted and appropriate statistical tool. The justification for its use lies in both the nature of the data collected and the analytical purpose it serves.

The weighted mean is particularly valuable in evaluating the efficacy of an intervention or a program because it accounts not only for the frequency of responses but also for the assigned weight or intensity of each response category. In a five-point Likert scale (e.g., 1 = Strongly Disagree to 5 = Strongly Agree), each response reflects a degree of agreement or effectiveness. By assigning numerical values to these responses and calculating the weighted mean, researchers can synthesize the data into a single representative value that captures the collective perception of the sample (León-Mantero et al., 2020).

Spearman Rho. Spearman's Rank-Order Correlation Coefficient (Spearman's rho, denoted as ρ) is particularly appropriate for examining relationships between variables measured on an ordinal scale, such as those derived from Likert-type survey data. This non-parametric statistical technique is widely employed in educational and social science research to assess monotonic relationships between two ranked or ordinal variables (Hasiloglu & Kunduraci, 2018).

In the context of evaluating the efficacy of AKLARECH—Spearman's rho can be used to test whether there is a statistically significant association between students' perceived efficacy (measured through Likert scale items) and their academic performance or other relevant ordinal variables (e.g., frequency of platform usage, levels of engagement, or satisfaction).

Thus, Spearman's rho provides a statistically sound method for determining whether higher (or lower) levels of perceived efficacy are associated with higher (or lower) levels of performance, offering insights

into the strength and nature of these relationships without imposing restrictive assumptions on the data.

Results and Discussion

Thorough discussions were consistently provided for each problem, drawing upon relevant literature and studies to enrich the study's outcomes. The results underwent meticulous tabulation, analysis, and interpretation, utilizing suitable statistical tools.

Figure 2.1 aimed to determine the frequency of student engagement with AKLATECH; a digital learning platform intended to enhance academic performance in Exponential Functions. Survey data (N = 38) revealed that most respondents used the platform occasionally (n = 16) or rarely (n = 13). Only eight learners reported using AKLATECH regularly, while daily use was nonexistent, and only one student indicated using the platform multiple times per day.

This tendency points to a low medium use, which means that though AKLATECH is accessible for learners, it does not yet become their academic routine part. Instances of occasional and rare use point to low levels of student engagement and apparently little integration of the platform into the learners' formal curriculum or classroom routines.

The observed usage frequency can be seen through different lenses. Firstly, it can mean that AKLATECH is not considered by learners to be a primary educational tool but rather an additional or auxiliary facility. This perception may be due to a lack of advertising or incentives from educators, insufficient onboarding, or digital literacy training, lack thereof or even technological obstacles like lack of consistent internet connectivity or presence of devices within the learners' homes (Khanra, 2020).
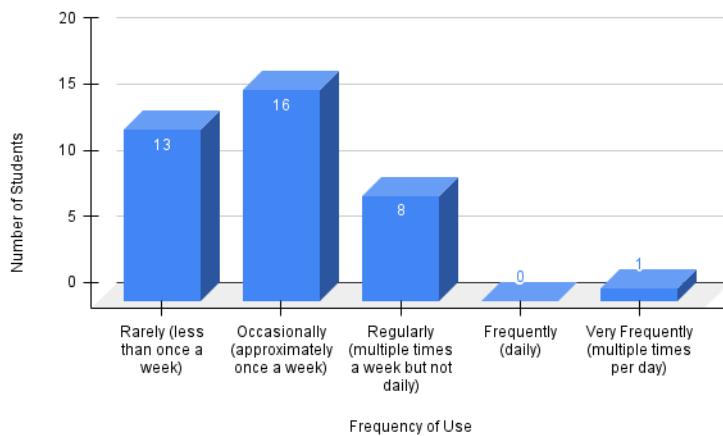
Moreover, the lack of daily users and high number of very frequent users may point to more widespread problems with the implementation of educational technology in secondary schools. These could range from lack of alignment between the content of the platform, and the immediate academic needs of the learners, and usability issues that make prolonged interaction in the content difficult (Jian, 2021).

This study brings considerable implications for educators, school administrators, and educational technology developers with respect to facilitating the implementation and continued use of the AKLATECH platform. To increase not only the efficacy but also the frequency of AKLATECH usage, there are some strategic steps suggested. First, curricular integration is imperative; to ensure the habitual use of AKLATECH and curricular alignment of the lessons, educators must be encouraged and supported in the inscription of AKLATECH in daily lesson plans and assessments. Secondly, professional development programs aimed at both teachers and learners are needed to ensure that the understanding and utilization of the tools and functions at the platform by the users is optimal and that there is improved experience and engagement for the users. Third, strategies to enhance student's motivation and engagement such as the integration of interactive and gamified features like progress monitoring, reward systems, and challenge-oriented activities are likely to promote continued interest and frequent participation (Baah et al., 2023). Fourth, infrastructure

support needs to be dealt with if one wants to ensure equal access to important digital devices and dependable internet connectivity, which are key to elimination of the gaps in the use of platforms. Finally, putting in place a strong feedback and evaluation mechanism will provide for ongoing assessment of user satisfaction, identification of challenges, and implementation of the stakeholder's suggestions to support iterative advancements and policy-level decisions regarding the AKLATECH deployment.

Additionally, higher frequency of AKLATECH engagement may be directly associated with superior learning results, which is corroborated by previous studies that show the relation between consistent adoption of educational technologies and better academic performance and retention (Quimsing & Ortega-Dela Cruz, 2024). Therefore, the regular interaction with the platform should become a key priority of its implementation strategy as a means of developing digital fluency as well as enhancing student success.

Meanwhile, the average duration of student interaction with the AKLATECH platform for individual access sessions is demonstrated on Figure 2.2. Amongst the 38 respondents the greatest portion of responders (n = 14) indicated session lengths of between 5-15 minutes, 13 learners indicated session lengths of between 16-30 minutes. The learners spent a smaller percentage of time (n = 7) less than 5 minutes on the platform; quite a few reported extended (31–60 minutes) and prolonged (more than the stipulated time) periods, which covered 2 of the sample each.
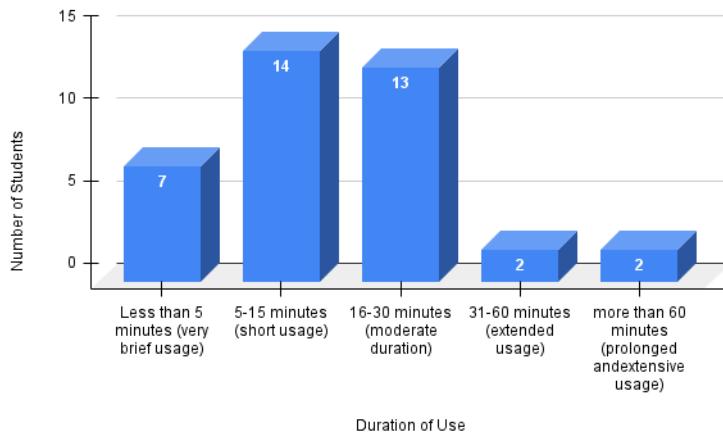
Such findings indicate that despite following a somewhat regular use pattern of AKLATECH, the level of extension and duration of engagements per session are not very high. This pattern could be evidence of the efficient use of platform features or the lack of intentional use of the functionality for extended periods of time, which may reduce the pedagogical value of the tool itself. Subsequent investigation on the nature of activities undertaken during this session will be necessary to establish whether the functionalities of the platform are being explored for further learning objectives.

The found preference for the short-to-moderate length AKLATECH usage sessions could be conditioned by several factors which are interconnected with each other. First, this pattern may refer to learners' routine of studying and short attention spans in digital studying spaces, which are known to be problematic for retaining deep attention for long (Haliti-Sylaj & Sadiku, 2024). The tendency towards short intent might also imply that the site is more used as a short reference place, for task fulfillment or for superficial interactions rather than in-depth exploration or continued consolidation of learning.

Moreover, very few student reports of extended usage can indicate possible issues with the platform itself. The absence of an enriching long-form –meaning interactive tutorials, extensive worksheets, or multimedia support– perhaps dampens the effect of stretched attention (Panda et al., 2022). Alternatively, other external constraints such as

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shared device use, the inability to have a consistent internet connection, and other academic and personal responsibilities that compete for time may further limit the amount of time learners can allocate to the platform. These findings emphasize the need for content design and accessibility to platforms to match the behavioral and contextual realities of student users in enhancing deeper and more sustained engagement.

The findings make several important implications for the implementation of educational technology and design of effective instructional strategies. To promote a longer and more meaningful engagement with AKLATECH, it is advised that the platform should put in features that are interactive and immersive such as quizzes, simulations, and game-based learning characteristics, which have been proven to increase motivation and cognitive engagement (Hossein et al., 2021). As well, designing content in modular forms, in which units incrementally come together to form coherent learning paths might stimulate continued engagement due to tangible milestones that learners can attain. The teacher-led integration is also very important; educators can request time-limited exercises or assignments or provide supported activities in the platform for progressive increase of session time and meaningful learning.

Furthermore, deployment of usage analytics to track the student behavior can allow for personalized interventions – especially for those who are always characterized by short, superficial engagement – thus enhancing more efficient study behaviors. A fair opportunity to access digital infrastructure, in school and at home settings, is still one of the preliminary needs to ensure regular, extended learning periods. Advocating for extended and concentrated use of AKLATECH is in line with the research explicating that prolonged interaction of digital learning tools correlates with academic performance and long-term retention of learning (Navarro et al., 2023; Rosita & Fatmasari, 2023). Hence, the optimization of the design of the platform, as well as the elimination of the barriers to the contextual use of AKLATECH, are necessary to achieve the potential benefits of education.

Table 1 presents the perceptions of Grade 11 learners regarding the efficacy of AKLATECH in providing content and learning support in the topic of Exponential Functions. The results indicate a generally positive perception, with an overall weighted mean of 3.902, corresponding to

the descriptive rating "Agreed." This suggests that learners perceived AKLATECH as an effective supplementary tool that supported their understanding and application of mathematical concepts.

The highest mean scores were observed in the items *"The content of AKLATECH aligned well with what was taught in class"* and *"The learning materials were accurate and up-to-date"*, both with a weighted mean of 4.026. These findings affirm the importance of instructional alignment and content validity in the development of e-learning platforms. When digital materials are synchronized with the classroom curriculum, learners are more likely to experience continuity in their learning, which can lead to better comprehension and retention.

Furthermore, the statement *"The video and audio lessons were easy to follow and understand"* (M = 3.947) indicates that the multimedia features of the platform were accessible and beneficial. This reflects the value of using audiovisual aids in mathematics instruction, especially in topics that may be abstract or complex. Similarly, the item *"I was able to apply what I learned from AKLATECH in answering my activities and tests"* (M = 3.947) highlights the platform's effectiveness in facilitating knowledge transfer to academic performance.

However, it is noteworthy that the lowest mean score was recorded for the item *"AKLATECH helped me understand exponential functions better"* (M = 3.605). Although the rating still falls within the "Agreed" category, it suggests that some learners may have struggled to achieve deep conceptual understanding through the platform alone. This may be attributed to the inherent complexity of exponential functions or to limitations in how the content was structured and presented.

Table 1

Perceived Efficacy of AKLATECH in Providing Content and Learning Support in Exponential Functions

Statement	Weighted Mean	Descriptive Equivalent	SD
1. AKLATECH helped me understand exponential functions better.	3.605	Agreed	**1.043**
2. The content of AKLATECH aligned well with what was taught in class.	4.026	Agreed	**0.953**
3. The video and audio lessons were easy to follow and understand.	3.947	Agreed	**0.928**
4. AKLATECH provided enough examples and practice exercises.	3.974	Agreed	**0.876**
5. I was able to apply what I learned from AKLATECH in answering my activities and tests.	3.947	Agreed	**0.995**
6. The concepts were broken down into manageable parts.	3.789	Agreed	**1.038**
7. The learning materials were accurate and up-to-date.	4.026	Agreed	**1.023**
Overall Weighted Mean	**3.902**	**Agreed**	

Legend: 1.00 – 1.80 – Strongly Disagreed; 1.81 – 2.60 – Disagreed;

2.61 – 3:40 – Neutral; 3.41 – 4.20 – Agreed; 4.21 – 5.00 – Strongly Agreed

Additionally, table 1 revealed the standard deviation throughout the statements and it ranges from 0.876 and 1.043, pointing to a somewhat varied pattern of responses. The lowest deviation from the mean was found in Statement 4, meaning that there was strong agreement among learners on the amount of practice provided. In contrast, participants reported the largest standard deviation in Statement 1 ("AKLATECH was useful for learning exponential functions") at 1.043. The result suggests that although most learners agreed, other learners may have reacted differently because of their backgrounds, learning strategies or the way they used the platform. The standard deviation statistics confirm that learners mostly thought positively and similarly about AKLATECH. At the same time, the variety in responses shows that it is important for learning technologies to support a range of learner needs and likes.

These results indicate that AKLATECH fulfills crucial requirements of the effective digital learning tools. Mayer's (2014) Cognitive Theory of Multimedia Learning states that instructional platforms that aim to deliver information in suitable and well-structured forms and reinforce understanding through multimedia can considerably aid learning. The consensus of the learners on all assessed items means that AKLATECH adopts such evidence-based design principles. Besides, the AKLATECH content alignment with the formal curriculum possibly contributed to the notion of the efficacy. This demonstrates the essence of curricular coherence in educational technology, which has previously been revealed to influence student trust and regular involvement (Green, 2018).

The learners' belief that they could apply their digital learning to offline assessments also reaffirms Vygotskiĭ et al., (1978) theory of transfer and application, where it is believed that condensed learning of meaning happens when learners can internalize the information, and then recontextualizing the information for use in other settings.

Some of the critical implications of the positive perception of AKLATECH as a content delivery and learning support system for the instructional practice and the future digital educational tool development are presented below. First, curricular integration remains essential; the affiliation of the platform to classroom instruction indicates a need for ensuring that digital resources are closely connected to curricular aims. Sustained partnership between developers and educators is required to sustain such alignment and foster pedagogical

coherence. Second at the instructional design level, the consistent high rating on major dimensions implies that AKLATECH is effectively utilizing established principles like clarity, and segmentation as well as scaffolding. Future versions should retain this instructional base with adaptive learning features to better respond to varied learners' needs. Third, teacher training will need to go beyond functionality to also include approaches to integrating AKLATECH into lesson and classroom planning, optimizing its instructional value.

Moreover, the recommendation of content accuracy and relevance indicates a heavy dependence on the research-based materials used for instruction. To sustain this standard, regular content auditing and revision should be institutionalized, thus establishing validity and keeping up to date with the changing academic standards. The efficacy of the platform, in its turn, indicates promising scalability prospects, especially to cover other mathematical areas or subjects where abstract, or complex ideas are present. Lastly, the adoption of mechanisms for student-centered feedback can help improve and individualize content continually to ensure the relevance and efficacy of AKLATECH in dynamic learning environments.

Table 2 presents the learners' perceptions of their engagement and interactive learning experiences with AKLATECH while studying Exponential Functions. The overall weighted mean of 3.410, interpreted as "Agreed," indicates a generally positive perception of the platform's ability to support student engagement and interactivity.

The highest-rated statement, *"The audio and video features made the learning experience more engaging"* (M = 3.816, SD = 0.947), reflects the significant role of multimedia components in maintaining student interest and involvement. This result is consistent with educational research that emphasizes the motivational impact of audio-visual learning tools, particularly in subjects like mathematics that often require visualization and explanation of abstract concepts.

The statement *"The platform encouraged me to learn at my own pace"* (M = 3.763) also received a high rating, affirming the value of self-paced learning in digital environments. AKLATECH's offline design seems to allow learners to manage their time and revisit lessons as needed, a feature further supported by the moderately rated statement *"The platform allowed me to review lessons as often as needed"* (M = 3.000).

Although this score is the lowest among the items, it still falls within the "Agreed" range, indicating that while the function was recognized, its perceived utility could be improved—perhaps by enhancing user navigation or lesson replay features.

Motivation-related items such as *"I was motivated to study more because of AKLATECH"* (M = 3.474) and *"AKLATECH made learning Exponential Functions more interesting"* (M = 3.263) suggest moderate motivational influence. These results imply that while AKLATECH contributed to engagement, it may require further enhancement in its interactivity or gamified features to stimulate higher levels of interest and motivation among learners.

Table 2

Student Engagement and Interactivity with AKLATECH in Exponential Functions Learning

Statement	WM	Descriptive Equivalent	SD
1. The audio and video features made the learning experience more engaging.	3.816	Agreed	**0.947**
2. I was motivated to study more because of AKLATECH.	3.474	Agreed	**0.987**
3. The platform encouraged me to learn at my own pace.	3.763	Agreed	**1.017**
4. AKLATECH made learning Exponential Functions more interesting.	3.263	Agreed	**1.063**
5. I felt more focused when studying using AKLATECH than using printed modules.	3.105	Agreed	**0.982**
6. The platform allowed me to review lessons as often as needed.	3.000	Agreed	**1.041**

7. I found the interactive features (e.g., self-checks or embedded questions) helpful.	3.447	Agreed	**0.967**
Overall Weighted Mean	**3.410**	**Agreed**	

Legend: 1.00 – 1.80 – Strongly Disagreed; 1.81 – 2.60 – Disagreed;

2.61 – 3:40 – Neutral; 3.41 – 4.20 – Agreed; 4.21 – 5.00 – Strongly Agreed

The statement *"I felt more focused when studying using AKLATECH than using printed modules"* (M = 3.105) scored among the lowest, pointing to the possibility that learners still find traditional print-based materials comparably effective or that AKLATECH has yet to fully optimize the digital learning environment for focus and concentration.

Finally, the usefulness of interactive components is reflected in the item *"I found the interactive features (e.g., self-checks or embedded questions) helpful"* (M = 3.447). This supports the value of embedded formative assessment tools in maintaining student attention and reinforcing understanding. The data indicate that AKLATECH supports moderate levels of engagement and interactivity in the context of learning Exponential Functions. While the platform is appreciated for its multimedia content and flexible pacing, opportunities remain for improving its motivational and interactive features to fully maximize student involvement.

The platform was also largely accepted for making learning exponential functions more exciting and offering the users a chance to go back to lessons and refresh on them again and again as a way of positioning self-regulated learning opportunities (Sawalha, 2018). Furthermore, learners agreed that interactive features including self-checks and embedded questions were useful, which emphasizes on the role of learner engagement with digital content in the learning process of comprehension and retention.

These results are consistent with the theory that the digital learning tools promote engagement when they are interactive, multimodal, and learner centered. According to Ramlatchan (2019) Multimedia Learning Theory states that the combination of verbal and visual elements enhances the

understanding and the ability of learner to dwell upon the information for longer. The multimedia approach adopted by AKLATECH conforms to such principles and seems to be working in attracting the interest of the learners.

The overwhelming consensus on non-rigid learning and content review follows constructivist theories in learning where autonomy and reflection are key to deep learning (Placet, n.d.). Also, the usefulness of interactive components conveys the message that AKLATECH is, indeed, using formative assessment tenets, which facilitate instantaneous response and student control.

However, the neutral position on focus implies possible weaknesses of digital cognitive engagement. As observed by Clemente-Suárez et al, (2024), simply having digital tools is not indication of cognitive focus. instead, it relies on the level of distraction-freeness and structure of the interface and how intuitively it is designed.

The findings lead to several important implications to the further development of the AKLATECH platform as well as its consideration as a part of classroom learning. First, making design for engagement as a major objective should be maintained; the incorporation of multimedia and interactive elements has been found to increase student motivation and interest, furthering their place as key elements in the instructional design process. Second, the native flexibility of the platform allows self-pace of learning for the educators to differentiate instructions while meeting the diverse learning needs for learners by letting them learn with their individual speed. Yet, the data also indicate the need to balance out digital and print-based modality.

To achieve more learning efficacy the user interface and content layout needs emphasizing; it needs to be continuously refined to decrease cognitive load – minimizing extraneous distractions and sustaining mental concentration. Positive reaction to the embedded self-check component means there is huge potential for developing interactive features that include gamified learning activities, adaptive questioning, and progress tracking that can deepen learner engagement and offer intrinsic motivation. Aside from that, the inclusion of learning analytics concerning behaviors including content revisits, and self-assessment use can provide teachers with actionable insight into student motivation, understanding, and improvement through time.

Table 3 presents the responses of Grade 11 learners regarding the perceived efficacy of AKLATECH in enhancing their learning and performance specifically in the topic of Exponential Functions. The overall weighted mean of 3.711, interpreted as "Agreed," reflects a favorable perception of AKLATECH's impact on learners' academic development and self-directed learning.

Among the six items, the statement *"I would recommend AKLATECH to other learners"* yielded the highest weighted mean (4.079, SD = 1.053), indicating strong student endorsement of the platform. This suggests that the learners found substantial value in their learning experience and were satisfied enough to recommend its use to peers—an indicator of both perceived usefulness and user satisfaction.

Statements such as *"I was able to complete all learning tasks through AKLATECH without needing extra help"* (M = 3.684) and *"I was able to answer more confidently in class after using AKLATECH"* (M = 3.658) demonstrate the platform's contribution to building student autonomy and classroom confidence. These findings highlight how AKLATECH not only supports learning outside the classroom but also enhances performance in formal learning settings.

Table 3

Perceived Efficacy of AKLATECH on Student Learning and Performance in Exponential Functions

Statement	WM	Descriptive Equivalent	SD
1. Using AKLATECH helped me improve my scores in Exponential Functions.	3.632	Agreed	**1.040**
2. I was able to answer more confidently in class after using AKLATECH.	3.658	Agreed	**0.953**
3. I believe AKLATECH helped me master difficult concepts like exponential equations.	3.632	Agreed	**0.896**

4. I was able to complete all learning tasks through AKLATECH without needing extra help.	3.684	Agreed	**1.006**
5. AKLATECH helped me become more independent in learning math.	3.579	Agreed	**0.924**
6. I would recommend AKLATECH to other learners.	4.079	Agreed	**1.053**
Overall Weighted Mean	**3.711**	**Agreed**	

Legend: 1.00 – 1.80 – Strongly Disagreed; 1.81 – 2.60 – Disagreed;

2.61 – 3:40 – Neutral; 3.41 – 4.20 – Agreed; 4.21 – 5.00 – Strongly Agreed

The responses also indicate moderate agreement that AKLATECH improved learners' performance (*"Using AKLATECH helped me improve my scores in Exponential Functions"* and *"AKLATECH helped me master difficult concepts like exponential equations,"* both with M = 3.632). These results suggest that the platform was instrumental in reinforcing content mastery, particularly in challenging areas such as exponential equations—traditionally considered complex due to their abstract nature and algebraic manipulation.

The statement *"AKLATECH helped me become more independent in learning math"* received a slightly lower mean (3.579), though still within the "Agreed" range. This reflects a modest but positive impact on fostering independent learning skills, a key competency in modern educational paradigms that value student-centered approaches and lifelong learning.

Meanwhile, the standard deviation values presented in Table 3 reflect the degree of consistency in learners' perceptions of AKLATECH's impact on their learning and performance in exponential functions. With SD values ranging from 0.896 to 1.053, the data reveals a moderate level of variability across responses. Statement 3 *("I believe AKLATECH helped me master difficult concepts like exponential equations")*

registered the lowest variability (SD = 0.896), indicating that most learners shared a similar level of agreement on this point. On the other hand, the highest standard deviation was observed in Statement 6 ("I would recommend AKLATECH to other learners") at 1.053, suggesting that learners held more diverse opinions on endorsing the platform to peers. Additionally, these findings suggest that while the general sentiment was positive, the extent of AKLATECH's effectiveness varied among learners, likely due to differences in learning preferences, engagement levels, or prior knowledge.

The consistently positive ratings agreed with educational theories that associate integration of technology with better learner outcomes. As determined by Bandura (1985) Social Cognitive Theory, self-efficacy and learning success share strong relationship. when learners believe a tool can help them to succeed, their motivation and engagement rise. The mechanism is reflected in the learners' perception that AKLATECH helped their performance and understanding.

Moreover, the capacity to learn on one's own and work without any external assistance would support Knowles' (1984) Theory of Andragogy where the learner is autonomous and self-directed. Even at the high school level, AKLATECH seems to embrace such principles, which is essential in the process of changing learners' behaviors to those of lifelong learning.

The influence of the platform on mastery of the challenging subjects additionally reflects its conformity to the principles of constructivist practices in that it involves scaffolding and differentiated pace. Technologies that give learners the opportunity to review topics and work interactively to apply their learning has been found to help retain and understand mathematics (Ersozlu, 2024).

The findings identify several major implications for the practice of instruction, curriculum design, and proper use of educational technology. The data show a significantly favorable view to personalized learning, validating the usefulness of AKLATECH as an instrument for differentiated instruction. Its ability to let the learners revise, learn, and master content at their own pace is in keeping with modern pedagogical practices that promote autonomy of learners and individual assistance. Further, the purported increase in class participation and the academic self-efficacy implies that the platform not only enhances learners'

comprehension of content but also strengthens confidence in learners – an important aspect of enduring engagement and performance in mathematics.
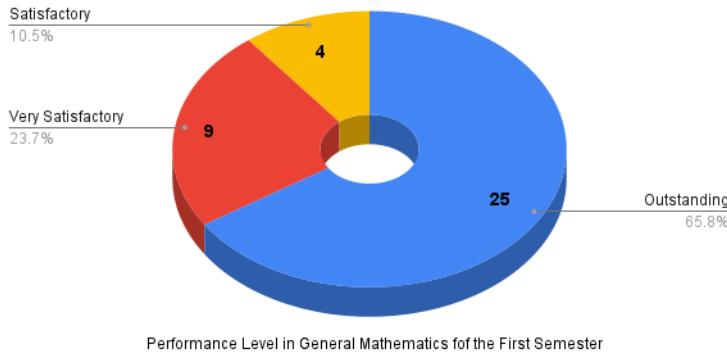
The role of the platform in assisting learners with accomplishing learning tasks and learning complex topics emphasizes its ability to be integrated into curricula, in instructional design and in assignment homework, in particular. Furthermore, the interest of learners to recommend AKLATECH to other learners indicates positive social validation that would be useful to capitalize on student driven training efforts or peer generated feedback systems reinforcing adoption through peer influence. However, the expansion of learning analytics should also be considered, so that educators and administrators are able to track student engagement and correlate self-reported gains in learning with objective measures. With continuity and scalability as the priority, future development of the platform should, therefore, bring the focus on retention of the most critical strengths, such as the cancel of instruction, interactive exercises, and opportunities of self-paced learning.

As shown in Figure 3, General Mathematics for the first semester resulted in high achievement rates among the participants. The number of "Outstanding" learners was highest, with 25, while 9 learners were rated "Very Satisfactory" and 4 learners were rated "Satisfactory." Also important to note, there were no learners who received either a "Fairly Satisfactory" or "Did Not Meet Expectations" rating.

The pattern of the results shows that most learners achieved results that were above-average to excellent. Because there are no low-performing learners, it seems the classroom is being taught properly, the curriculum fits well, and AKLATECH is being used successfully.

Learners in the outstanding group could have performed better due to their motivation, helpful support, or enhanced teaching styles, especially if they used AKLATECH as an additional or main instructional tool. This can be seen as a sign that the overall atmosphere in the classroom or school encourages learning. According to Conley (2020) ensuring learners know what they are learning, get feedback, and have plenty of time to practice helps most learners achieve a deep grasp of concepts. If the learning environment allowed teachers to differentiate and remediate, the current distribution of performance adds further

evidence   to   the   theory.

Satisfactory
10.5%

Very Satisfactory
23.7%

4

9

25

Outstanding
65.8%

Performance Level in General Mathematics fof the First Semester

The data may also reflect the benefits of blended learning approaches, where digital tools like AKLATECH are used to reinforce in-class instruction. As supported by Cao (2023), blended learning environments tend to produce moderate to large improvements in learning outcomes when well-implemented. The achievement levels here suggest that learners likely received sufficient instructional support, meaningful practice, and access to content outside the classroom. The distribution of student performance, with a majority classified under the "Outstanding" and "Very Satisfactory" categories, underscores the efficacy of current pedagogical strategies employed in the General Mathematics program. This suggests that teachers may be implementing effective formative assessments, scaffolding techniques, and instructional interventions that facilitate comprehension and prevent academic failure. Such results align with research emphasizing the value of continuous feedback and differentiated instruction in promoting learner success (Saralar-Aras, 2023).

Given the favorable performance outcomes, it is imperative for school administrators and instructional leaders to maintain these standards through consistent monitoring, pedagogical innovation, and teacher professional development. Sustained academic excellence depends not only on effective teaching practices but also on institutional commitment to continuous improvement and reflective practice.

Although no learners were categorized as "Fairly Satisfactory" or "Did Not Meet Expectations," it remains essential to address the learning needs of those who achieved only "Satisfactory" or "Very Satisfactory" ratings. Targeted interventions, enrichment activities, and differentiated instruction should be employed to assist these learners in reaching their full academic potential, in accordance with the principles of inclusive and equitable education (Molina Roldán et al., 2021).

The overall positive student outcomes can serve as a basis for informed decision-making in educational policy. These findings support the continued investment in technology-enhanced learning tools such as AKLATECH, as well as the refinement of curriculum content and assessment systems. Furthermore, the data may inform strategic planning related to teacher training, resource allocation, and the scaling of innovative educational technologies across disciplines.

Meanwhile, the correlation matrix presented in Table 4 illustrates the strength and direction of the relationships among three variables: frequency, duration, and perceived efficacy of a specific intervention or behavior, based on a sample of 38 participants. The results are based on Spearman's rho, which is appropriate for ordinal data or when assumptions of normality are not met (Schober & Schwarte, 2018)

A moderate, positive, and statistically significant correlation was found between frequency and duration (ρ = .594, $p < .001$), suggesting that as the frequency of the behavior increases, the duration also tends to increase. This finding is consistent with behavioral theory, which posits that repetition of a behavior over time leads to its habitual integration (Schober & Schwarte, 2018). This correlation may reflect the reinforcement mechanism where sustained engagement increases the likelihood of continued participation.

The relationship between frequency and perceived efficacy was positive but not statistically significant (ρ = .318, p = .051). While close to the conventional alpha level of .05, this suggests a trend where more frequent participation is associated with greater perceived benefits, but not strongly enough to establish a significant association. This near significance implies that frequency may play a role in shaping perceptions of efficacy, potentially aligning with the self-perception theory (Feneberg et al., 2020), where individuals infer attitudes and effectiveness based on their behavior patterns. However, the marginal

result calls for caution in interpretation and suggests the need for further investigation with larger samples.

Table 4

Relationship of AKLATECH Usage and the Perceived Efficacy of AKLATECH

Variable	Frequency Usage	Duration Usage	Perceived Efficacy
Frequency Usage	____		
Duration Usage	0.594***	____	
Perceived Efficacy	0.318	0.318	____

Note. Spearman's rho correlations are shown: *p < .05; p** < .01; p*** < .001.

Like with frequency, the link between duration and perceived effect was positive but not significant (ρ = .318, p = .052). The results suggest that merely seeing the same educational technology for longer does not assure a higher opinion of its effectiveness, although the evidence points to this idea from exposure theory (Rosita & Fatmasari, 2023). This might be because there were too few subjects or because participants didn't agree on how effective it was.

The results include both theoretical and practical implications. The strong relation between frequency and duration shown in theory suggests that repeating a behavior often leads to longer participation. This suggests once more that if a behavior is repeated, it can make it easier for learners to keep doing it. Any strategy meant to encourage lasting engagement should focus on both starting new behaviors and getting learners to take part regularly to turn these habits into real routines.

The fact that both frequency and perceived effectiveness, along with duration and perceived effectiveness, do not affect overall consequences but still have a weak positive association, suggests how behavioral exposure may play a role in perceived outcomes. Even though the results

were not statistically significant, the moderate connections suggest some ways that engagement could help learners find more benefit in our classes. As a result, making participation more common and prolonged may encourage learners to feel the program helps them which is important for keeping them involved and encouraging lasting behavior changes (Haliti-Sylaj & Sadiku, 2024).

In addition, the results suggest that behavior-based interventions must be personalized for everyone. Because learners view their own ability in different ways, designers ought to combine qualitative surveys with numbers to learn what causes such differences.

Table 5 presents a Spearman's rank-order correlation matrix examining the relationships between frequency of AKLATECH usage, duration of usage, and academic performance (grades) among Grade 11 Humanities and Social Sciences (HumSS) learners. This analysis provides a nuanced understanding of how behavioral engagement with educational technology relates to student outcomes.

Table 5

Relationship of AKLATECH Usage and the Academic Performance of Grade 11 HumSS Learners

Variable	Frequency Usage	Duration Usage	Academic Performance
Frequency Usage	____		
Duration Usage	0.594***	____	
Academic Performance	0.53	0.322*	____

*Note. Spearman's rho correlations are shown: *p < .05; p** < .01; p*** < .001.*

 Moreover, there was a weak and non-significant relationship between how often AKLATECH was access and learners' academic performance (ρ = .053, p = .750). It means that being active on the platform more times won't automatically lead to better academic results. These results

fit with the advice provided by (Environnlental et al., n.d.), stating that relying on technology alone is not enough and focusing on designing digital lessons is more important. Basically, just logging in does not seem to help learners achieve positive learning outcomes.

Conversely, the analysis shows a weak to moderate, significant positive correlation between how long the device is used and a learner's performance at school (ρ = .322, p = .048). It suggests that students who spent more time using AKLATECH generally had higher academic achievement. This also follows Cognitive Load Theory (Sweller et al., 1998) which claims that continuing to use your mind in-depth leads to improved results. The work of Ryan & Deci (2020), based on Self-Determination Theory, demonstrates that how long a task takes can prove how much students care about what they are doing and strive to learn which are important factors for academic achievement. If students willingly allocate time to educational resources, it tends to mean they are capable and able to manage their learning, both qualities linked to a student's success.

Moreover, findings show that the significance of duration is greater than that of frequency, so amount of time spent doing something seems to play a bigger role in learning. This idea is supported by constructivist learning theory which believes that learners gain knowledge through getting involved with content rather than reading about it (Bruner, 1985). Because of this, AKLATECH ought to be both user-friendly and set up to promote dedicated and results-oriented use.

Besides, longer use of the technology doesn't always lead to a huge change in grades. This result suggests that factors such as content quality, how digitally literate students are and the connection between platform tasks and curriculum goals may be involved. There is a need to go beyond counting users and try to understand their behavior on the platform. This agrees with Irani & Denaro (2020), who observed that how much students participate in discussion online is more important to their outcomes than simply having access to online courses.

These research results lead to various consequences. At the beginning, schools should ensure that AKLATECH is used intentionally by involving it in commonly used learning tasks such as checking for understanding, joint projects and personal reflection. Such an established integration would make learners become engaged users, not

just learners who log in often. It is important for teachers to give clear direction and proper help, as without it, students may not make the most out of platform-based learning in settings where controlling and supervising one's own learning happens less.

To further improve learning, it is proposed that AKLATECH and similar systems introduce learning analytics dashboards focused on how long students work on tasks, how many times they answer quizzes and how they interact with review materials. It would allow educators to pinpoint how students are involved and provide the right learning interventions.

The analysis reveals useful details about digital engagement and academic results. Frequency and duration go together, but only the duration is a strong predictor of academic performance. The evidence proves that how long someone stays on a platform is a better sign of good learning results, rather than just how much time they spend on it. For this reason, strategies for educational technology should change from boosting access to supporting meaningful engagement with tools, matching what works best in teaching and maximizing the value of AKLATECH.

Lastly, table 6 presents the Spearman's rank-order correlation between students' perceived efficacy in using AKLATECH and their academic performance in Grade 11 Humanities and Social Sciences (HumSS). The results reveal a very weak, positive, and statistically non-significant correlation between perceived efficacy and grades (ρ = .071, p = .674). This indicates that there is no meaningful relationship between how effective students feel the AKLATECH platform is and their actual academic performance.

It may not at first seem obvious, since self-efficacy is commonly thought to strongly influence academic success. According to Bandura (1985), when students have self-efficacy—thinking they can do tasks that matter for learning—it can increase their motivation, help them keep learning and produce good results. Research by Navarro et al., (2023), as well as by Ejdys (2021), shows that students with more confidence in their ability to do well in school participate more in learning and tend to perform better academically.

Even so, the way learners believe in their abilities with AKLATECH might be unrelated to their general academic self-confidence. It's feasible that some students feel capable of managing the platform,

however their grades do not improve. It indicates that students' satisfaction and confidence with new technological tools are not a good indicator of their school achievements.

The lack of a strong connection between technology use and learning outcomes may show that perceived efficacy is not the factor guiding the link. Instead, studying how much time students are working and how well they are participating may be more helpful. Davis (1989) claimed that media technology is not the focus when learning, but the importance of their usefulness depends on the way information is provided and used.

The results demonstrate the importance to connect technology use with the design and main goals of education. It points out that just making students more comfortable or better at AKLATECH may not result in better academic performance. For this reason, educators and instructional designers must make sure tasks are supported and focused on helping students develop and use new skills. Gould et al., (2022) suggests in his cognitive theory of multimedia learning that technology should back up activities such as choosing, organizing and blending information which have a clear impact on learning performance.

Table 6

Relationship of Perceived Efficacy of AKLATECH and the Academic Performance of Grade 11 HumSS Learners

Variable	Perceived Efficacy	Academic Performance
Perceived Efficacy	____	
Academic Performance	0.53	0.322*

*Note. Spearman's rho correlations are shown: $*p < .05; p** < .01; p*** < .001$.*

As a result, this finding can be used to guide teacher training and improve how the system is organized. Teachers should receive training both to encourage use of the learning platform and to help increase student involvement in their online lessons. Just like AKLATECH, platforms should embrace performance feedback, so that students can track their progress on learning tasks.

Additionally, this study invites future research to explore possible moderating or mediating variables, such as prior academic ability, learning strategies, or digital literacy levels. These factors could better explain the gap between perceived confidence in technology use and actual academic outcomes. Mixed-method studies that incorporate both quantitative and qualitative data may also shed light on students' actual experiences and learning processes while using educational technologies.

While perceived efficacy with AKLATECH was expected to influence academic performance positively, the data do not support this hypothesis in the current study. The negligible and statistically non-significant correlation suggests that perception alone does not drive academic success. This emphasizes the critical need to focus on substantive learning behaviors and instructional integration of technology rather than merely on digital confidence. As such, educational interventions should prioritize engagement quality and instructional alignment over reliance on student perceptions alone.

Summary of Findings

1. The study showed that most learners went on AKLATECH only sometimes (42.1%) or just very rarely (34.2%). Only a small group said they use Ruby regularly (at 21.1%), and none of the learners said they check the site every day. Session durations were mostly short, as 71% of learners said they spent somewhere between 5 and 30 minutes on a session. Very few learners spent more than half an hour looking at the platform. These findings show that learners did not use the app too much and it didn't become part of their regular study routine.

2. The study found that Grade 11 learners generally had positive perceptions of AKLATECH as an offline digital learning platform for Exponential Functions. Learners agreed that the platform provided relevant content, supported self-paced learning, and helped improve their understanding and academic performance. While engagement and interactivity were rated moderately, features like audio-visual materials and self-check assessments were appreciated. The findings suggest that AKLATECH is an effective supplementary tool, though further improvements in interactivity and user experience are recommended.

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3. The results of the first semester in General Mathematics indicate that the respondents achieved a high level of academic performance. The majority of learners were seen as either "Outstanding" (n = 25) or "Very Satisfactory" (n = 9), leaving only four under the "Satisfactory" group. It should be noted that none of the learners evaluated were recorded as doing either 'Fairly Satisfactory' or 'Did Not Meet Expectations'. From this pattern, we see that learners work in an effective learning environment, with well-structured courses, plenty of learner support, and likely the useful application of AKLATECH. According to Bloom's Mastery Learning Theory, making sure learning is guided and well-structured increases the chances of learners doing well in school.

4. The study explored how frequency and duration of AKLATECH usage, along with perceived efficacy, relate to academic performance among Grade 11 HumSS learners. A significant, moderate correlation was found between frequency and duration of usage, while duration showed a weak but significant correlation with academic performance. However, frequency and perceived efficacy did not significantly predict academic outcomes. Additionally, students' perceived efficacy of AKLATECH showed no meaningful correlation with their grades.

Conclusions

From the findings of the study, conclusions were drawn:

1. AKLATECH remains underutilized among learners, with most engaging only occasionally and for brief periods. The data suggest that the platform is not yet fully integrated into daily academic routines and may not be perceived as essential to learners' learning processes.

2. The findings suggest that AKLATECH is a generally effective and well-received digital learning platform for teaching Exponential Functions among Grade 11 learners. It aligns with classroom content, supports self-paced and interactive learning, and positively impacts students' performance and autonomy. However, there is room for improvement in its capacity to

deepen conceptual understanding and enhance motivational engagement, especially through improved content structure and interactive design.

3. The findings of this study affirm that learners enrolled in the General Mathematics program achieved commendable performance levels, with a clear majority demonstrating proficiency and excellence. This outcome implies the successful implementation of pedagogical strategies, effective formative assessment practices, and possibly the beneficial use of digital learning platforms such as AKLATECH. Moreover, the absence of underperforming learners indicates that academic support systems are in place to mitigate learning gaps. The results support the theoretical and empirical literature asserting that technology-enhanced and differentiated instruction contribute positively to academic achievement, particularly in complex subjects like mathematics.

4. While increased time spent using AKLATECH appears to have a modest positive effect on academic performance, frequency of use and perceived efficacy alone do not significantly influence learning outcomes. This suggests that quality and depth of engagement, rather than surface-level interaction or confidence in the tool, are more critical to academic success.

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SHARPENING YOUNG MINDS: A QUANTITATIVE EXPLORATION OF CRITICAL THINKING SKILLS AMONG GRADE 9 STUDENTS AS THE BASIS FOR A CLASSROOM-BASED INTERVENTION PROGRAM

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Abstract

This quantitative study explored the critical thinking skills of Grade 9 students at Parada National High School during the School Year 2024–2025. It assessed six key dimensions of critical thinking: (1) Gathering Information and Supporting Position, (2) Planning and Organizing Information, (3) Openness to Different Ideas, (4) Goal Setting, (5) Making Connections, and (6) Analyzing. The study aimed to determine whether students' critical thinking skills significantly differ based on gender and whether there is a significant relationship between these skills and their academic performance in English. Using a descriptive-correlational-developmental research design, the study surveyed students' demographic profiles, evaluated their critical thinking competencies, and examined statistical correlations and differences.

Findings revealed that the respondents were equally distributed by gender, with generally outstanding academic performance in English. Students were classified as "Skilled" in overall critical thinking, with "Openness to Different Ideas" scoring highest. No significant gender-based differences were found in critical thinking levels. However, a weak but statistically significant correlation was observed between critical thinking skills and academic performance in English. Based on these results, the study offers recommendations for enriching classroom instruction, including the development of a targeted intervention plan to further enhance critical thinking competencies.

Keywords: *critical thinking skills, academic performance, Grade 9 students, gender differences, intervention plan, English performance, higher-order thinking skills*

Introduction

As society continues to evolve in a technology-driven world, individuals are expected to possess functional knowledge and skills essential for daily living. Recognizing this, the Department of Education (DepEd) prioritizes improving the quality of education delivery to equip students with vital competencies. Critical Thinking is one of the most pivotal 21st-century skills students must acquire and master.

However, various studies have reported that Filipino students have poor critical thinking skills. According to Chi (2024), Filipino students got an average of 14 points in the 2022 Programme for International Student Assessment (PISA) creative thinking assessment, ranking the Philippines in the bottom four of 64 participating countries. This score is much lower than the Organization for Economic Cooperation and Development (OECD) average of 33 points, highlighting the need for improved critical thinking instruction in Filipino schools. Furthermore, Lansangan and Orleans (2024) averred that Filipino students often show openness to different ideas but struggle with planning and organizing information, suggesting a need for curricular improvements to strengthen critical thinking competencies. Significantly, meaningful learning demands that students develop skills in selecting appropriate information, evaluating its reliability, and making sound decisions. This observation is congruent with Marquez (2017), which stressed that critical thinking can be developed when the students are able to ask questions, examine possibilities, and undertake reflective discussions. Unfortunately, the most common didactic pedagogical practice in the Philippines precludes possibilities of such reflective practice in the classroom. Marquez further underscored that critical thinking is best cultivated when the students are provoked to rethink, explicate, and substantiate their beliefs, and eventually improve on their capacity for making informed judgments.

Filling these gaps calls for the execution of a well-designed intervention plan. Hawthorne (2023) asserts that interventions are specially designed teaching strategies that depart from regular procedures to deal with certain learning problems. Moreover, interventions may be provided one-on-one or in groups and are specifically tailored to suit the individual needs of students. This is consistent with Simonovic et al. (2023), who highlighted that the growth of critical thinking capacity is essential for post-secondary education and a prerequisite for

employability. Through introducing such interventions at an early stage, students are able to develop critical skills prior to progressing to higher levels of study. Research has proven such interventions to work within different learning environments. Marashi et al. (2024) demonstrated that educational interventions via mobile apps significantly enhanced adolescent oral health behaviors. Likewise, Orok et al. (2025) discovered that focused interventions significantly increased healthcare students' knowledge of antimicrobial resistance. In English language learning, Mujiono et al. (2023) identified the effectiveness of project-based learning in enhancing English proficiency. Also, Bai, Wang, and Zhou (2021) found that self-regulated learning strategies through e-learning improved students' writing highly significantly. Together, these studies affirm the importance of high-quality intervention plans in responding to a broad variety of educational needs.

Interventions must be dynamic and evolving to meet the changing needs of learners. In particular, strategies that actively engage students in real-world scenarios effectively promote critical Thinking. According to Marquez (2017), engaging students in problem-solving activities that require active inquiry, reflection, and evaluation can significantly improve their reasoning abilities. As Filipino students struggle with these skills, integrating innovative teaching strategies into interventions is crucial. Project-based learning, debate forums, and peer-led discussions have been proven to enhance students' engagement and improve their decision-making abilities, making them practical approaches for intervention plans.

When designing effective intervention plans, it is essential to consider factors such as gender and academic performance. These elements play a significant role in shaping students' learning experiences and outcomes. Research underscores the importance of incorporating gender-sensitive strategies to optimize learning interventions. Lesperance et al. (2022) found that motivational and affective interventions in subjects like math and science had a greater impact on female students. This finding highlights the need for strategies that build confidence and foster participation among female learners, particularly in traditionally male-dominated fields such as math and science.

Gender dynamics also influence how students interact in group settings. Feng et al. (2023) explored this aspect and found that female students excelled in listening, communication, and integrating information

during group discussions. Additionally, same-gender groups showed stronger engagement, with all-male groups demonstrating lower post-class performance. These insights highlight the value of forming balanced groups or implementing tailored strategies that promote collaboration across genders. Mixed-gender groupings, for instance, can improve male students' engagement while encouraging female students to take on leadership roles. In the Philippine context, Gustafson (2018) examined a local educational program and observed that while women generally excelled in school, they tended to earn lower wages in the labor market. This finding emphasizes the need for interventions that not only enhance academic performance but also equip students with transferable skills like leadership, problem-solving, and effective communication to better prepare them for future employment challenges.

Recognizing the connection between gender and academic performance further underscores the value of differentiated learning approaches in intervention planning. Male students may benefit more from hands-on activities, kinesthetic learning methods, or interactive lessons that boost engagement. On the other hand, female students often thrive in reflective learning environments that emphasize discussions, writing tasks, and collaborative work. By considering these preferences, intervention programs can create more equitable and effective learning experiences for all students.

Given the identified gaps in Filipino students' critical thinking skills and the role of gender and academic performance, developing an effective intervention plan is necessary. Such a plan should incorporate meaningful activities, age-appropriate materials, and strategies that foster reflective Thinking. By addressing the diverse needs of students, students can create an inclusive environment that supports the growth of critical thinking skills among Grade 9 learners. Furthermore, intervention strategies should be flexible, adaptable to different learning styles, and sensitive to gender differences to maximize their impact. The findings of this study will provide valuable insights for designing interventions that promote academic success and equip students with skills vital for their future endeavors.

Methodology

The researcher has chosen to employ a quantitative research approach to explore the critical thinking skills of Grade 9 students. Wilson, 2019 explained that it is concerned with the planning, designing, and implementing strategies to collect and analyze data. This method is appropriate as it allows for collecting and analyzing numerical data, essential in assessing the students' critical thinking abilities. Using this approach, the researcher aims to gather objective information to effectively measure and evaluate the student's skills. The findings from this data will provide a significant baseline for developing a classroom-based intervention plan tailored to enhance students' critical thinking competencies.

The study will examine critical thinking skills among Grade 9 students by considering factors such as gender differences and academic performance. Investigating these factors will help identify potential patterns or disparities in students' critical thinking abilities. By grouping students based on gender, the researcher can assess whether there are notable differences in their critical thinking skills. Additionally, exploring the relationship between critical thinking skills and academic performance will offer insights into how these cognitive abilities influence overall learning outcomes. This comprehensive analysis provides valuable information that can guide educators in designing targeted strategies to improve student performance.

To achieve these objectives, the researcher will use a descriptive-correlational-developmental research design. According to Creswell (2014), descriptive research involves studying and describing a population's characteristics using surveys, interviews, or observations. This study will cover gender, academic performance, and critical thinking skills. Also, Creswell (2014) defines correlational research as a non-experimental method that examines relationships between variables without manipulation. This study will explore the link between academic performance and critical thinking skills. As Creswell (2014) defined, developmental research investigates changes over time using cross-sectional and longitudinal studies. This design will guide the researcher in developing an intervention plan as the study's output.

This design is appropriate as it combines three key elements: describing the current state of students' critical thinking skills, examining the correlation between variables such as gender and academic performance, and identifying developmental trends that may emerge throughout the study. By integrating these approaches, the researcher can better understand the factors influencing Grade 9 students' critical thinking skills and develop effective interventions to address identified gaps or weaknesses.

The study will be conducted at Parada National High School in Parada, Santa Maria, Bulacan. This school is one of the national high schools in the Santa Maria East District under the Schools Division Office of Bulacan. The study will take place during the School Year 2024-2025. Parada National High School was selected as the research setting due to its sufficient number of potential respondents. According to Creswell (2014), a single setting can be appropriate for research, particularly in cases where the target population is well-defined, accessible, and aligns with the study's objectives. A single-site study is often suitable when the researcher aims to investigate a particular group or context in-depth, ensuring rich data collection and manageable logistics.

The school has 20 Grade 9 sections, each comprising approximately 38 to 45 students, providing an ample population for assessing students' critical thinking skills. The researcher aims to gather data from a representative sample of students within the school to ensure the findings accurately reflect the target population. By focusing on this particular group, the study can provide contextually relevant insights into the school's educational environment, thereby guiding effective intervention strategies tailored to the student's needs.

The study's respondents will be the Grade 9 students at Parada National High School. These students have been chosen as the target population because the primary variable of the study — critical thinking skills — is expected to be developed and refined at this educational level. Grade 9 is considered a crucial stage for mastering higher-order thinking skills, making these students suitable participants for the research.

Section	Male	Female	Total
9- Garnet	18	12	30
9- Opal	13	10	23
9- Rhodonite	15	16	31
9- Sapphire	14	16	30
9- Onyx	16	18	34
9- Morganite	13	17	30
TOTAL	89	89	178

Table 1. Respondents

To select the respondents, the researcher will employ a convenience sampling technique, targeting the four sections the researcher handles, which comprise 89 male and 89 female students. According to Creswell (2014), for medium populations (100–500), a sample of 30–50% is often recommended. This means that 178 students are a sufficient number to answer the survey form.

According to Jawad Golzar et al. (2022), Convenience sampling is a non-probability sampling technique where participants are selected based on their accessibility and proximity to the researcher. This method is often employed due to its cost-effectiveness and simplicity, making it a popular choice in various research fields. This method was chosen to facilitate efficient data collection, as the researcher will involve the five English classes she currently handles. This approach not only ensures accessibility to the respondents but also allows the researcher to leverage existing records on students' gender and academic performance. By utilizing this data, the researcher can effectively analyze potential correlations and patterns related to critical thinking skills. Moreover, this sampling technique will help streamline the data-gathering process, ensuring timely and organized collection.

The researcher will adapt and modify a survey questionnaire developed by Mincemoyer et al. (2001) and Wade et al. (2015) to assess the critical thinking skills of Grade 9 students. The modified instrument will contain 29 items to explore students' learning practices related to essential critical thinking skills. The questionnaire comprises six key subfactors:

gathering and supporting a position, planning and organizing information, openness to different ideas, goal setting, making connections, and analyzing experiment results.

The instrument will use a 4-point Likert-type scale to measure students' responses, with response options ranging from strongly disagree to strongly agree. The descriptive mean scores will be interpreted as follows: a mean of 1.00 to 1.49 corresponds to strongly disagree (SA), 1.50 to 2.49 indicates disagree (D), 2.50 to 3.49 represents agree (A), and 3.50 to 4.00 corresponds to strongly agree (SA).

To ensure the modified questionnaire is suitable for assessing critical thinking skills in the context of English Language Education, the researcher will seek validation from specialists in English Language Education and research. Thompson (2023) explained that incorporating content validation into the instrument development process enhances the research findings' accuracy, credibility, and quality. The specialists will evaluate the modified instrument for clarity, relevance, and alignment with the study's objectives to ensure its validity and reliability.

Upon the approval of the request letter to conduct the study, addressed to the school principal of Parada National High School, the researcher will prepare the necessary research instruments. The primary tool for data collection will be a test questionnaire survey form, which will be divided into two main parts.

The first part of the survey will focus on gathering the demographic profile of the respondents, specifically identifying their gender. This information will be essential for analyzing possible trends or differences in critical thinking skills based on gender. The second part of the survey will consist of a comprehensive assessment to evaluate the students' critical thinking skills. The questionnaire will include items that measure various aspects of critical thinking, such as analysis, evaluation, inference, and reasoning abilities. To ensure efficient and accessible data collection, the survey will be administered through Google Forms. This platform will allow students to conveniently answer the questionnaire using their devices, streamlining the data-gathering process.

In addition to the survey responses, the researcher will also prepare an Excel spreadsheet that will include the general average of each respondent, which will serve as the data for assessing their academic

performance. This information will be carefully encoded to maintain accuracy and consistency. Once the survey responses have been collected, the researcher will encode all the necessary data and submit it to a statistician for analysis. The statistician will use descriptive and inferential statistical methods to interpret the findings. Descriptive statistics summarize the data, while inferential statistics identify significant relationships or patterns.

Finally, as the statistician prescribes, the researcher will present the analyzed data in a tabular format to ensure clarity and coherence in reporting the results.

Based on the stated Statement of the Problem (SOP) in Chapter 1, the researcher will utilize descriptive and inferential statistics to analyze the collected data and address the research questions. To describe the demographic profile of the respondents, specifically in terms of gender, the researcher will use frequency count and percentage. The frequency count will identify the number of male and female respondents, while the percentage will compute the proportion of each gender relative to the total number of participants.

For the respondents' academic performance in English, the researcher will calculate the mean to determine the average performance of the students. The mean will measure central tendency, representing the respondents' typical academic performance in English. Additionally, the researcher will compute the standard deviation (SD) to assess the variability or dispersion of students' academic performance scores from the mean. This statistical tool will indicate how closely or widely distributed the scores are, offering deeper insights into the student's academic achievement.

To assess the critical thinking skills of the respondents, the researcher will utilize several statistical tools to ensure accurate evaluation. The mean will be calculated for each aspect of critical thinking to determine the students' overall performance level in those areas. Additionally, the standard deviation (SD) will be computed to measure the variability in students' scores, providing insights into how consistently they performed across different dimensions of critical thinking. A descriptive scale or rating system will be applied to interpret the mean scores effectively, categorizing the results into specific performance levels for clarity. Furthermore, frequency counts and percentage distribution will

be used to identify the number and proportion of students in each performance category, offering a clearer understanding of the overall distribution of critical thinking skill levels. These methods will collectively comprehensively analyze the respondents' critical thinking abilities.

Range	Qualitative Description	Verbal Interpretation
3.25 -4.00	Strongly Agree	Highly Skilled
2.50-3.24	Agree	Skilled
2.49-1.75	Disagree	Moderately Skilled
1.00-1.74	Strongly Disagree	Needs Improvement

To determine the significant difference in the level of critical thinking skills of Grade 9 students when grouped according to gender, the researcher will employ the Independent Samples t-test. This statistical tool is appropriate for comparing the means of two independent groups — in this case, male and female students. The t-test will assess whether there is a statistically significant difference between the critical thinking skill levels of the two groups. The resulting p-value will be evaluated against a predetermined significance level (e.g., 0.05) to determine if the observed difference is meaningful. If the p-value is less than the significance level, it will indicate a significant difference in the critical thinking skills between the two groups.

r-value Range	Interpretation
± 0.00 – 0.10	Negligible Correlation
± 0.11 – 0.30	Weak Correlation
± 0.31 – 0.50	Moderate Correlation
± 0.51 – 0.70	Strong Correlation

r-value Range	Interpretation
± 0.71 – 1.00	Very Strong Correlation

To determine the significant relationship between the level of critical thinking skills and academic performance in English, the researcher will employ the Pearson Product-Moment Correlation Coefficient (Pearson r).

The computed correlation coefficient (r-value) will indicate the degree of association between the variables, with values ranging from -1 (perfect negative correlation) to +1 (perfect positive correlation). An r-value close to zero suggests little to no correlation. Additionally, the p-value will be assessed to determine the significance of the relationship. The relationship will be considered statistically significant if the p-value exceeds the predetermined significance level (e.g., 0.05).

Results and Discussion

Analyzing the demographic profile is an essential factor in designing an intervention program to enhance students' critical thinking skills. As discussed in Chapter 2, gender and academic performance are key variables that should be revisited alongside the primary independent variable, critical thinking. A thorough quantitative exploration of these factors is necessary to ensure the effectiveness of the intervention program.

Table 1. Frequency and Percentage Distribution of Genders of the Respondents

Gender	f	%
Male	89	50%
Female	89	50%
Total	178	100%

Table 1 presents the frequency and percentage distribution of respondents' genders. The data reveals an equal distribution, with 89

respondents identifying as male and 89 as female, resulting in a total sample size of 178. This balanced representation ensures that gender-related insights are equally weighted in the study.

Furthermore, Erviona and Arsyad (2022) highlight the significance of considering gender differences in educational strategies, emphasizing that tailored approaches can enhance learning outcomes. The inclusion of an equal number of male and female respondents allows for a more accurate analysis of potential gender-based variations in educational experiences and preferences.

Table 2. Frequency and Percentage Distribution of Academic Performance of the Respondents

Descriptor	Grading Scale	f	%
Outstanding	90-100	119	66.85
Very Satisfactory	85-89	54	30.34
Satisfactory	80-84	5	2.81
Fairly Satisfactory	75-79	-	0
Did not meet expectations	Below 75	-	0
Average: 91 (Outstanding)			

Table 2 presents the frequency and percentage distribution of respondents' academic performance in English, as indicated by their general average in the subject. The data reveals that the overall academic performiance of Grade 9 students in English is outstanding, with an average score of 91. This suggests that students performed exceptionally well in written work, performance tasks, and quarterly examinations. This aligns with the findings of Digol (2023), which demonstrated that inquiry-based instruction resulted in a 'Very Satisfactory' performance level in Science among Grade 9 students. Similarly, a study by Paano and Fuentes at Dolores National High School in Eastern Samar found that 79% of Grade 9 students attained an 'Outstanding' rating in their Filipino final grade.

Specifically, the data presents the academic performance distribution of students based on their general averages. Among the 178 students, the majority, 119 students (66.85%), achieved an Outstanding rating with scores ranging from 90 to 100. This suggests that more than half of the students demonstrated excellent academic performance. Additionally, 54 students (30.34%) fell within the Very Satisfactory category, scoring between 85 and 89, indicating strong but slightly lower performance compared to the Outstanding group. Meanwhile, only 5 students (2.81%) were classified under Satisfactory with scores between 80 and 84, showing that a small portion of students met the required competencies but at a moderate level. Notably, there were no students in the Fairly Satisfactory (75-79) or Did Not Meet Expectations (Below 75) categories, indicating that all students performed at an acceptable level or higher. The variation in grades, along with the absence of students in the Fairly Satisfactory (75-79) and Did Not Meet Expectations (Below 75) categories, can be attributed to several instructional strategies implemented in English 9. One significant factor is the emphasis on collaborative learning, which allows students to engage actively with their peers, share knowledge, and reinforce their understanding of lessons. Since performance tasks account for 50% of the total grade, students benefit from group activities, discussions, and project-based assessments that encourage teamwork and knowledge application, ultimately leading to higher grades. Additionally, the conduct of remediation programs and the intensive use of formative assessments have played a crucial role in ensuring that students fully grasp the lessons before moving forward. Remediation sessions provide struggling students with targeted support, helping them improve their skills and understanding of key concepts. Likewise, formative assessments, such as quizzes, reflection activities, and teacher feedback, allow students to identify areas for improvement early on, leading to continuous learning progress.Supporting these findings, Vygotsky's Sociocultural Theory of Learning highlights the importance of social interaction and scaffolding in cognitive development. When students work together and receive timely support from teachers, they are more likely to achieve higher learning outcomes. Similarly, Black and Wiliam (1998) emphasize in their study on Assessment for Learning that formative assessment significantly enhances student performance by providing continuous feedback and opportunities for improvement.

The findings of outstanding performance in English further contribute to the existing body of knowledge, reinforcing that Grade 9 students do not only excel in Filipino and Science but also demonstrate exceptional achievement in English. This highlights their strong academic performance across multiple subject areas, underscoring the effectiveness of current instructional strategies and assessment tools in fostering high-level competencies. Significantly, the results indicate that the intended competencies in the English 9 curriculum were effectively mastered by the students.

From the survey on critical thinking skills, the researcher presents the mean distribution for each aspect of critical thinking.

Table 3. Mean of Six Aspects of Critical Thinking Skills

Aspects	Mean	Interpretation
1. Gathering Information and Supporting Position	3.12	Skilled
2. Planning and Organizing Information	3.31	Highly Skilled
3. Openness to Different ideas	3.21	Skilled
4. Goal Setting	3.24	Skilled
5. Making Connections	3.15	Skilled
6. Analyzing	3.16	Skilled
Grand Mean: 3.20 (Skilled)		

Table 3 presents the overall mean scores representing the critical thinking skills of Grade 9 students, along with the mean scores for each specific aspect. The data indicate that students are generally skilled in critical thinking, as reflected in the grand mean of 3.20. This suggests that students have the ability to organize and connect ideas, analyze information, and engage in higher-order thinking processes that require critical evaluation. Their level of proficiency in critical thinking may be attributed to classroom activities that encourage deeper analysis and problem-solving. These findings align with the Schools Division Office (SDO) of Bulacan's initiative to prioritize Higher-Order Thinking Skills

(HOTS), as stated in Division Memorandum No. 431, s. 2023, titled "Division Roll-Out on the Higher Order Thinking Skills Professional Learning Packages (HOTS-PLPs) for English, Science, and Mathematics (ESM)." This memorandum highlights a training program aimed at equipping teachers with strategies to incorporate HOTS into their instructional methods, ensuring that students are continuously exposed to learning experiences that develop their analytical, evaluative, and creative thinking skills. As a result, students benefit from activities designed to strengthen their ability to think critically, reinforcing their overall academic performance.

Among the different aspects of critical thinking, Planning and Organizing received the highest mean score of 3.31, which falls under the "Highly Skilled" category. This suggests that students are proficient in structuring their thoughts and systematically approaching problems, which serves as a strong foundation for critical thinking. Goal Setting followed with a mean score of 3.24, indicating that students are capable of setting objectives and working toward them effectively. Similarly, Openness to Different Ideas, with a mean score of 3.21, demonstrates that students are receptive to diverse perspectives and engage in reflective thinking. Meanwhile, Making Connections and Analyzing Information had nearly similar mean scores, showing that students have the ability to relate concepts and evaluate information critically. However, Gathering Information had the lowest mean score, implying that students may need further reinforcement in research and information synthesis skills. Although students are already skilled in critical thinking, there is room for improvement to help them reach the highly skilled level. Providing students with more opportunities to analyze, synthesize, and evaluate information through inquiry-based learning, debates, problem-solving activities, and collaborative discussions can further strengthen their critical thinking abilities. Additionally, teachers can continue implementing HOTS-based instructional strategies, as supported by SDO Bulacan's initiatives, to deepen students' engagement with complex ideas and real-world applications.

By fostering a learning environment that encourages critical thinking and intellectual exploration, students will be better prepared to navigate challenges, make informed decisions, and enhance their creative thinking skills—another essential 21st-century competency. With continued exposure to high-level cognitive tasks, students will develop

into independent, analytical thinkers equipped for future academic and professional success.

Presented below are the results of the administered survey on students' critical thinking skills. The quantitative analysis focuses on an in-depth discussion of each domain of critical thinking, which is essential for identifying key insights to propose a classroom-based intervention.

Table 4. Summary of Comparison of the Level of Critical Thinking of Grade 9 Students in Terms of Gathering Information and Supporting Position

Statistics	FEMALE	MALE
N	89	89
x	3.07	3.17
Interpretation of Mean	Skilled	Skilled
σ	0.398	0.337
Mean Difference between Two Groups	0.101	
T	-1.829	
Critical t =	2.0017	α= 0.05
p-value =	0.069	
Interpretation	Non-Significant	

The mean score for female students was 3.07, whereas male students scored a slightly higher mean of 3.17. Both scores are in the "Skilled" range, which means that students of both sexes have an excellent level of critical thinking ability in terms of *Gathering Information and Supporting Position.* The mean difference between the two groups is 0.101, which implies that male students scored slightly higher on mean than female students. Regarding variability, the female students had a standard deviation of (σ =.398), whereas the male students had σ = 0.337. This means that the scores of male students were more tightly clustered around their mean than the female students, whose scores were spread out across a broader range. To determine whether the

difference in critical thinking levels in terms of *Gathering Information and Supporting Position* between the two groups is statistically significant, a t-test was performed. The obtained p-value was 0.069. As this p-value is larger than the alpha level (α > 0.05., the difference in critical thinking levels in terms of *Gathering Information and Supporting Position* between female and male students is not statistically significant.

The mean differences suggest that male students performed slightly better than female students in terms of gathering information and supporting their position. This finding aligns with the Hunter-Gatherer Hypothesis proposed by Silverman and Eals (1992), which theorizes that males historically played the role of hunters. Hunting required skills such as navigation, spatial awareness, and scanning large areas for relevant information. These evolutionary adaptations may have contributed to males developing stronger abilities in tasks involving gathering, analyzing, and synthesizing information from multiple sources.

Despite this slight difference, both male and female students scored within the "Skilled" range, indicating that they possess a high level of critical thinking ability in Gathering Information and Supporting Position. This suggests that while there may be small variations in cognitive processing between genders, both groups demonstrate strong competencies in critical thinking.

Table 5. Summary of Comparison of the Level of Critical Thinking of Grade 9 Students in Terms of Planning and Organizing Information

Statistics	FEMALE	MALE
N	89	89
x	3.16	3.45
Interpretation of Mean	Moderately Skilled	Highly Skilled
σ	0.433	0.356
Mean Difference between Two Groups	0.285	

T	-4.802	
Critical t =	2.0017	α= 0.05
p-value =	0.000	
Interpretation	Significant	

Critical thinking level analysis between Grade 9 students in terms of *Planning and Organizing Information* shows significant differences between genders. Female students registered a mean of (x=3.16), labeled as "Moderately Skilled," whereas male students recorded a higher mean of (x=3.45), marked as "Highly Skilled." This signifies that male students are more skilled in this domain than female students. The female students had a standard deviation of (σ = 0.433), implying more variability in their scores, while the male students' standard deviation was (σ = 0.356), meaning that they performed consistently. The computed p-value was 0.000 which is below the alpha level (α < 0.05). This only imply that the difference in critical thinking ability in terms of *Planning and Organizing Information* between female and male students is statistically significant.

The mean difference highlights that male students outperformed female students in Planning and Organizing Information. However, this finding contrasts with the study by Naglieri and Rojahn (2001) on Gender Differences in Planning, Attention, Simultaneous, and Successive (PASS) Cognitive Processes and Achievement, which suggests that females often outperform males in planning and attention-related tasks. This discrepancy indicates that as time progresses, gender differences in performance and cognitive skills may evolve or vary based on educational trends, societal influences, and learning environments. Traditional assumptions that one gender consistently outperforms the other in specific cognitive domains may no longer hold true across different contexts and generations.

Therefore, the general perception among educators that either female or male students inherently perform better must be reconsidered. Instead, a more inclusive and gender-sensitive approach should be embraced in education, ensuring that teaching strategies cater to individual strengths rather than relying on outdated gender stereotypes. Furthermore, the

statistical significance of the findings reinforces the notion that gender plays a role in this particular critical thinking domain, making it a relevant area for further research and pedagogical development.

Table 6. Summary of Comparison of the Level of Critical Thinking of Grade 9 Students in Terms of Openness to Different Ideas

Statistics	FEMALE	MALE
N	89	89
x	3.29	3.14
Interpretation of Mean	Highly Skilled	Skilled
Σ	0.316	0.309
Mean Difference between Two Groups	0.146	
T	3.116	
Critical t =	2.0017	α= 0.05
p-value =	0.002	
Interpretation	Significant	

Comparison of Grade 9 students' critical thinking skills according to *Openness to Different Ideas* indicates clear gender differences. The female students a mean of (x=3.29), which put them in the "Highly Skilled" category, whereas the male students garnered a mean of (x=3.14), which placed them in the "Skilled" category. This indicates that female students are more skilled in being open to different ideas than male students. The standard deviations for both groups were also very similar, at σ = 0.316 for females and σ = 0.309 for males, which suggests that the score variation is the same in both genders. The mean difference between the two groups was 0.146, which suggests that female students were slightly higher on mean than male students on this critical thinking component. Independent t- test yielded a p-value of 0.002, significantly lower than the alpha level of α = 0.05, and hence proving that the difference in critical thinking level between openness to other ideas is statistically significant.

Focusing on the mean scores, it can be inferred that female students demonstrated greater openness to different ideas compared to male students. This distinction can be explained by Gender Socialization Theory (Eagly, 1987), which posits that societal expectations and upbringing shape cognitive and behavioral differences between genders. From an early age, females are often socialized to be more cooperative, empathetic, and open to different viewpoints. They are encouraged to engage in collaborative discussions, active listening, and inclusive decision-making, making them more receptive to diverse perspectives. In contrast, males are often socialized to prioritize independence, assertiveness, and competitiveness, which may lead to a stronger adherence to their own viewpoints and a reduced tendency to consider alternative perspectives.

These findings underscore the importance of designing educational strategies that foster openness to different perspectives among both male and female students. While female students may naturally excel in this area due to social conditioning, male students can benefit from instructional approaches that actively encourage critical discussions, perspective-taking, and exposure to diverse viewpoints.

Integrating gender-responsive teaching methods, such as structured debates, reflective writing exercises, and multicultural content, can help bridge the gap and ensure that both genders develop a well-rounded capacity for openness to new ideas. Additionally, teachers should be mindful of implicit biases in the classroom that may reinforce traditional gender roles, ensuring that all students are encouraged to explore, question, and engage with diverse perspectives without restrictions based on societal expectations.

Table 7. Summary of Comparison of the Level of Critical Thinking of Grade 9 Students in Terms of Goal Setting

Statistics	FEMALE	MALE
N	89	89
x	3.29	3.19
Interpretation of Mean	Moderately Skilled	Skilled
σ	0.291	0.342

Mean Difference between Two Groups	0.099	
T	2.077	
Critical t =	2.0017	α= 0.05
p-value =	0.039	
Interpretation	Significant	

The female students scored a mean of (x= 3.29), which was in the category of "Moderately Skilled," while male students scored a mean of (x = 3.19), placing them in the "Skilled" category. This indicates that the female students show a higher proficiency level in the goal-setting skills than the male students. Standard deviations for the two groups were (σ = 0.291) for females and (σ = 0.342) for males, representing a similar spread of scores across both sexes. The mean difference of (0.099) further establishes that female students performed better than male students in this area of critical thinking in terms of goal setting. With a p-value of (0.039), less than the significance level of (α < 0.05), the findings suggest that the differences found in goal setting are statistically significant.

This analysis suggests that female students demonstrated higher proficiency in goal-setting skills compared to male students. This finding aligns with the principles of Social Role Theory, proposed by Alice Eagly (1987), which states that societal expectations and culturally defined gender roles shape individual behaviors and skills. Women are often socialized to be nurturing, organized, and detail-oriented—traits that contribute to effective goal setting. This socialization process enables females to develop stronger planning and organizational skills, allowing them to set and achieve goals more effectively.

Given the significance of goal-setting skills in academic and personal development, it is essential to ensure that all students, regardless of gender, receive adequate support and training in this area. Educators should implement strategies that help male students strengthen their goal-setting abilities, ensuring they can perform equally well alongside their female counterparts. Prioritizing this skill will contribute to the overall development of students, equipping them with essential competencies for future success.

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Table 8. Summary of Comparison of the Level of Critical Thinking of Grade 9 Students in Terms of Making Connections

Statistics	FEMALE	MALE
N	89	89
x	3.15	3.14
Interpretation of Mean	Skilled	Skilled
σ	0.377	0.286
Mean Difference between Two Groups	0.112	
T	0.224	
Critical t =	2.0017	α = 0.05
p-value =	0.823	
Interpretation	Non-Significant	

The analysis of making connections among students reveals that female students had a mean score of 3.15, categorizing them as "Moderately Skilled," while male students had a slightly lower mean score of 3.14, placing them in the "Skilled" category. This suggests that female students demonstrated a slightly higher proficiency in making connections compared to their male counterparts. The standard deviation for female students was 0.377, indicating greater variability in their scores, whereas male students had a standard deviation of 0.286, signifying that their scores were more consistent.

Despite the observed mean difference of 0.112, the computed p-value of 0.823 is significantly higher than the standard alpha level of 0.05. This indicates that the difference in making connections skills between male and female students is not statistically significant. Therefore, while female students appeared to have slightly better making connections, the findings suggest that this difference could be due to chance rather than a meaningful variation in their abilities.

The nearly identical mean scores of male and female students suggest that they possess the same level of proficiency in making connections.

This indicates that the activities, materials, and strategies used to enhance this skill can be applied equally to both groups. Since there is no significant difference in their performance, educators can implement uniform instructional approaches to further strengthen students' ability to analyze relationships, draw conclusions, and integrate information effectively across different contexts.

Table 9. Summary of Comparison of the Level of Critical Thinking of Grade 9 Students in Terms of Analyzing

Statistics	FEMALE	MALE
N	89	89
x	3.27	3.06
Interpretation of Mean	Highly Skilled	Skilled
σ	0.329	0.291
Mean Difference between Two Groups	0.211	
T	4.536	
Critical t =	2.0017	α= 0.05
p-value =	0.000	
Interpretation	Significant	

The female students garnered a mean of (x = 3.27), making them "Highly Skilled," whereas the male students scored an average of *(x = 3.06),* ranking them as "Skilled." This demonstrates that the female students have greater level of critical thinking skills in terms of Analying than their male peers. The mean difference of (0.211) emphasizes the advantage of female students over their male counterparts in this critical thinking aspect. Additionally, the statistical test produced a p-value of (0.000), which is well below the alpha level of (α= 0.05). This result confirms that the differences between the two groups are statistically significant.

Data reveals that female students excel in analytical skills, which enhances their overall critical thinking abilities. This finding aligns with

the study conducted by Noverli and Cahya (2021), which examined students' critical thinking skills based on gender. The study found that female students scored higher in key indicators such as providing simple explanations, building essential skills, and determining strategies and tactics. These results suggest that female students tend to engage in more complex thought processes compared to their male counterparts. Given this advantage, incorporating peer-assisted learning activities where female students can support their peers in analytical tasks may be beneficial. This approach not only fosters collaboration but also strengthens the analytical abilities of all students involved.

Table 10. Summary of Comparison of the OVER ALL Level of Critical Thinking of Grade 9 Students

Statistics	FEMALE	MALE
N	89	89
x	3.20	3.19
Interpretation of Mean	Skilled	Skilled
Σ	0.212	0.222
Mean Difference between Two Groups	0.010	
T	0.310	
Critical t =	2.0017	α= 0.05
p-value =	0.757	
Interpretation	Non-Significant	

The general conclusion of the extent of critical thinking among students of Grade 9 is that male and female students are at the same level. The female students have a mean result of (x= 3.20) that falls into the category "Skilled," whereas male students have (x= 3.19), which is also "Skilled." It reflects that no prominent difference in the critical thinking levels exists between males and females. The maen difference of (0.010) also highlights the negligible difference in scores. The test of difference yielded a p-value of (0.757), which is significantly higher than the

significance level of (α= 0.05). This shows that the differences in overall critical thinking levels between female and male students are not statistically significant.

Table 11. Pearson Correlation on Academic Performance and Critical Thinking Skills

		Academic Performance	Critical Thinking
Academic Performance	Pearson Correlation (r)	1	0.148
	Sig. (2-tailed) (*p*)		0.048
	N	178	178
Critical Thinking	Pearson Correlation (r)	0.148	1
	Sig. (2-tailed) (*p*)	0.048	
	N	178	178

The Pearson correlation between critical thinking and academic performance among the 178 students is positive. The Pearson correlation coefficient is (r =0.148), showing weak but statistically significant correlation between the two measures. The significance level is (p = 0.048), and it is less than the traditional threshold of (α= 0.05) and implies that the correlation is statistically significant. The findings align with the study conducted by Wicaksana et al. (2020), which concluded that critical thinking has a positive impact on academic achievement. Likewise, Akpur (2020) discovered a significant relationship between critical thinking, reflective thinking, creative thinking, and academic performance among university preparatory class students. These studies suggest that students who develop strong critical thinking skills tend to perform better academically, as they are better

equipped to analyze, evaluate, and apply information effectively. This highlights the importance of integrating critical thinking activities into educational practices to enhance students' overall academic success.

This suggests that the better students' critical thinking, the slightly stronger tendency there is for their academic performance to be better. Yet the strength of this relationship is quite low, suggesting that though there is some relationship, there are other variables that also play a strong part in determining academic performance. Hence, these results imply that improving critical thinking ability might benefit students' academic performance, albeit the impact might not be large.

From the quantitative exploration and analysis of critical thinking skills, gender, and academic performance, the researcher generates inputs from the data, which will serve as the basis for designing a classroom-based intervention plan.

Table 12. Key Inputs for Developing a Classroom-Based Intervention Plan

Areas	Inputs
1. Gender	• Gender plays a vital role in selecting materials, strategies, and collaborative learning approaches, as gender disparities are evident in the study. This highlights the need for a gender-sensitive intervention plan. • Since female students excel in critical thinking, they can assist male students in various activities that promote critical thinking, fostering both skill development and collaborative learning.
2. Academic Performance	• Since the students' academic performance is outstanding, the activities and strategies should progress from moderate to more complex levels. • Activities and strategies can be grouped based on academic performance, allowing

	students with outstanding performance to assist those at fair and satisfactory levels.
3. Critical Thinking Skills	• Implement activities that promote critical thinking skills, such as debates, Venn diagram analysis, mind mapping, and investigative tasks.
	• The selection of themes should be age-appropriate, focusing on topics such as education, the environment, technology, and social media to encourage critical thinking among students.
	• Design assessment tools that focus on higher-order thinking skills, beginning with application, analysis, and evaluation.

Summary of the Findings

The following is a summary of the findings that address the specific questions of the study:

1. The respondents were equally distributed in terms of gender. Meanwhile, the students' overall academic performance in English was outstanding.

2. The respondents were generally categorized as "Skilled" in critical thinking. Among the different aspects, Openness to Different Ideas had the highest mean score, placing students in the "Highly Skilled" category. Other critical thinking aspects, such as Gathering Information and Supporting Position, Planning and Organizing Information, Goal Setting, Making Connections, and Analyzing, were all rated within the "Skilled" category.

3. While female students scored higher in some aspects, and male students in others, the overall differences in critical thinking skills between genders were not statistically significant.

4. The Pearson correlation coefficient indicated a weak but statistically significant relationship between critical thinking skills and academic performance.

Conclusions

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

1. Gender and academic performance are significant variables in examining students' critical thinking skills. The findings indicate that students' academic performance in English 9 is generally good, signifying their mastery of the required competencies.

2. The overall rating of "Skilled" in critical thinking suggests that students possess the ability to analyze and evaluate information effectively. This indicates that they have developed higher-order thinking skills, which are essential for critical thinking.

3. The study concluded that there is no significant difference in critical thinking skills between male and female students. As a result, the null hypothesis regarding gender differences in critical thinking skills is accepted.

4. The findings reveal a weak but statistically significant correlation between critical thinking skills and academic performance. Therefore, the null hypothesis stating that there is no relationship between critical thinking and academic performance is rejected

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PERCEPTIONS AND ENGAGEMENT IN EDUCATIONAL RESEARCH: A CORRELATIONAL INVESTIGATION OF SCHOOL PRINCIPALS AND TEACHERS

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Abstract

This research examines the correlation between school principals' and teachers' understanding of educational research and their degree of research participation in the Ibajay West District, Schools Division of Aklan. Employing a quantitative correlational research design, data were collected from 74 elementary teachers and 7 school principals through validated questionnaires. The research examined participants' knowledge and perception of action research and their engagement in research activities. Findings indicated that although both teachers and principals had predominantly positive views about research, school heads exhibited greater levels of engagement, particularly in more complex research activities like raising funds and disseminating findings. Teachers were engaged in earlier research phases but exhibited low participation in application and publication. Pearson's r analysis indicated positive and significant correlation between perception and research involvement, confirming that more robust research perceptions are linked to greater participation. The research points to the importance of capacity-building, research mentoring, and institutional facilitation to establish a healthy research culture in primary schools. Advice and suggestions are professional development initiatives, mentoring frameworks, and institutional incentives for enhanced continuous research engagement among teachers.

Keywords*: Educational Research, Research Engagement, Action Research, School Principals, Teachers' Perception*

Introduction

In the 21st century, the Department of Education (DepEd) faces numerous challenges in students' skills development, teachers' engagement and professional growth, and the overall teaching-learning process. These challenges can hinder students from becoming competent and prevent teachers from delivering quality instruction. DepEd encourages school principals and teachers to research these issues, as it is a recognized method for identifying and solving problems while enhancing teaching practices. In line with this, DepEd Order No. 16, s. 2017, also known as the Research Management Guidelines, provides a framework for promoting school research culture. This policy ensures that research initiatives contribute to evidence-based decision-making, continuous education improvement, and educators' professional development.

Educational research is significant in informing and improving school instruction practices and administrative policies. Despite this, educators' levels of involvement in seeing the utility of research differ tremendously. This difference can impact the translation of research findings into educational practice, affecting student and overall school performance. Understanding how teachers perceive research and how they engage with it is key to building a culture of research within schools.

Globally, research has pointed to issues connecting educational research with classroom practice. Many teachers perceive research as abstract or disconnected from their teaching contexts, leading to limited adoption (Cárcamo et al., 2024). In the Philippines, most educators are still hesitant to undertake action research despite efforts by the Department of Education to encourage it (Saro & Taray, 2024). Reasons like limited time, inadequate training, and inadequate administrative support are among the factors that lead to this reluctance (Vergara & Sublay, 2024). Locally, the same patterns have been noted in areas like Aklan, with teachers reporting difficulty reconciling research work with their teaching load.

Particularly, in the Ibajay West District of Schools Division of Aklan, there is an urgent need to look into the relationship between school administrators and educators' attitudes toward research and participation levels. Early observations indicate that although some educators appreciate the value of research, the actual involvement in

research activities continues to be in small numbers (Ly, 2024). This difference could be due to a perceived lack of relevance of research areas, insufficient required skills, or insufficient institutional support. Solving these problems is important for the district's objective of embedding research-based practices in daily teaching and administrative routines.

Existing research has examined various factors influencing teachers' involvement in research. For example, Echon and Cabal (2022) examined how interactions between school principals and teachers contribute to teachers' professional well-being and noted the importance of leadership in ensuring a supportive research culture. Tarrayo et al. (2021) also looked into Filipino school teachers' involvement in research and established that constraints, including insufficient time and poor motivation, impede it. Nonetheless, little research has been directed at the immediate relationship between teachers' perceptions of research and actual participation, especially in the Ibajay West District context. This research seeks to address this gap in addressing how perceptions by school principals and teachers affect research engagement. Understanding this correlation is essential to construct evidence-based interventions that create a strong research culture within the district.

Methodology

This study investigated the correlation between school principals' and teachers' perceptions of research and their level of research engagement. The researcher utilized a quantitative research approach to accomplish this since the study requires the identification of an independent variable (research perception) and a dependent variable (research engagement). Sreekumar (2023) defines the quantitative research approach as a systematic examination of occurrences that affect a certain group of people, known as the sample population, which consists of school principals and elementary teachers. Such an approach involves the collection of different levels of data through surveys, questionnaires, or other systematic means, as well as statistical analysis to establish patterns, compare results, or determine correlation among variables.

Specifically, Pearson's r correlation was used in this study as a statistical parameter, as it is appropriate for measuring the strength and direction of the relationship between two continuous variables. Quantitative data was gathered in this study to ensure reliability and validity using an

adopted research questionnaire survey. Bhandari (2021) outlines how correlational research design analyzes the relationships between variables without the researcher's manipulation. This kind of design helps one to understand if there is a correlation, its direction (positive or negative), and its magnitude. This study's outcomes helped fill gaps in past literature, as most research has been on perception or engagement without exploring their interaction. This study showed how one can develop a culture of research in schools by exploring the relationship between the attitudes of school principals and teachers towards research and their engagement. In addition, the findings were utilized to guide the development of future education programs and projects that seek to enhance research participation among school principals and teachers. Determination of these relationships enabled school leaders to develop improved plans for establishing a research culture in schools, ultimately resulting in improved professional development and academic achievement.

Ibajay West District, part of the Schools Division of Aklan, was the research setting particularly targeted for study because of its high number of elementary schools. Thus, the setting is appropriate for conducting the study. School principals and teachers within the district were the main respondents to this study. Hence, the survey covers a wide scope of views regarding the perception of research and involvement within the learning environment.

Creswell and Poth (2018) argue that quantitative research can be centered on one controlled setting, like one school district, to yield in-depth knowledge of the research variables. By focusing on a single district, this research can control extraneous variables that may influence the results and ensure that the data collected are situation-specific and generalizable to similar educational contexts. Past studies (Smith, 2020; Robinson et al., 2023) have established that selecting a single district as a research site is adequate to provide valid and generalizable results. This research specifically examined seven elementary schools located in the Ibajay West District: Agbago Elementary School, Aquino Elementary School, Laguinbanwa Elementary School, Mabusao Elementary School, Maloco Elementary School, Ondoy Elementary School. And Sta. Cruz Elementary.

Having multiple schools within the district increases the validity and significance of the research by generating more in-depth data on what

drives research participation among school principals and teachers. By sampling the schools, the research contributed to developing policy interventions that enable the creation of a research culture in the district. The findings of this study are expected to guide future policy development, professional development programs, and institutional research studies that could benefit not only the Ibajay West District but also other districts with a similar education system.

The researcher employed total population sampling to select teacher-respondents who completed the survey based on their perception of and engagement in the research. Since the total number of teachers did not exceed 100, this sampling method was appropriate. According to Canonizado (2020), Total population sampling is a type of purposive sampling that involves examining an entire population with a specific set of characteristics. Researchers often use this method when the population is small and well-defined, as studying only a fraction may not yield accurate or comprehensive results. This approach ensures that all elementary teachers' perspectives are considered, comprehensively understanding their attitudes toward research. Since elementary teachers play a significant role in shaping early education, their insights are essential in assessing the impact of research engagement in the field.

The researcher's participants were seven elementary school principals of the Ibajay West Schools Division of Aklan, with ranks from Head Teacher I to III and Principal I to Principal III. Another included population in the study was a group of 74 teachers from the aforementioned elementary schools who participated by answering the survey instrument.

Table 1. Respondents of the Study

School	School Principals	School Heads	Teachers
Abago Elementary School	1		8
Aquino Elementary School		1	12
Laguinbanwa Elementary School	1		9

Mabusao Elementary School		1	6
Maloco Elementary School	1		16
Ondoy Elementary School	1		15
Sta. Cruz Elementary		1	8
	4	**3**	**74**
Total			**82**

To determine research priority and direction, Teachers-in-Charge were excluded from the research since they fulfil a different task from regular teachers and school principals, with diverse instructional and administrative requirements. By limiting the respondents to teachers, school heads, and school principals alone, the research hopes to understand better the relationship between perceptions of research and participation in research activities from the perspective of the elementary school.

This study used the Raosoft sample size calculator, a widely accepted tool for determining the appropriate sample size of participating teachers, to calculate the number of required respondents by population size, confidence level, and margin of error. After determining the sample size needed, proportional allocation was used to represent the same number of teachers from various schools. The process allows the larger schools to contribute a proportionate number of responses to the smaller schools with smaller numbers of educators, thus providing statistical representativeness and balance. The data's Precision and reliability are ensured by questioning the total number of teachers at each school participating from the Personnel Unit of the Schools Division Office (SDO) of Aklan.

This data from credible sources were the reference point for calculating sample size based on validated statistical facts. Using a systematic

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sampling plan and data collection approach, this study guarantees that the research findings are representative, credible, and applicable to comparable learning settings. The research approach allowed for the comprehensive investigation of how school administrators' and teachers' attitudes toward research influence their engagement in research-informed activities, thus promoting a research-based culture in primary school institutions.

Since the study is conducted with two key variables—research perception and research engagement—the researcher employed two different methodological instruments to obtain respective data: a test questionnaire survey to obtain research perception measurement data and another test questionnaire survey to obtain research engagement measurement data. Both tools obtained quantitative data, which would be susceptible to statistical testing to assess the relationship between the two variables.

To establish the teachers' and school administrators' views regarding research, this study employed a 30-item survey questionnaire, adapted from Prudente and Aguja (2018), entitled "Principles, Attitudes and Processes in Doing Action Research: Perceptions of Teachers from the Philippines." The instrument was selected because it possesses a balanced framework that captures comprehensive dimensions of research perception among teachers. The instrument has three major components: Action Research Principles – which measure the respondent's perception of the principles that guide research in an educational setting; Attitude Toward Doing Action Research – which measures the degree to which respondents have a positive or negative attitude toward conducting research; and Processes Involved in Doing Action Research – which measures the respondents' knowledge and confidence in conducting the different steps of the research process. To ensure ethical research practices and respect intellectual property rights, the researcher sent the original authors of the survey an email and requested permission to use the instrument formally before its formal utilization. After obtaining permission, the instrument was adapted to fit the usage of this study.

The participants' level of research participation measured using a 10-item scale created by Pascual (2024). The tool was utilized due to its high reliability, which was achieved through a 96% Cronbach's Alpha level, demonstrating high internal item consistency. All the measures of the

extent to which teachers conduct research-related activities are assessed as follows:

Participation in independent or group research activities; Application of research results to classroom practice; Presenting research or presenting at conferences; Publication of research in journals; and Conducting research workshops or training. The validity and reliability of the instruments have been ensured through previous research and statistical reliability tests, thus ensuring that the data collected were reliable and precise. Pilot testing of the survey instruments was conducted on a small sample of teachers outside the study population to ensure clarity, coherence, and usability before final use. Utilizing these tested and reliable instruments, this study ensures that the data collected yielded meaningful information on how school principals' and teachers' attitude toward research affects their participation in research activities. This enabled an in-depth analysis of the factors encouraging or inhibiting a research culture in elementary schools.

To ensure an orderly and moral data collection process, the researcher undertook several necessary steps, from obtaining authorization to conduct the research to handling data collected to be analyzed later. The researcher officially requested permission to conduct the study in the seven chosen elementary schools of the Ibajay West District. This shall be done by issuing a letter of request, which shall be directed to the principals of the participating schools. The letter contained:

-Objectives and purpose of research;

-Relevance of the study in establishing a research culture among teachers;

-Characterization of participants (school principals and teachers);

-A request to help in disbursing the survey questionnaires and

-A copy of the survey instruments used for analysis.

After the researcher has received permission from the school principals to make the request, the researcher went to the next phases of the data collection process.

Before administering the survey, the researcher had a brief orientation with the chosen school principals and teacher respondents for those schools that the researcher personally visited. For the Google Form, a general note explaining the rationale of the study was stated. The orientation notified them of the study's purpose and informed them of their roles as respondents. The orientation included:

-A definition of the research purpose and how it relates to their practice;

-The significance of their sincere answers in producing significant data;

-Detailed description of the survey questionnaire, its components, and how to answer each item; and

-A chance for the participants to pose any questions or get clarification on the content of the survey.

The orientation lasted approximately 10–15 minutes, and the respondents were given an understanding before they answered the survey. This was applicable to the schools that the researcher personally visited. For the online distribution, the researcher was assisted by the school head in monitoring the survey activity, and respondents were given three days to complete the form.

After the orientation, the participants were given the survey questionnaires. The respondents took 30 to 45 minutes to complete the survey, which was appropriate since the questionnaires were simple and easy to read. During this period, the researcher was present to answer any questions or address any issues the participants had. After the questionnaires were submitted, the researcher entered the responses into Microsoft Excel for proper data handling. After encoding, a professional statistician was enlisted to analyze the data using appropriate statistical tests. Specifically, Pearson's r correlation was used to identify the relationship between research perception and participation among teachers and school principals.

The statistical analysis enlightened on the following:

-Whether there was a considerable correlation between research perception and participation;

-The strength and direction of this correlation (positive or negative); and

-Potential implications for developing a greater research culture in primary schools.

By following this systematic data collection process, the research ensured accuracy, reliability, and validity in both data collection and analysis, thus providing a comprehensive understanding of how teachers' perceptions of research influenced their participation in research activities

The researcher used descriptive statistics to determine the participants' perceptions and research involvement. The main instrument was a questionnaire survey, the range of which was adapted from the study of Valdez et al. (2020).

Scale	Verbal Interpretation	Range	Verbal Description
4	Strongly Agree	3.51-4.00	Very Positive
3	Agree	2.51-3.50	Positive
2	Disagree	1.51-2.50	Negative
1	Strongly Disagree	1.00-1.50	Very Negative

This scale was used to determine participants' engagement in research.

Scale	Range	Verbal Interpretation
4	3.51-4.00	To a Great Extent
3	2.51-3.50	To a Moderate Extent
2	1.51-2.50	To a Small Extent
1	1.00-1.50	To a Very Small Extent

The researcher employed the Pearson Product-Moment Correlation Coefficient (Pearson r) to determine the significant relationship between school principals' and teachers' perceptions of research and their engagement.

r-value Range	Interpretation
± 0.00 – 0.10	Negligible Correlation
± 0.11 – 0.30	Weak Correlation
± 0.31 – 0.50	Moderate Correlation
± 0.51 – 0.70	Strong Correlation
± 0.71 – 1.00	Very Strong Correlation

The calculated correlation coefficient (r-value) expressed the strength of the association between variables, ranging from -1 (perfect negative association) to +1 (perfect positive association). An r-value near zero would imply minimal to no association. The p-value was evaluated to determinewhether the association is significant. The association was deemed statistically significant if the p-value exceeds the selected significance level (0.05).

Results and Discussion

Using a validated survey form, the researcher measured the respondents' perceptions of research in terms of the principles of action research, their attitudes toward conducting action research, and the processes involved. Understanding these variables serves as a starting point for fostering a culture of research, as cultivating a positive perspective is essential to motivating teachers to engage in research activities.

Table 2. Mean, Standard Deviation, and Verbal Interpretation of School Heads' Perceptions on Action Research

School Heads' Perception n=?	Mean	SD	Verbal Interpretation
1. Principles of Action Research	3.71	0.395	Very Positive
2. Attitude Toward Doing Action Research	3.64	0.382	Very Positive
3. Process Involved in Doing Action Research	3.58	0.503	Very Positive
Overall Mean	**3.65**	**0.391**	**Very Positive**

Legend:

3.51-4.00   Very Positive

2.51-3.50   Positive

1.51-2.50   Negative

1.00-1.50   Very Negative

Table 2 provides the school heads' perception of research in the Ibajay West District on three broad categories: Principles of Action Research, Attitude Toward Doing Action Research, and Process Involved in Doing Action Research. All received ratings deemed "Very Positive" with mean scores ranging from 3.58 to 3.71. The "Principles of Action Research" had the highest mean (x= 3.71, SD = 0.395) indicating school heads strongly agreed to a theoretical understanding without variation; similarly, the "Attitude Toward Doing Action Research" rated the second mean (x= 3.64, SD = 0.382) indicating school heads' were very positive about their disposition to engage in research practice.

Although the "Process Involved in Doing Action Research" had the lowest mean score (x = 3.58, SD = 0.503), it received a rating deemed "very positive," implying slightly less confidence in their understanding of research procedures or variability of understanding among respondents compared to the other two dimensions. The overall mean

was x = 3.65 with a standard deviation of 0.391, reflecting strong and consistent positive perceptions of their research programs backed by both interventional and non-interventional methods across respondents.

The standard deviations (low to moderate, from 0.382 to 0.503) are small enough that responses fell largely around the mean—which is indicative of a high-level agreement commonality among the school heads. This homogeneity adds credibility to the findings and implies that school heads are aligned in thinking about the role of research in education. This alignment can positively shape teachers' perceptions and engagement with research across the district.

Results of this study are in line with other research studies. For example, in Ahmed et al. (2020), the teachers possessed a satisfactory level of understanding concerning research concepts, exactly as results of the present study indicated. In addition, research conducted by Abrenica and Cascolan (2022) reflected that while teachers generally acknowledged the importance and value of action research in enhancing their teaching practices and professional growth, they were often constrained in their actual participation due to various challenges. These challenges included time limitations, lack of institutional support, insufficient training, and competing responsibilities within the school environment. Such barriers limited their ability to fully engage in the research process, despite their positive attitudes toward it. Furthermore, a study by Oancea et al. (2021) emphasized the critical need for sustained capacity-building interventions aimed at strengthening teachers' practical research skills. The authors argued that long-term support and professional development initiatives are essential not only for improving the quality of educational research conducted by teachers but also for fostering continuous and meaningful participation in research activities throughout their careers.

The results indicate that the principals of schools within the Ibajay West District have a favorable attitude towards conducting action research, and most particularly in understanding its basics and willingness to undertake it. But their own less confident attitude in performing the process of research could be a reaction to the need for additional guidance or training on the same. The closeness of their answers reflects a common perception of the role of research in schools that would

facilitate an enabling platform for teachers to pursue and carry out research activities.

Table 3. Mean, Standard Deviation, and Verbal Interpretation of Teachers' Perceptions on Action Research

Teachers' Perception n=?	Mean	SD	Verbal Interpretation
1. Principles of Action Research	3.67	0.491	Very Positive
2. Attitude Toward Doing Action Research	3.51	0.529	Very Positive
3. Process Involved in Doing Action Research	3.59	0.513	Very Positive
Overall Mean	**3.59**	**0.485**	**Very Positive**

Legend:

3.51-4.00   Very Positive

2.51-3.50   Positive

1.51-2.50   Negative

1.00-1.50   Very Negative

Table 3 shows the teachers' perceptions of research. All factors were interpreted as "Very Positive," with an overall mean of x̄ = 3.59 (SD = 0.485), which means the teachers were generally positive towards research. The highest rating was for "Principles of Action Research" (x = 3.67, SD = 0.491), indicating that they had a fair understanding of research principles. This could be the result of an effort from the schools to integrate research knowledge into professional development and training programs.

In contrast, "Attitude Toward Doing Action Research" yielded the lowest mean (x = 3.51, SD = 0.529), indicating action research was valued by

the teachers, but there may be psychological, structural, or contextual constraints affecting their inclination or confidence to participate in it. The means for "Process Involved in Doing Action Research" ($x = 3.59$, SD = 0.513), imply teachers are moderately familiar with and capable of conducting research procedures. However, the standard deviations of the means across all dimensions (0.491 to 0.529) reflect greater variability in teachers' responses compared with school heads responses. This implies the teaching populations' research practice exposures, experiences, or support systems are less homogeneous than the school heads.

The findings from the current study align with existing literature on teachers' perceptions of research. For instance, a study by Yang et al. (2022) found that while faculty members acknowledged the importance of educational research, they often faced challenges in integrating research findings into their teaching practices due to divergent expectations and limited collaboration with researchers. Davis and D'Lima (2020) emphasized that one of the key obstacles to increasing teacher involvement in research is the lack of formal research education and training. Their study revealed that, although efforts have been made to encourage teacher participation in research, many educators feel underprepared and lack the foundational skills necessary to contribute meaningfully. This deficiency hampers the overall effectiveness of research initiatives within educational institutions. In support of these findings, Oshifogun et al. (2024) identified time constraints as another significant barrier, particularly for faculty members aiming to implement active learning strategies. Together, these studies underscore the importance of addressing both professional development and institutional support to enhance teacher engagement in research and innovative teaching practices.

This research highlighted the need for multiple programs of research capacity building that will each be different and sustained, to fill the gaps regarding practical skills and to develop more intentional and sustained engagement with research by teachers. Although the overall perceptions towards research are positive, it will still be committed by district leaders to encourage research practices while addressing motivation, providing mentoring, and accessibility to resources to change the positive perceptions of research into actual participation and productiveness with research in the district.

Table 4. Overall Mean, Standard Deviation, and Verbal Interpretation of School Principals' and Teachers' Perceptions on Action Research

Educators	Mean	SD	Verbal Interpretation
1. School Heads	3.59	0.518	To a Great Extent
2. Teachers	3.21	0.828	To a Moderate Extent
Overall Mean	**3.59**	**0.485**	**To A Great Extent**

Legend:

3.51-4.00   To a Great Extent

2.51-3.50   To a Moderate Extent

1.51-2.50   To a Small Extent

1.00-1.50   To a Very Small Extent

This table 4 presents the school heads' and teachers' engagement in research-related activities within the Ibajay West District. The results show that school heads were more engaged (x = 3.59, SD = 0.518), verbally interpreted as "To a Great Extent", while teachers were engaged at a moderate level (x = 3.21, SD = 0.828), verbally interpreted as "To a Moderate Extent". The overall average of 3.59 with the interpretation "To a Great Extent" shows that school leaders were more engaged than teachers and will provide opportunity for school leaders to influence and shape a research culture at the school level.

The involvement of school heads was greater with respect to some key research functions, including involved with selecting research priorities, developing research proposals, and/or reviewing and revising research agenda. Their engagement included applying for external funding through the Policy Research Program (PRP), to engage in research activities organized by the school's research center, to present research findings at conferences and congresses, and as well to apply the research findings in their decision-making processes. In addition, school heads would be more likely to publish in referred journals, both locally and

internationally. Their participation demonstrates sound administrative commitment and the ability to lead evidence-based practice.

On the other hand, while teachers also engage with research, their participation seems to be often more limited and diverse, again with a higher standard deviation (SD = 0.828), suggesting a lack of consistency across individual participation. Teachers engage in research-related activities, like working with colleagues on their research proposals, helping colleagues developing research topics, attending capability-building seminars, to a moderate degree. It seems that fewer teachers are engaged with the later-stage research activities, like applying for PRP grant funding, presenting their research findings at research-related conferences, or publishing in scholarly journals. This means while there is some level of engagement with foundational activities, teachers may have limited or face barriers in time, limited research experience or limited institutional support.

The results of the present research are in line with the literature regarding teachers' and school heads' involvement in research work. For example, in their study, Abun et al. (2020) found that school heads' leadership capacity affected teachers' work engagement in a positive way, indicating that good leadership may create teachers' involvement in research work. Likewise, in a study conducted by Coşkun (2023), the involvement of teachers in research was hindered by school climate that was not collaborative and lacked necessary resources, which could be utilized for explaining lower teacher participation rates compared to school heads. Besides, Eroglu and Donmuş Kaya (2021) concluded that teachers' poor research training and their intensive workload were the major obstacles for their participation in research, and this suggests structural constraints influence the level of participation of teachers.

These findings show the importance of empowering teachers to be effectively involved in the entirety of research endeavors. Schools must increase provision of capacity-development programs that are inclusive and maintained with coordinated school head mentoring programs and veteran researchers. Closing the engagement gap is critical to support the development of a research-based school culture, improved pedagogy practice among classroom teachers and augment evidence-based enhancements to provide education in the district.

Table 5. Correlation between Perceptions of School Heads and Teachers and Level of Engagement in Research

Educators	Pearson R	Sig.	Verbal Interpretation
1. School Heads	0.749	.000	Very Strong Correlation
2. Teachers	0.941	.002	Very Strong Correlation

Table 5 shows the statistical associations between the perceived attitudes of respondents, school heads and teachers, toward research and affiliations with research-related activities in the Ibajay West District. As shown by Pearson's correlation coefficient, there is a very strong positive relationship for both school heads and teachers in terms of their perceptions and research engagement because respondents have a greater positive perception, and there is a positive correlation between research engagement and positive perception.

For school heads, the concluded correlation of r = 0.749, p = 0.000 is below the conventional significance value of p = 0.05. This indicates a statistically significant and very strong relationship; it indicates there is a relationship between the school heads who have proper knowledge of the principles of research and their attitudes toward research practice and those same heads who engage in research tasks like the identification of research priorities, being involved in proposal writing, funding through the Policy Research Program (PRP), presenting and publishing. Their role as instructional leaders likely enhances their capacity to model and sustain a research-oriented school culture.

The correlation for teachers is even stronger, with r = 0.941 and p = 0.002, also below 0.05, indicating a statistically significant and very strong relationship between their perceptions of research and degree of engagement with research. This means that the positive outlook on research has a significant impact, which says that teachers who have a positive perception of research are much more likely to be actively engaged in research activities, such as collaborating to write proposals, taking research and applying in the classroom, attending seminars with

the aim of building their research capacity, and presenting or publishing research results. The nature of this correlation indicates that disposition, knowledge, and perceptions are essential to motivating teachers to engage in and face barriers to research, such as limited experience or time.

The results of both r values being statistically significant ($p < 0.05$) leads us to conclude that perception is an important variable predicting research engagement. The results of this study also support the need to develop positive research mindsets through professional development, institutional support, and mentoring. Obviously, educators need to develop a better understanding and attitude toward research if we want the research productivity to increase in this country, as well as to ultimately be more evidence-informed in decision-making and improvement in schools.

The findings from the study align with broader educational research. For instance, a study by Melloria and Gaylo (2024) emphasized the role of school leaders in a research-oriented culture, noting that principals who actively support research initiatives tend to have teachers more engaged in research. Similarly, research by Mansor et al. (2021) highlighted that teachers' commitment to research is significantly influenced by the support and expectations set by school leadership. Furthermore, Esllera and Escala (2024) found that teachers' self-efficacy and engagement in research are enhanced when they perceive strong support from their school heads.

The results identify the key contribution perceptions make to driving research participation by both school heads and teachers within the Ibajay West District. The highly significant positive relationships between positive attitudes towards research and participation in research activities indicate that when teachers, particularly school heads and teachers, have a positive attitude towards research, they are likely to be actively involved in related activities such as proposal preparation, seminars, and publication. This highlights the need to promote positive research perceptions through focused professional development and institutional support, as these attitudes have a direct impact on increased research productivity and evidence-based decision-making in schools.

Summary of Findings

Based on the discussion, analysis, and interpretation of the data in Chapter 4, the following key findings have been identified:

1. The study found that principals in schools perceived action research positively and comprehended its principles but believed less in conducting it. This implies a positive context of support among teachers, but increased training might be necessary. Teachers within the Ibajay West District also perceived research positively, particularly general research, and less research action. Their own views were more diverse than those of the principals. General problems were insufficient time, assistance, and absence of research training.

2. School administrators in Ibajay West District were more active in research work than teachers. Admins were more involved in activities such as prioritizing research, finding funds, and reporting and publishing results, indicating high commitment to research. Teachers were predominantly involved in initial steps such as proposal development and attending seminars, with lower activity in advanced levels of research work.

3. There was a strong positive correlation between perception and participation in research among school heads and teachers in the Ibajay West District. School heads who positively perceived research were more actively involved in proposals writing, searching for funds, and publishing. Teachers registered an even clearer association between positive perception and active participation, particularly in co-proposal ventures, seminars attendance, and publishing articles.

Conclusion

Based on the summary of findings, the researcher drew conclusions aimed at validating the stated hypothesis.

The study found a strong positive correlation between the perception of research and the level of research engagement among teachers and school principals in the Ibajay West District. This means that those with a more positive view of research were more actively involved in research activities. The findings confirm that perception significantly influences

participation, supporting the need to strengthen research culture in schools through targeted support and development efforts. The strong correlation between perception and research engagement indicates the necessity to promote a positive research culture through selective professional development, capacity building, and mentoring programs.

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UNVEILING THE IMPACT: TRANSFORMATIONAL LEADERSHIP STYLES OF SCHOOL PRINCIPALS AND ORGANIZATIONAL TRUST TOWARD ENHANCED SCHOOL EFFECTIVENESS

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Abstract

This study investigated the transformational leadership styles of school principals and their impact on organizational trust among teachers in the Schools Division of Bulacan. Specifically, the research explored four dimensions of transformational leadership—idealized influence, inspirational motivation, intellectual stimulation, and individual consideration—and how these relate to teachers' perceptions of organizational trust, including coworker trust, supervisor trust, and trust in organizational management. The respondents were divided into two groups. Group 1 consisted of four school principals from national high schools (categorized as Big Schools), each with at least three years of experience in their current leadership positions. Group 2 included 255 Junior High School teachers, randomly selected from the same schools using Raosoft's sample size calculator, with proportional distribution per school verified by a statistician. All teacher participants had a minimum of three years of teaching experience in their respective schools to ensure informed responses regarding their principals' leadership styles and organizational trust. Using a quantitative-descriptive correlational research design, data were gathered through survey questionnaires. Findings revealed that school principals were perceived as highly effective transformational leaders and that teachers reported high levels of organizational trust. A strong positive correlation was established between transformational leadership practices and organizational trust, underscoring the essential role of leadership in fostering a trustworthy and collaborative school environment. The results affirm the importance of transformational leadership in cultivating a positive school climate conducive to both teacher growth and student success.

Introduction

The realization of the Department of Education's vision and mission depends on the school principals' capability to lead their teachers, students, and stakeholders. This highlights the pivotal role of leadership styles that school principals possess as they significantly improve teachers' performance, holistically develop students and actively engage stakeholders, resulting in positive organizational trust, which reflects school effectiveness.

According to Ullah and Azizian (2024), the active function and future development of schools are greatly influenced by the leadership styles of the school principals, which may extend to inspire teachers to perform at their best. Furthermore, being able to inspire others is just as crucial to managing an organization as having a clear vision and excellent communication skills. Effective leadership is required. As stipulated in Republic Act 9155, in the governance of basic education, school principals are the authority, responsible, and accountable for managing schools' activities, programs, and projects. This makes the hurdle of school principals difficult and complex, which is why poor leadership skills may restrict the full implementation of programs and projects that may affect students' welfare and holistic development. That is why having a leadership style ensures proper implementation of school operations and attainment of goals. School principals in the Philippines adopt leadership methods that significantly influence learners, teachers, and the educational environment. Identifying and assessing these leadership styles is crucial to understand their impact on academic outcomes and to promote effective leadership practices. (Mendoza and De Jesus, 2024) averred that school principals in the Philippines adopt various leadership methods that significantly influence learners, teachers, and the educational environment. Identifying and assessing these leadership styles is crucial to understand their impact on academic outcomes and to promote effective leadership practices.

Transformational leadership is one of the most well-known leadership philosophies of the twenty-first century. Tepper et al. (2018) assert that

transformational leadership can facilitate staff members by improving one's capacity to drive organically, which is the leader's ability to achieve performance levels that surpass expectations. Additionally, it can enhance psychological empowerment. The school may be on the verge of success if principals turn their teachers into capable, committed, and productive servants. Teachers will be inspired to help solve problems, students will perform at their highest level, and active stakeholders will work together to make the school a positive learning place. Moreover, transformational leadership tends to maximize the degree of professional performance of work, according to Khan et al. (2020). It also shows that businesses with a variety of structures rely heavily on the performance of their employees. Teachers will be inspired and motivated to perform at their highest level as their leaders, despite their varied roles in service to students, due to the school leaders' high performance and results, significantly impacting the school's operations. According to Anderson et al. (2017), as school principals become transformative leaders, Transformational leaders help their followers accomplish the organization's goals and performance requirements by inspiring them to share a common vision. Challenges such as teachers' reluctance to accept challenging tasks and low self-confidence have been identified in the Philippine education system. These issues can hinder the development of a positive school culture and affect student outcomes, highlighting the need for leadership that can build trust and empower teachers (Santos, 2023). This signifies that in shaping the school culture, school principals should possess the desirable traits of transformational leaders as they ensure that all school members perform their best and keep on professional development, which significantly affects the students.

Transformative school principals empower employees by encouraging autonomy, professional growth, and decision-making. This empowerment fosters a culture of trust, as employees feel valued and respected. Organizational trust refers to trust is defined as "positive expectations individuals have about the intent and behaviors of multiple organizational members based on organizational roles, relationships, experiences, and interdependencies," as cited in Shockley-Zalabak, Ellis, & Winograd, in Joo, Yoon, and Galbraith (2021). Meanwhile, once the organization's trust does not exist, various problems may exist. (Worrell & Bardolf 2024) revealed that 46% of public school teachers do not trust Chancellor David Banks. This indicates a growing dissatisfaction with leadership, potentially undermining organizational trust. This is linked

to the finding (Day, 2025) that an oversight committee report uncovered a significant culture of fear within the district, leading to the resignation of five special education teachers. The hostile workplace environment, characterized by intimidation and favoritism, has eroded trust among staff, impacting the overall school climate. These studies prove the need to prioritize organizational trust as it blocks the pursuit of excellence, negatively affecting students and teachers.

Therefore, as organizational trust in a school increases, the overall environment becomes more positive, collaborative, and effective. Research on school effectiveness and improvement has widely recognized the importance of building relationships of trust in schools (Weinstein et al., 2018; Çoban et al., 2020; Amzat, 2018). Thus, relationships between educators, parents, students, and administrators are strengthened by open communication and respect for one another. Teachers who have faith in their leaders are more encouraged and empowered to try new things in the classroom, which improves student performance. Additionally, worker collaboration improves, fostering a culture of cooperation where resources and ideas are openly exchanged. Additionally, because trust lessens conflict and promotes a sense of safety and belonging, students gain from a more stable and encouraging learning environment. Parents who believe in the school's leadership and feel assured about their choices become more involved. More excellent organizational trust results in inspired teachers, more engaged students, and a more successful school community based on shared values and objectives.

Examining the connection between organizational trust and transformative leadership, we find it essential to creating high-performing, moral, and successful companies, particularly in sectors like education, which are crucial to society. School administrators can better understand how visionary and moral leadership can motivate change, empower staff, and enhance organizational results by having a solid understanding of transformative leadership. On the other hand, organizational trust is essential for encouraging teamwork, lowering conflict, and improving performance and job satisfaction. However, it can explore how leadership behaviors influence trust-building processes and, in turn, how trust affects organizational success. This knowledge is particularly valuable in schools, where strong leadership and trust among teachers, students, and parents.

The effect of transformational leadership on high school culture was examined in Sasan 2024. The study discovered through interviews with students, instructors, and school administrators that transformational leadership techniques positively impacted school culture and created an atmosphere that supported academic success. To contribute to better learning environments and academic achievements. In Yemeni public schools, a different study (Alzoraiki et al., 2024) examined how school culture mediated the relationship between transformative leadership and teaching effectiveness. The results demonstrated the importance of leadership in improving educational outcomes by showing that transformational leadership and a healthy school culture substantially predicted improved teaching performance. These studies highlight that transformative leadership is important to school operations, student performance, and future projects. These reports and studies purported to determine the impact of school principals' transformational leadership styles on teachers' organizational trust in pursuit of school effectiveness. This study will give valuable insights into how school principals' leadership styles shape organizational strategy, which may impact school performance.

Methodology

Since a quantitative research approach enables the collection of numerical data that can be analyzed using statistical techniques to identify relationships, trends, and patterns, it was used in this study to determine the impact of school principals' transformational leadership styles on teachers' organizational trust. In particular, a descriptive-correlational research design was used for this investigation. SOP 1, which looks at school principals' transformational leadership styles, and SOP 2, which is about organizational trust among teachers, were both be covered in the descriptive component. According to McCombes (2019), a descriptive research design is a methodological technique that seeks to precisely and methodically characterize the features of a population, circumstance, or phenomena; instead of answering the "why," it focuses on observing and describing details without altering them. It answers the "what," "where," "when," and "how" inquiries.

This phase involved gathering and summarizing data to describe the prevailing leadership styles and levels of trust within the organization. Once the descriptive data had been collected, it was analyzed using a correlational research design to determine the relationship between

transformational leadership and organizational trust. A correlational research design is a non-experimental approach to assess the statistical relationship between two or more variables without manipulating them. This method allows researchers to determine whether an association exists between variables, which can be positive, negative, or non-existent. This approach allowed the researcher to assess the strength and direction of the association between these variables, providing insights into how transformational leadership influences organizational trust.

To achieve this, the study utilized a survey-based data collection method, where structured questionnaires were distributed to respondents. The responses were measured using a Likert scale, enabling the quantification of perceptions regarding leadership styles and organizational trust. Furthermore, this study applied inferential statistical methods, such as correlation analysis and regression analysis, to determine how much transformational leadership influences organizational trust. Correlation analysis helped measure the strength and direction of the relationship between the two variables.

This study was conducted in four national high schools (category: big schools) of the Schools Division of Bulacan. The selected schools were Parada National High School, Prenza National High School, Pulong Buhangin National High School, and Assemblywoman Felicita G. Bernardino Memorial Trade School.

The school principals in these schools have been in their positions for over three years, ensuring their leadership styles are well-established and observable. This tenure allows teachers to effectively assess their organizational trust, as they have had ample time to observe their principals' leadership approaches and contributions to their respective schools.

The respondents of this study were divided into two groups. Group 1 consisted of school principals from the four national high schools (Category: Big School) who have held their positions for at least three years. They were selected based on specific criteria, including their designation as school principals, their leadership in a school categorized as a national high school, and their tenure of at least three years in their respective schools. These four school principals were asked to respond to a survey questionnaire on transformational leadership styles.

Meanwhile, Group 2 comprised teachers from the four selected national high schools. The number of teacher participants was determined using Raosoft's sample size calculator to ensure an adequate and representative sample. From 755 total JHS teachers, from the computation of the Raosoft, the participants were 255. The distribution per school was determined through ratio and proportion, which the statistician checked. Participants were randomly selected, provided they had taught in their respective schools for at least three years. This criterion ensures that the teachers have sufficient familiarity with their school principals' leadership styles and contributions to school development, allowing them to provide informed responses regarding organizational trust.

Table 1. Respondents of the Study

School	Principal	Total Population	Teachers
Assemblywoman Felicita G. Bernardino Memorial Trade School	1	276	93
Parada National High School	1	127	43
Prenza National High School	1	193	65
Pulong Buhangin National High School	1	159	54
TOTAL	4	755	255

To assess school principals' transformational leadership skills, the researcher adapted and modified the Multifactor Leadership Questionnaire (MLQ) Form, which measures leadership across ten factors related to transformational leadership. However, only the factors relevant to school principals' transformational leadership styles were considered, namely Idealized Influence, Inspirational Motivation, Intellectual Stimulation, and Individual Consideration. The instrument

consists of 20 statements, which school principals responded to using the scale: Always, Frequently, Sometimes, and Never.

The researcher used the Organizational Trust Scale Polat (2007) developed to measure organizational trust among teachers. This survey assesses three key dimensions: trust in Colleagues, Trust in the Work Setting, and Trust in Management, each comprising 12 statements. Responses were collected using a 4-point Likert scale: 1—strongly Disagree, 2—disagree, 3—agree, and 4—strongly Agree.

The researcher personally delivered request letters to the four selected national high schools, seeking permission to conduct the study. These letters formally requested school principals to participate in the Transformational Leadership Styles survey and selected teachers to answer the Organizational Trust survey.

Upon approval, the researcher conducted an initial meeting with the school principals to discuss the nature and purpose of the study, as well as to provide an overview of the survey questionnaire. The researcher ensured that the principals understood the content and significance of the survey before answering the questionnaire.

Next, the researcher met with the randomly selected teachers from each school to explain the concept of organizational trust and the purpose of the survey. The orientation included a brief discussion on the importance of their responses in assessing the level of trust within their organization. As the teachers fully understood the survey, they were given 20 minutes to complete the questionnaire.

After collecting the completed survey forms, the researcher carefully encoded the data into Microsoft Excel to organize and prepare it for statistical analysis. The encoded data were then forwarded to a professional statistician for inferential statistical processing and analysis.

To determine the transformational leadership styles of school principals and the organizational trust of teachers, the researcher used descriptive statistics, including mean, standard deviation, frequency, and percentage distributions. Mean and Standard Deviation were used to measure the central tendency and variability of responses for each dimension of transformational leadership and organizational trust.

This table presents the verbal descriptions, corresponding numerical scale, and percentage range used to assess the transformational leadership styles of school principals. The ratings are determined using an adapted assessment instrument.

Verbal Description	Scale	Range
Always	4	3.25-4.00
Frequently	3	2.50-3.24
Sometimes	2	1.75-2.49
Never	1	1.00-1.74

In conducting the organizational trust survey, the researcher utilized this table, which is structured on a 4-point Likert scale. This scale provides a systematic approach to measuring respondents' perceptions, ensuring consistency and reliability in data collection and analysis.

Range	Qualitative Description	Verbal Interpretation
3.25 -4.00	Strongly Agree	Highly Trusting
2.50-3.24	Agree	Trusting
2.49-1.75	Disagree	Moderately Trusting
1.00-1.74	Strongly Disagree	Distrusting

Results and Discussion

The researcher presented the mean, standard deviation, and verbal interpretation of the four dimensions of transformational leadership based on the survey assessing the transformational leadership styles of selected principals in Junior High Schools.

Table 1. Summary of the Transformational Leadership Styles of the School Principals

Dimensions	Mean (X)	Standard Deviation (SD)	Verbal Interpretation
1. Idealized Instruments	3.88	0.102	Highly Effective
2. Inspirational Motivations	3.81	0.125	Highly Effective
3. Intellectual Stimulation	3.75	0.204	Highly Effective
4. Individual Consideration	3.69	0.125	Highly Effective

The findings from the summary table suggest that the principals' views consider their leadership highly effective in all four categories of transformational leadership. The Idealized Influence mean score of 3.88 indicates that principals continually perceive themselves as effective role models, reinforcing core values, ethical decision-making, and connotation for a better purpose. They think they create pride in circumstances when acting to receive respect, demonstrating a strong commitment to the overall good of the group. The low standard deviation, 0.102, illustrates the commonality in their perception of effectiveness in this area. For Inspirational Motivation, the average score is 3.81, demonstrating principals' perception that they believe they are highly effective at inspiring and motivating others, with their certainty in their vision to reach goals. Principals describe that they regularly communicate the importance of a shared mission and confidence in accomplishing school goals. The standard deviation of 0.125 demonstrates that the motivational component inspires principals but that motivational aspects are lower in a degree of conviction than they were in idealized influence.

In Intellectual Stimulation, with an average rating of 3.75, principals frequently promote critical thinking, address problems, and inspire

creativity in their schools. They create an environment where co-working for alternative understandings is encouraged, and new approaches for resolving problems are sought. However, a standard deviation of 0.204 indicates that individual leaders have somewhat different frequencies of intellectual stimulation and, therefore, differ in how they engage staff in this method. Lastly, the Individual Consideration scored 3.69, implying that principals effectively support each staff member and student. They are spending time providing coaching and technical assistance and looking for ways to support the many varying needs and strengths of individuals. Again, this is a high score, but it is slightly lower than the other dimensions, which suggests that this could be an area for growth to provide more individualized support and mentoring.

The findings of this mixed-methods study align with and expand upon those of Overstreet (2022), offering significant implications for cultivating transformational leadership qualities in secondary school principals. One key implication is that principals can foster transformational leadership traits in their followers by applying one or more of the four core components of transformational leadership. Another important implication is that these leadership qualities can be developed within the principals through targeted professional development opportunities. The highly effective ratings across the four components—idealized influence, inspirational motivation, intellectual stimulation, and individual consideration—suggest that these areas are particularly impactful. As such, they may serve as a strong foundation for designing professional development initiatives focused on mentoring and coaching, which is essential for nurturing transformational leadership in school leaders.

Furthermore, the highly effective ratings may also be linked to the findings of Hardman (2023), who revealed that transformational leaders demonstrate high moral standards, personal magnetism, and persistence in their efforts to influence others. These leaders also cultivate a growth mindset, forward-thinking, and a culture of excellence to inspire and motivate their teams. In addition, they foster environments that promote continuous learning, innovative collaboration, effective critical thinking, and creative problem-solving—key attributes that align closely with the core components of transformational leadership.

The self-assessments indicate that principals generally perceive their leadership to be highly effective across all four dimensions of transformational leadership: idealized influence, inspirational motivation, intellectual stimulation, and individual consideration. This suggests a strong level of self-confidence and commitment to their leadership roles. However, some variability was observed in how principals reported applying the dimensions of intellectual stimulation and individual consideration. This inconsistency may point to areas where leadership practices can be further strengthened. For instance, more deliberate efforts could be made to consistently encourage creative thinking, foster innovation, and provide tailored support to individual team members based on their unique needs. Addressing these areas could enhance the overall impact of their leadership. Overall, while the principals demonstrated a strong sense of dedication and effectiveness in their roles, the findings highlight the potential for ongoing professional growth—particularly in refining how transformational leadership is enacted in practice.

An assessment of organizational trust in teachers was determined using an adopted survey form, which may serve as the study's dependent variable. The aim was to determine how the independent variable formed or impacted it.

Table 2. Summary of the Teachers' Assessment of Organizational Trust

Factors	Mean (X)	Standard Deviation (SD)	Verbal Interpretation
1. Coworker trust	3.70	0.363	Highly Trusting
2. Supervisor Trust	3.74	0.376	Highly Trusting
3. Organization management trust	3.75	0.303	Highly Trusting

The summary table shows that the perception of trust in the organization is generally rated high on all three measures: coworker trust, supervisor trust, and trust in the organization's management. In Coworker Trust,

the mean score of 3.70 demonstrates that teachers trust their colleagues and view them as reliable. Teachers believe their colleagues fulfill their responsibilities and are willing to share important information when needed. The standard deviation (0.363) shows some variation, implying occasional differences in the degree of trust the teachers give to their colleagues, but the overall perception remains positive.

For the Supervisor Trust, the average score of 3.74 reflects a high level of trust from teachers toward leadership, specifically the principals. Teachers have confidence in their school heads acting consistently, being helpful, and having a positive and reliable presence. The standard deviation (0.376) is slightly higher, demonstrating some inconsistency regarding the teachers' perception of how approachable and reliable their supervisors are. About Organization Management Trust, the average score of 3.75 indicates that teachers have a strong level of trust in the management and decision-making of the school. Teachers feel the organization values their contributions, shares relevant information, and maintains a supportive environment. The standard deviation (0.303) indicates a lower level of variation, indicating that teachers generally have similar perceptions of how the organization occurs within the school.

These findings are consistent with those of Akbay and Zeybek (2023), who found that teachers exhibit high trust in their schools. Their study also revealed that gender, educational status, and seniority do not significantly influence teachers' perceptions of organizational trust. This supports the decision in the current research to focus specifically on the impact of transformational leadership style on organizational trust, as other demographic variables appear to have minimal effect. Moreover, Basaran and Cakir (2023) revealed that teachers demonstrate strong organizational trust in their school principals, mainly because they work in positive and supportive school environments. These schools are described as "happy schools," where leaders inspire and motivate their staff. This finding highlights the significant role that school principals play in shaping organizational trust through their leadership style.

The data consistently shows high levels of trust in colleagues, supervisors, and the overall organizational management within the school environment. Teachers report feeling supported, valued, and trusted, suggesting that the school culture fosters a strong sense of community and collaboration. This positive environment is essential for

creating a conducive professional growth and development atmosphere where teachers feel secure in their roles and confident in the leadership that guides them. Overall, the data indicates a trustworthy and supportive school climate, but there are opportunities for improvement to strengthen trust across all levels of the school community. Schools can further solidify their commitment to creating a more cohesive, positive, and collaborative environment for all staff members by focusing on these areas.

Through a descriptive research design, the data on transformational leadership and organizational trust are described and interpreted, and in this part, they are correlated. The data were subjected to Pearson correlation.

Table 3. Correlations Between Principals' Transformational Leadership Styles and Teachers' Organizational Trust

		Principal' Transformational Leadership Style	Teachers' Organizational Trust
Principal' Transformational Leadership Style	Pearson Correlation (r)	1	.992
	Sig. (2-tailed) (p)		.008
	N	4	4
Teachers Organizational Trust	Pearson Correlation (r)	.992	1
	Sig. (2-tailed) (p)	.008	
	N	4	4

The data shows that Teachers' Organizational Trust and the Principal's Transformational Leadership Style have a strong positive correlation (r= 0.992). It indicates that the increase in the trust of the teachers in the organization is closely associated with the transformational leadership style of the principals. The principal's ability to inspire and motivate teachers, create a shared sense of purpose, and act with ethical consideration fosters a greater sense of trust within the school environment. With a significance value of p = 0.008, the relationship is statistically significant, confirming that the observed association is not due to chance. Teachers' trust in the organization is enhanced when the principal acts in ways such as advocating the importance of a collective mission, providing intellectual stimulation, and offering individual support. Those aspects of leadership create a climate where teachers feel valued and supported and are involved at a higher level of trust with colleagues and the organization.

These findings contribute to the existing body of knowledge, complementing previous studies focusing on transformational leadership styles and work performance. For instance, Khan et al. (2020) found that transformational leadership has a significant positive relationship with the mediator, intrinsic motivation. Their results also concluded that transformational leadership positively and significantly affects work performance.

The results imply that principals who effectively engage in transformational leadership can significantly enhance teachers' trust in the organization, potentially leading to a more positive and collaborative school environment.

Summary of the Findings

The following is a summary of the findings that address the specific questions of the study:

1. School principals perceive their leadership as highly effective across all four dimensions of transformational leadership.

2. Teachers generally rate their trust in the organization highly across all three measures, reflecting a strong sense of confidence in their school environment.

3. The data demonstrates a strong positive correlation between teachers' organizational trust and the principal's transformational leadership style, which leads to the rejection of the null hypothesis.

Conclusions

The following are the conclusions drawn from the collected and analyzed data:

1. The highly effective ratings across the four dimensions of transformational leadership suggest that the principals in this study embody this leadership style and meet all its key indicators.

2. The high levels of organizational trust reported by teachers toward their school principals reflect a strong and positive relationship between teachers and their leaders, indicating a supportive and trusting school environment.

3. The strong positive correlation between transformational leadership style and teachers' organizational trust signifies transformational leadership's significant impact on fostering trust within the school organization.

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School Leadership and Teacher Support Through Inquiry-Based Learning

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Abstract

This study explored the influence of school leadership and teacher support on the implementation of Inquiry-Based Learning (IBL) in Grade 4 Science classes in the Ibajay West District for the school year 2024–2025. Utilizing a mixed-methods research design, the study employed achievement tests, survey questionnaires, and interview guide questions to gather quantitative and qualitative data from 7 school leaders, 7 Grade 4 Science teachers, and 20 learners.

Findings revealed that school leadership played a crucial role in IBL implementation by providing instructional guidance, coaching, and resources. Teachers who received professional development, collaborative opportunities, and adequate materials showed greater confidence and effectiveness in delivering IBL strategies. Students taught using IBL exhibited significantly higher engagement and academic performance, as evidenced by improved post-test scores and positive survey responses. However, challenges such as limited preparation time, lack of materials, and insufficient training were also noted.

Statistical analysis, including a paired t-test and Pearson correlation, confirmed a significant positive relationship between leadership and teacher support and successful IBL implementation. The study concluded that strong leadership, continuous professional development, and adequate resource provision are key enablers of IBL success. Recommendations include institutionalizing IBL training, improving resource allocation, and fostering collaborative teaching practices to sustain inquiry-based instruction in elementary science.

Keywords: *Inquiry-Based Learning, school leadership, teacher support, student engagement, academic achievement, Grade 4 Science, Ibajay West District.*

Introduction

In today's rapidly evolving educational landscape, learner engagement and academic achievement remain vital benchmarks of school success. However, many educational institutions continue to grapple with sustaining learners' interest and improving outcomes, especially in subjects requiring higher-order thinking skills such as Science. Central to addressing these challenges is the role of school leadership and teacher support in implementing innovative, learner-centered approaches that foster meaningful learning experiences.

One such approach gaining momentum is Inquiry-Based Learning (IBL), a pedagogical method that shifts learners from passive recipients of knowledge to active participants in the learning process. Through questioning, investigating real-world problems, and engaging in hands-on exploration, IBL nurtures curiosity, critical thinking, and problem-solving skills. As Mitchell (2020) asserts, IBL not only deepens conceptual understanding but also equips learners with essential competencies needed in a complex, fast changing world.

The successful adoption of IBL, however, hinges on effective school leadership and sustained teacher support**.** School leaders play a pivotal role in shaping instructional practices by setting a clear vision, providing necessary resources, and supporting ongoing professional development. Teachers, as the primary agents of classroom change, require continuous mentoring, collaboration opportunities, and institutional backing to integrate IBL into their instructional routines. Yet, despite its potential, IBL's implementation remains uneven due to disparities in leadership capacity, training access, and resource availability (De Jesus, 2025).

In the Philippine context**,** these challenges are particularly pronounced. According to the 2023 Program for International Student Assessment (PISA), Filipino students scored significantly below the global average in science, signaling critical gaps in conceptual understanding and scientific literacy (OECD, 2023). This underperformance calls for urgent reforms in teaching practices, highlighting the need for learner-centered strategies like IBL that stimulate inquiry, analytical thinking, and active participation.

To address these systemic issues, the Department of Education (DepEd) introduced the MATATAG Curriculum, designed to strengthen foundational skills and promote student-centered learning (DepEd,

2024). However, translating policy into practice remains a challenge, particularly in rural areas where teachers often lack the training and support required to effectively implement innovative strategies such as IBL (Kilag et al., 2024). As Donkor (2024) notes, despite global recognition of IBL's value, resource limitations and inconsistent teacher support often hinder its successful integration.

In the DepEd Schools Division of Aklan, particularly within the Ibajay West District, these challenges are reflected in regional science performance. Based on 2024 Regional Achievement Measure (RAM) data, 73.89% of Grade 4 students met expected proficiency levels in science. While promising, this also indicates that 26.11% remain below the benchmark—a substantial proportion of learners who may be disengaged or struggling with essential analytical skills. This data underscores the urgent need to adopt more engaging and innovative teaching methods tailored to diverse learner needs.

Given this context, this study focuses on the effective integration of Inquiry-Based Learning as a means to enhance student engagement and achievement, particularly in science. It emphasizes the crucial interplay between school leadership, teacher support, and instructional innovation, with an aim to explore how these elements can work synergistically to foster deeper learning. As Tshabalala (2024) stresses, visionary school leadership and a supportive professional environment are essential to creating a culture that encourages innovation and elevates teaching practices.

This research, entitled *"Enhancing School Leadership and Teacher Support through Inquiry- Based Learning: Improving Student Engagement and Achievement,"* aims to examine how collaborative efforts among school leaders and teachers can drive the successful implementation of IBL. It will explore the impact of leadership strategies, teacher empowerment, and institutional support on the effectiveness of IBL in classroom settings. Moreover, the study will investigate how IBL influences learners' motivation, engagement, and academic performance—offering valuable insights for schools seeking to improve science instruction and overall learning outcomes.

Ultimately, this study seeks to contribute to the growing body of research supporting IBL as a transformative educational strategy. By emphasizing the integral role of leadership and teacher development, it

aspires to provide practical guidance for educators, administrators, and policymakers dedicated to advancing quality education in the Philippine context and beyond.

Methodology

This study adopted the mixed-method research design, combining both quantitative and qualitative approaches to achieve a more comprehensive understanding of the research problem. This design is particularly appropriate for exploring the complex dynamics between school leadership practices, teacher support, IBL implementation, and student outcomes.

Quantitative data were gathered through pre-achievement tests and post-achievement tests aligned with the Grade 4 Science curriculum, as well as through structured surveys using a 5-point Likert scale administered to school leaders, teachers, and students. These data provided measurable insights into student academic performance, engagement levels, and perceptions of leadership and support.

Qualitative data were obtained through interview guide directed at teachers, school leaders, and students. These responses offered in-depth perspectives on the challenges, strategies, and experiences related to IBL implementation in the classroom.

The integration of both data types enhanced the validity of the findings and allows for triangulation, strengthening the study's overall conclusion.

The study was conducted in the Ibajay West District of Aklan, focusing specifically on Laguinbanwa Elementary School, where IBL strategies are currently being implemented as part of the MATATAG Curriculum. The setting was selected due to its active engagement with IBL and its relevance to the goals of the study.

The respondents of the study included seven (7) school leaders who oversee the implementation of Inquiry-Based Learning (IBL) and provide institutional support, seven (7) Grade 4 Science teachers who apply IBL strategies in their teaching practices, and twenty (20) Grade 4 learners from Laguinbanwa Elementary School, who are the direct beneficiaries of IBL instruction. These participants were selected through purposive sampling, targeting individuals with direct

experience in the implementation and support of IBL within the science curriculum.

Table 1. *Respondents of the Study*

School	School Leader	Students	Teachers
School A	1	286	1
School B	1	135	1
School C	1	813	1
School D	1	270	1
School E	1	181	1
School F	1	323	1
School G	1	193	1
TOTAL	**7**	**2,201**	**7**

Table 1 presents the distribution of respondents across the seven participating schools in this study. Each school contributed one school leader, totaling seven school leaders, who were key

informants in understanding the implementation of Inquiry-Based Learning (IBL) and how it influenced both leadership practices and teacher support mechanisms.

The teacher respondents, numbering 7 in total, were also drawn from these schools. Their responses provided valuable data on classroom engagement and instructional effectiveness under IBL strategies.

The total learner population across these schools is 2,201, highlighting the broad scope and potential impact of school leadership and teacher practices in fostering student engagement and achievement through inquiry-based approaches.

These respondents were carefully selected to represent diverse school contexts—ranging from smaller institutions like School B with a

population of 135, to larger schools such as School C with 813 students. This diversity ensures that the findings reflect a wide range of educational environments, adding depth and generalizability to the study.

Table 2. *Respondents of the Study*

School	Grade 4 Science Teachers	Total teachers in Grade 4 Science
School A	1	1
School B	1	1
School C	1	1
School D	1	1
School E	1	1
School F	1	1
School G	1	1
TOTAL	7	7

Table 2 outlines the participation of Grade 4 Science teachers across the seven schools involved in the study. Each school contributed one teacher, all of whom are currently handling Grade 4 Science classes.

This focused selection of seven Grade 4 Science teachers allowed for a consistent examination of how Inquiry-Based Learning (IBL) is implemented at the same educational level across different school settings. It ensures that comparisons and insights drawn from the study are aligned in terms of curriculum expectations, age group, and instructional content.

These teachers played a pivotal role in the research, offering firsthand insights into the practical application of IBL strategies in their classrooms, as well as their experiences with support from school

leadership and the resulting effects on student engagement and achievement

Table 3. *Respondents of the Study*

School	Grade 4 Students	Total Students in Class
School E	20	20
Total	20	20

Table 3 presents the student respondents involved in this study. A total of 20 Grade 4 students from School E participated, representing the entire class at that grade level.

These students were selected to take part in the full research process, which includes a pre- achievement test, post-achievement test, and an online survey. Their involvement is essential in evaluating the impact of Inquiry-Based Learning (IBL) strategies on student engagement and academic achievement in science.

By focusing on a single class, the study can closely monitor changes and outcomes resulting from the implementation of IBL, ensuring more accurate measurement of its effectiveness within a controlled learning environment.

To gather the required data, several instruments and procedures were utilized. Achievement tests were administered to Grade 4 students before and after the implementation of Inquiry-Based Learning (IBL) strategies to assess changes in their academic performance. These tests were aligned with the fourth-quarter Science competencies from the MATATAG Curriculum. In addition, structured surveys using a 5-point Likert scale were distributed to school leaders, teachers, and students to gather their perceptions regarding school leadership, teacher support, and student engagement in relation to IBL. Interview guide questions were also incorporated in the survey instruments to collect qualitative data on participants' experiences, challenges, and suggested strategies, providing deeper insight into how leadership and support influence IBL implementation and outcomes. To ensure clarity, appropriateness, and reliability, all instruments—including the surveys and achievement

tests—were reviewed by educational experts and piloted in a comparable school setting.

Quantitative data were analyzed using various statistical tools. Descriptive statistics, including mean, standard deviation, and frequency distributions, were used to summarize survey responses and achievement test scores. A paired sample t-test was employed to determine significant differences between pre-achievement test and post- achievement test scores, assessing the impact of Inquiry-Based Learning (IBL) on student achievement. Additionally, the Pearson Product-Moment Correlation Coefficient was used to examine the relationships between school leadership, teacher support, and the implementation of IBL in relation to student engagement and academic performance. Meanwhile, qualitative data from interview guide responses underwent thematic analysis to identify recurring themes and insights that complement the quantitative findings.

To obtain comprehensive and reliable data, this study employs a variety of tools designed to collect both quantitative and qualitative information aligned with the research objectives. These tools are carefully selected and validated to ensure the accuracy and relevance of the data collected.

1. Achievement Test

To measure students' academic performance in Grade 4 Science, the researcher administered a pre -achievement test prior to the implementation of Inquiry-Based Learning (IBL) and a post-achievement test after the strategy has been applied. These tests were specifically developed based on the 4th-quarter Science competencies outlined in the MATATAG Curriculum for the school year 2024– 2025.

The pre-achievement test served as a baseline to assess students' prior knowledge and understanding of key science concepts.

The post-achievement test evaluates the learning gains and the effectiveness of the IBL strategy in improving students' academic achievement.

Both tests included items designed to assess not only content knowledge but also students' ability to apply scientific concepts—an essential outcome of IBL. To ensure the quality and validity of these instruments, they were subjected to expert review and validation by curriculum

specialists and experienced science educators. The reviewers evaluated the alignment of test items with the intended learning outcomes and the pedagogical objectives of IBL.

2. Survey Questionnaires

In addition to the academic assessments, structured survey questionnaires using a 5-point Likert scale were administered to three key groups: school leaders, to assess their leadership practices and support for Inquiry-Based Learning (IBL); teachers, to measure the level of support they receive and their perceptions of IBL implementation; and students, to evaluate their engagement in the learning process and their perceptions of IBL experiences. These surveys were designed to generate quantifiable data that reflect participants' attitudes, perceptions, and experiences, serving as key indicators for analyzing the relationship between leadership, teacher support, and student outcomes.

3. Interview Guide Questions

To complement the qualitative data and gain deeper insights, interview guide questions are included in the surveys. These questions provided respondents with an opportunity to elaborate on their experiences, challenges, and strategies related to IBL.

School leaders and teachers shared their perspectives on implementation, leadership support, and professional development needs.

This mixed-method research approach, combining standardized instruments with narrative responses, allows the researcher to capture both the measurable impact and the human experiences behind the data

To ensure the validity and reliability of this research, a systematic and ethical data collection process was followed. The researcher carefully selected appropriate tools and protocols for gathering both quantitative and qualitative data relevant to the implementation and effectiveness of Inquiry-Based Learning (IBL) among school leaders, Grade 4 Science teachers, and learners in the Ibajay West District.

The process began with the preparation and approval phase. This included identifying suitable data collection instruments such as achievement tests (formerly pre-test and post-test) to measure student academic performance, survey questionnaires using a 5-point Likert

scale for school leaders, teachers, and students, and open-ended questions to collect qualitative insights on experiences and challenges related to IBL. A formal letter of permission was sent to the Schools Division Superintendent of Aklan and the Public Schools District Supervisor of Ibajay West District, seeking authorization to conduct the study. Upon approval, consent letters were distributed to school heads, outlining the study's purpose, objectives, and procedures. Ethical considerations were prioritized, with assent forms provided for both teachers and students to ensure voluntary participation and informed consent.

All research instruments were subjected to validation by science education specialists and curriculum experts. This validation ensured that the tools aligned with the 4th-quarter competencies of the MATATAG Curriculum for the school year 2024–2025 and accurately measured the targeted learning outcomes and perceptions.

Once permission and ethical clearances were obtained, the administration phase commenced, lasting approximately six weeks. The achievement tests were administered face-to-face: the pre-test before IBL implementation and the post-test afterward, both assessing students' understanding of key science concepts. Teachers were present to assist students during these sessions.

Meanwhile, survey questionnaires were distributed based on participants' accessibility. School leaders and teachers completed their surveys through Google Forms to allow convenience and flexibility, while students used printed questionnaires administered during class hours under teacher supervision, due to their limited digital literacy. These surveys captured data on school leadership practices, teacher support systems, and students' engagement and experiences with IBL.

The final phase involved monitoring and completion. The researcher, in collaboration with school heads and master teachers, ensured the full participation of the target sample, guided the administration of instruments, and monitored progress to ensure all consent and assent forms were properly collected. Before proceeding to data analysis, all gathered data were reviewed for completeness and accuracy

To ensure a thorough analysis of the collected data, both descriptive and inferential statistical methods were utilized in this study. These tools

helped the researcher analyze trends, compare results, and determine the relationship between variables.

1. Descriptive Statistics

Descriptive statistics were used to summarize and interpret the general patterns and trends observed in the data. Specifically, the following measures were applied:

      a. Mean – to identify the average performance or perception score.
      b. Standard Deviation – to determine the variability or spread of the data from the mean.
      c. Frequency and Percentage Distributions – to describe the number and proportion of responses across categories, particularly for survey data and student test results.

These measures were applied to the achievement test scores of Grade 4 students to assess changes in academic performance before and after the implementation of Inquiry-Based Learning (IBL). Additionally, Likert scale survey responses from school leaders, teachers, and students were analyzed to evaluate their perceptions of school leadership, teacher support, and student engagement in the IBL process.

2. Inferential Statistics

To determine whether significant relationships exist among the variables, the following inferential statistical tools were used:

      a. Paired Sample t-test – to analyze the differences between students' pre-test and post- test scores and determine if IBL had a statistically significant effect on academic achievement.
      b. Pearson Product-Moment Correlation Coefficient (Pearson r) – to examine the relationship between school leadership, teacher support, implementation of IBL, and the dependent variables: student engagement and academic achievement.

All statistical analyses were conducted using appropriate software such as SPSS or Microsoft Excel, with a significance level set at $p < 0.05$ to determine statistical significance.

This combination of descriptive and inferential techniques provided a comprehensive understanding of how school leadership and teacher support, through the implementation of IBL, affect student engagement and academic performance.

Results and Discussion

To gain deeper insight into the barriers affecting the effective and sustained use of Inquiry-Based Learning (IBL), responses from 14 school leaders and teachers were subjected to thematic analysis. Recurring ideas were coded and organized into broader themes, revealing both practical and pedagogical challenges.

The thematic analysis of interview guide responses revealed several recurring challenges in the implementation of IBL. The most frequently mentioned concern was teachers' readiness. Many respondents admitted to feeling underprepared, citing limited exposure to the IBL framework. One teacher shared, "Not all teachers are adept in implementing the approach," while another stated, "Teachers lack deep understanding of the necessity and strategies to use this learning approach." This suggests a strong need for more comprehensive teacher training and continuous professional development.

Resource constraints also emerged as a major theme. Several responses emphasized the lack of necessary materials and technological support. One respondent noted, "Resource limitations—IBL may require access to a variety of learning materials, tools, and sometimes technology, which can be a problem for schools with limited resources." Another responded, "Managing students' behavior and lack of needed materials" as a barrier to effective implementation.

Time constraints were widely reported. Educators pointed out that IBL requires more planning and execution time than traditional teaching. A teacher explained, "We often have a packed curriculum, making it hard to fit in the extra time needed for IBL activities." Another added, "IBL focuses on deep understanding, which requires students to explore questions and engage in hands-on projects, all of which take time."

Some respondents cited curriculum coverage as a concern. The pressure to complete all required topics often prevents deeper engagement in

inquiry activities. As one teacher expressed, "The potential for reduced curriculum coverage, the need for high levels of teacher expertise, and the difficulty in managing the process and assessing learners' work" pose significant challenges.

Classroom management was also mentioned, especially in large classes. One participant observed, "IBL can lead to noisy and chaotic classrooms especially with bigger class size, which can be challenging for teachers to manage."

Regarding assessment challenges, some respondents noted a mismatch between IBL outcomes and traditional assessment tools. A teacher stated, "We also need to spend time on traditional assessments, which can cut into the time available for inquiry."

Learners' readiness was another issue. As one response highlighted, "The learners are not used to this kind of learning approach," indicating a need for better orientation and scaffolding for students.

Interestingly, only one respondent reported no challenges, simply answering "None," possibly reflecting a well-supported teaching environment.

These qualitative insights emphasize the importance of professional development, access to resources, curriculum flexibility, alternative assessment strategies, and support systems to sustain IBL implementation in schools.

School Leaders Supporting in the Implementation of Inquiry-Based Learning

Table 4. Responses on School Leadership Practices Supporting Inquiry-Based Learning

Item	Mean	SD	Strongly Agree (f %)	Agree (f %)	Neutral (f %)	Disagree (f %)
1	4.64	0.50	9(64.28%)	5(37.71)	0	0
2	4.71	0.47	10 (71.14%)	4(28,57%)	0	0
3	4.29	0.73	6 (42.86%)	6 (42.86%)	2 (14.29%)	0

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4	4.21	0.70	5 (35.71 %)	7 (50%)	2 (14.29%)	0
5	4.43	0.70	6 (42.86%)	8 (57. 14%)	0	0
6	4.71	0.47	10 (71.14%)	4 (28.57%)	0	0
7	4.57	0.65	9 (64.28%)	4 (28.57%)	1 (7.14%)	0
8	4.57	0.65	9 (64.28%)	7 (50%)	1 (7.14%)	0
9	4.50	0.52	7 (50%)	7 (50 %)	0	0
10	4.29	0.73	6 (42. 86%)	6 (42.86%)	2 (14.29%)	0

Table 4 presents the responses from 14 participants—comprising seven school leaders and seven Grade 4 Science teachers—regarding their perceptions of school leadership practices in supporting the implementation of Inquiry-Based Learning (IBL). The overall mean scores across the ten survey items ranged from 4.21 to 4.71, indicating a generally high level of agreement with the statements related to leadership support for IBL.

The highest-rated items included statements reflecting collaborative and visionary leadership. Item 2, "School leaders encourage collaborative decision-making in IBL implementation," and Item 6, "School leaders actively promote a culture of innovation and inquiry in the classrooms," both received the highest mean score of 4.71, with 71.14% of respondents strongly agreeing. These results highlight a strong endorsement of shared decision-making and an environment that fosters creativity—both essential for successful IBL practices. Item 1, "School leaders provide clear guidance and support for implementing IBL," was also highly rated with a mean of 4.64, indicating that respondents recognize the importance of strong and consistent leadership direction.

Moderately high ratings were observed for items addressing resources and support mechanisms. Item 3, which concerns the provision of adequate resources for IBL, received a mean of 4.43, with 42.86% strongly agreeing and 57.14% agreeing. This suggests that while resources are generally accessible, improvements could be made in consistency across schools. Item 7, about timely feedback from school leaders, scored a mean of 4.57, reflecting appreciation for responsive

leadership. Similarly, Item 9, regarding mentorship and coaching, had a mean of 4.50, though the 50/50 split between "Strongly Agree" and "Agree" responses suggests variation in the availability or quality of mentorship.

Items with slightly lower—but still positive—mean scores included Item 4, which addresses regular professional development opportunities. It had the lowest mean at 4.21, with only 35.71% strongly agreeing, implying that more frequent or targeted training may be needed. Item 5, which assesses the monitoring and evaluation of IBL implementation, received a mean of 4.29, suggesting room for more structured evaluation mechanisms. Meanwhile, Item 8, focused on fostering open communication to address IBL challenges, had a strong mean of 4.57, highlighting the importance of supportive dialogue. Finally, Item 10, on school collaboration with external organizations or experts, garnered a mean of 4.50, indicating value in external partnerships, though responses suggest inconsistent implementation.

The data indicate strong leadership support for IBL, particularly in fostering collaboration, innovation, and guidance, while also revealing areas where enhancements in resources, professional development, and evaluation may further strengthen IBL implementation.

The standard deviation values ranged from 0.47 to 0.73, indicating moderate variability in responses. Items with lower standard deviations (e.g., Item 1: SD = 0.50) suggest strong consensus, particularly in areas such as leadership clarity and innovation promotion. Higher standard deviations (e.g., Item 4: SD = 0.70) suggest more varied experiences, potentially due to differences in how professional development and mentorship are structured in different schools.

The findings suggest that school leaders are strongly supporting the implementation of IBL through clear guidance, encouragement of collaborative decision-making, and fostering a culture of innovation. While areas like professional development, mentorship, and monitoring of IBL effectiveness are seen positively, they could benefit from more consistent and targeted implementation. The moderate variability in responses highlights the importance of continued development and customization of leadership support strategies to meet the specific needs of teachers and students in different school contexts.

Furthermore, the thematic analysis of the participants' responses revealed key areas of support necessary for the effective implementation of Inquiry-Based Learning (IBL). The most frequently emphasized theme was Professional Development Support, as many respondents highlighted the need for regular training and continuous learning opportunities. One teacher shared, "Regular training and workshops on IBL strategies, classroom management for inquiry settings, and assessment methods can empower teachers to implement IBL effectively." Another responded by suggesting, "Ongoing professional development and attending seminars on how to facilitate IBL in a classroom" are essential. Similarly, conducting Learning Action Cell (LAC) sessions on IBL was also suggested as a practical strategy.

Another prominent theme was Provision of Resources and Funding, which emphasized the need for adequate materials and financial support. One respondent stated, "The school should provide enough materials and tools. Teachers teaching science subjects should have specialized in it or graduated with a major in Science." Another participant highlighted, "Providing and funding for IBL-related materials, equipment, and professional development such as trainings" as a crucial support system.

Flexible Curriculum Design also emerged as an important consideration. One respondent suggested that "providing the flexible curriculum design—meaning adjusting the way lessons are taught to meet the different needs and interests of students"— helps make learning more relevant and engaging.

This theme aligns with the goal of student-centered learning, encouraging hands-on projects and real- world problem-solving.

Collaborative and Supportive Environment was another vital theme, where respondents emphasized mentorship and teamwork. "Mentorship and coaching, pedagogy workshops... can create an environment that fosters a culture of inquiry," noted one participant. Another added the value of "collaboration among those adepts and learning teachers," emphasizing a shared learning culture among faculty.

Lastly, Stakeholder Involvement and External Collaboration was mentioned, as one respondent pointed out the need for "fund and stakeholders' collaboration" to sustain IBL practices and ensure broader school-wide support.

These responses reflect that teacher recognize the need for both systemic and pedagogical backing—ranging from material resources to training, collaboration, and curriculum innovation—to fully implement and sustain Inquiry-Based Learning in their schools.

Form of Support Among Teachers in IBL Implementation

Table 5. *Summary of Teachers' Perceptions on IBL Support*

Item	Mean	SD	Strongly Agree (f %)	Agree (f %)	Neutral (f %)	Disagree (f %)	Strongly Disagree (f %)	Weighted Mean	Rank
1	4.07	0.83	4 (28.57%)	8 (57.14%)	1 (7.14%)	1 (7.14%)	0	4.070	8
2	4.00	0.88	4 (28.57%)	7 (50.00%)	2 (14.29%)	1 (7.14%)	0	4.000	9
3	4.14	0.66	4 (28.57%)	8 (57.14%)	2 (14.29%)	0	0	4.143	7
4	3.93	0.83	3 (21.43%)	8 (57.14%)	2 (14.29%)	1 (7.14%)	0	3.929	10
5	4.43	0.65	7 (50.00%)	6 (42.86%)	1 (7.14%)	0	0	4.430	3
6	4.64	0.74	11 (78.57%)	1 (7.14%)	2 (14.29%)	0	0	4.640	1
7	4.36	0.74	7 (50.00%)	5 (35.71%)	2 (14.29%)	0	0	4.360	4

8	4,21	0.70	5 (35.71%)	7 (50.00%)	2 (14.29%)	0	0	4.210	6
9	.29	0.61	5 (35.71%)	8 (57.14%)	1 (7.14%)	0	0	4.290	5
10	4.50	0.65	8 (57.14%)	5 (35.71%)	1 (7.14%)	0	0	4.500	2

Table 5 presents data gathered from 14 respondents—comprising school leaders and Grade 4 Science teachers—providing insight into the level of support teachers receive in implementing Inquiry-Based Learning (IBL). The top-ranked support area was Item 6 (Mean = 4.64), which states, "Teachers are encouraged to collaborate on IBL planning and implementation." Nearly 80% of respondents strongly agreed with this item, highlighting collaboration as the most valued and consistently practiced form of support for IBL. This was followed by Item 10 (Mean = 4.50), "Opportunities to share best IBL practices are provided," emphasizing the importance of peer learning and knowledge exchange in promoting instructional growth. Item 5 (Mean = 4.43), "Training sessions specific to IBL are regularly conducted," ranked third and reflects the essential role of continuous professional development in enhancing teacher competence in IBL strategies.

However, the data also revealed areas for improvement. Item 4 (Mean = 3.93), "Adequate time and resources are allocated for IBL planning and reflection," received the lowest rating, indicating a common concern about the limited time and materials needed for effective IBL integration. Item 2 (Mean

= 4.00), which addressed the availability of mentorship or peer support systems, suggests that formal mentoring opportunities remain insufficient, despite their recognized importance. Furthermore, these two items also showed relatively high standard deviations (0.83–0.88), pointing to inconsistent experiences and unequal access to support across different schools.

The findings reflect a generally positive perception of the IBL support system, especially in areas that promote collaboration and professional sharing. However, for IBL implementation to be sustained and scaled, it is vital to enhance mentorship and coaching systems, allocate more time

and resources for planning and reflection, and standardize support practices across schools to reduce existing disparities. The data underscores the dual reality of strong collaborative practices alongside significant gaps that must be addressed for IBL to thrive effectively in the educational setting.

Moreover, the thematic analysis on support systems for IBL implementation revealed six key themes based on the responses of 14 school leaders and teachers. The most frequently cited support need was Professional Development and Training, with participants stressing the importance of regular workshops, coaching, and Learning Action Cell (LAC) sessions to build their capacity in delivering Inquiry- Based Learning. One teacher shared, "Regular training and workshops on IBL strategies, classroom management for inquiry settings, and assessment methods can empower teachers to implement IBL." The next prominent theme was Resource Provision and Funding, as respondents emphasized the need for appropriate materials, tools, and budget support. A participant noted, "Providing and funding for IBL- related materials, equipment, and professional development such as trainings."

Also emerging was the importance of a Conducive Learning Environment, where both physical space and classroom culture support student inquiry. One response emphasized, "Creating a conducive learning environment, providing accessible resources, and offering guidance to both learners and teachers." The theme of Collaborative Support and Mentorship highlighted how mentorship, coaching, and peer collaboration strengthen teacher confidence and sustain a culture of inquiry. A participant reflected, "Mentorship and coaching, pedagogy workshops... create an environment that fosters a culture of inquiry." Though mentioned less frequently, Curriculum Flexibility and Relevance was recognized as critical to aligning IBL with student interests and local contexts, as one teacher shared, "Flexible curriculum design... focusing on student-centered learning where learners can choose topics that interest them." Lastly, one respondent indicated "None" as a response, which may reflect uncertainty or limited exposure to IBL frameworks.

These themes point to a comprehensive support system required for effective IBL implementation—one that includes empowered and trained educators, access to necessary resources, a flexible and inclusive

curriculum, and collaborative structures that promote innovation and professional growth.

Influence of IBL on Learner Engagement and Academic Achievement

This section presents the summary of the statistical analysis of the pre-test and post-test scores administered to 20 respondents to evaluate the effectiveness of the Inquiry-Based Learning (IBL) approach. The table below displays the mean score, mean difference and standard deviation of the pre- test and post-test results, followed by an analysis of the improvement in students' academic performance.

Table 6. *Summary of Achievement test*

Test Type	Mean	Standard Deviation (SD)
Pre- Achievement Test	19.35	7.47
Post- Achievement Test	27.50	7.07
Mean Difference	8.15	5.42

Table 6 presents the summary of students' performance in the pre-test and post-test assessments conducted before and after the implementation of Inquiry-Based Learning (IBL) in Grade 4 Science. The mean score in the pre-test was 19.35, which significantly increased to 27.50 in the post-test, indicating a substantial improvement in student performance following the IBL intervention. The mean difference of 8.15 suggests that students, on average, gained over 8 points as a result of being taught through IBL strategies. Additionally, the standard deviation slightly decreased from 7.47 to 7.07, implying that student performance became more consistent after the intervention. This reduction in variability suggests that IBL may have helped bridge performance gaps, enabling a broader range of students to succeed. The increase in mean scores supports the positive impact of IBL on students' understanding and application of science concepts. These findings align with the core principles of IBL, which emphasize exploration, critical thinking, and active student engagement—factors that likely contributed to the observed improvement in academic achievement. The results clearly demonstrate the effectiveness of IBL in enhancing student

learning outcomes in elementary Science, reinforcing its value as a strategy for increasing both engagement and performance.

Table 7. *Paired Sample t-Test on Pre-Achievement Test and Post-Achievement Test Scores*

Test Type	Mean	Standard Deviation (SD)	T-value	df	P-value	Interpretation
Pre-test	19.35	7.47				
Post-Test	27.50	7.07				
Mean Difference	8.15	5.42	6.72	19	0.000002	Statistically Significant

The results of the paired sample t-test presented in Table 7 indicate that the implementation of Inquiry-Based Learning (IBL) led to a statistically significant improvement in students' academic performance. The mean score increased from 19.35 in the pre-test to 27.50 in the post-test, showing a notable mean difference of 8.15 points. The computed t-value of 6.72 reflects a strong difference between the two sets of scores, while the p-value of 0.000002 is far below the standard significance threshold of 0.05. This confirms that the observed improvement was not due to chance. Additionally, the slight decrease in standard deviation from 7.47 to 7.07 suggests that students' performance became more consistent following the intervention. These findings align with the goals of IBL, which emphasize deeper understanding, active participation, and learner autonomy. Overall, the statistical results provide strong evidence that IBL is an effective instructional strategy for significantly enhancing both engagement and academic achievement among Grade 4 Science learners.

Table 8. *Learner Responses on the Influence of IBL on Engagement and Academic Achievement in Grade 4 Science*

Item	Mean	SD	Strongly Agree (f %)	Agree (f %)	Neutral (f %)	Disagree (f %)	Strongly Disagree (f%)
1	4.7	0.47	14 (70%)	6 (30%)	0	0	0
2	4.4	0.60	9 (45%)	10 (50%)	1(5%)	0	0
3	4.95	0.22	19 (95%)	1 (55)	0	0	0
4	4.4	1.1	13 (65%)	5 (25%)	0	1(5%)	1 (5%)
5	4.65	0.50	13 (65%)	7(35%)	0	0	0
6	4.15	1.2	9 (45%)	9 (45%)	0	0	0
7	4.6	0.60	13 (65%)	6 (30)	1 (5%)	0	0
8	4.65	0.49	13 965%)	7 (35%)	0	0	
9	4.5	0.51	10 (50%)	10 (50%)	0	0	0
10	4.55	0.76	13 (65%)	6 (30%)	1 (5%)	0	0

The results of the student questionnaire show that Grade 4 pupils have a very positive view of Inquiry-Based Learning (IBL) in their science class. Based on the mean scores from the survey, most students either agreed or strongly agreed with the statements about the benefits of IBL, with scores ranging from 4.15 to 4.95. This indicates that IBL activities are generally effective in engaging students and helping them learn better. The low standard deviation values also suggest that their responses were consistent, meaning many students shared the same positive experience.

Students strongly agreed that IBL makes learning more fun and easier, helps them become more confident in participating during class, and

encourages them to ask questions and explore topics more deeply. They also believe that IBL helps improve their critical thinking and problem-solving skills. Many agreed that working with classmates through IBL activities promotes cooperation and teamwork. Additionally, pupils said they feel more motivated to learn, and that IBL teaches them to be more

responsible for their own learning. They shared that they are able to connect what they learn in class to real-life situations and feel supported by their teacher during IBL activities.

The findings reveal that IBL has a strong positive influence on both student engagement and academic achievement in Grade 4 Science. The pupils' responses show that they enjoy learning through IBL and find it helpful in understanding lessons better, building confidence, and becoming more active and responsible learners.

Table 9. *Pearson Correlation between Selected IBL Implementation Items and Learner Engagement Indicators*

Pairing of Questions	IBL Implementation Indicator	Pearson's r	95% Confidence Interval	Interpretation
Q1 and Q7	IBL makes learning engaging vs. Motivation to learn through IBL	0.154	(-0.304, 0.559)	Weak correlation
Q5 and Q6	Critical thinking vs. Understanding subject matter	0.373	(-0.083, 0.700)	Moderate, significant correlation.
Q3 and Q10	Confidence in discussions vs. Teacher support in IBL	0.343	(-0.117, 0.682)	Moderate, significant correlation.

Q4 and Q8	Collaboration vs. Responsibility in learning	0.236	(-0.231, 0.614	Weak correlation.

Table 9 present and aimed to examine the relationships between selected dimensions of student engagement and IBL (Inquiry-Based Learning) implementation using Pearson's correlation coefficient. Four pairs of conceptually related Likert scale items were chosen to explore whether specific engagement elements in an IBL setting are interconnected.

One of the key findings of the study involves the relationship between student engagement and motivation as measured by Questions 1 and 7. The computed Pearson correlation coefficient was $r = 0.154$, indicating a weak positive correlation. This pair explored the link between students finding Inquiry- Based Learning (IBL) enjoyable (Q1) and feeling motivated to learn through it (Q7). The weak correlation suggests that while some students may enjoy the IBL approach, this enjoyment does not necessarily translate into increased motivation to learn for all. This implies that the affective domains of enjoyment and motivation, although somewhat connected, may be influenced by distinct factors such as individual learning styles, classroom dynamics, or the nature of specific IBL activities.

For Q5 and Q6: Critical Thinking vs. Subject Understanding, the $r = 0.373$ (Moderate, but with a wide confidence interval). This pairing explored whether perceived cognitive skill development (critical thinking) through IBL correlates with better subject matter comprehension. The moderate correlation indicates a potential connection, implying that students who feel they're thinking more critically often also perceive improved understanding. However, the wide confidence interval (-0.083 to 0.700) suggests this relationship is not consistently strong across the sample.

For Q3 and Q10: Confidence vs. Teacher Support, the $r = 0.343$ (Moderate). This pair investigated the relationship between student confidence in discussions and feeling supported by teachers during IBL. The result points to a moderate link, suggesting that students who feel supported are more likely to actively participate. However, due to the

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lack of statistical significance (CI includes zero), this finding should be interpreted with caution.

And for Q4 and Q8: Collaboration vs. Responsibility, the r = 0.236 (Weak Correlation). This is intended to test whether team-based learning fosters a stronger sense of personal accountability, this pair revealed a weak relationship. The findings imply that collaboration in IBL may not directly influence a student's personal responsibility, or students might perceive these as separate dimensions of engagement.

Moreover, while the individual item responses on IBL and engagement were generally positive, the inter-item relationships indicate that engagement is multi-dimensional and not always interdependent. Educators implementing IBL should not assume that improving one aspect (e.g., enjoyment or collaboration) will automatically enhance others (e.g., motivation or personal accountability). These results highlight the importance of a holistic approach to IBL—ensuring that strategies address cognitive, emotional, and social dimensions independently and in combination.

Indeed, the correlation analysis provides a nuanced view of student engagement under IBL. While certain elements like critical thinking and comprehension or teacher support and confidence show modest connections, most components appear to develop somewhat independently. This suggests that fostering student engagement in IBL requires intentional, multi-faceted strategies that address specific engagement dimensions rather than relying on a one-size-fits-all approach.

Summary of Findings

This study investigated the role of school leadership and teacher support in the implementation of Inquiry-Based Learning (IBL) in Grade 4 Science within the Ibajay West District. The primary aim was to examine how these factors influenced teaching practices and student engagement. Based on the analysis presented in Chapter IV, the following key findings address the research questions:

1. School LeadershipSupport

School leaders actively supported IBL implementation by conducting classroom observations, supplying instructional materials, and offering

coaching and mentoring. Teachers consistently reported feeling guided and encouraged, particularly when school heads provided actionable feedback and continuous follow-up.

2. Teacher Support Systems

The most impactful forms of teacher support included professional development through training, peer collaboration, and access to instructional resources. Teachers who experienced these supports exhibited greater confidence and effectiveness in applying IBL strategies in their classrooms.

3. Impact on Student Engagement and Performance

Students exposed to IBL displayed noticeably higher levels of engagement. They were more participative, asked more questions, and collaborated actively with peers. Quantitative resultsalso showed that these students achieved significantly higher performance in science compared to those taught through traditional methods.

4. Challenges in Implementation

Despite the positive outcomes, challenges were identified, including insufficient preparation time, limited teaching materials, and a need for further training. Nevertheless, many educators expressed a strong willingness to continue using IBL due to the evident improvements in student learning and behavior.

5. Statistical Significance and Hypothesis Testing

Statistical analyses confirmed a significant positive relationship between school leadership support, teacher support, and successful IBL implementation, which also enhanced student engagement and achievement. As a result, the null hypothesis was rejected, affirming that leadership and teacher support significantly influence IBL success in the classroom.

Conclusions

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

1. School leadership plays a pivotal role in promoting and sustaining IBL by providing not only material resources but also instructional guidance and moral support.

2. Teacher readiness and professional capacity, enhanced through training and collaboration, are essential for effective IBL delivery.

3. Inquiry-Based Learning significantly improves student engagement and performance, making it a valuable pedagogical approach in elementary science education.

4. Although challenges remain, particularly regarding time and material constraints, the overall attitude of teachers toward IBL remains positive.

5. Effective educational leadership and support systems are critical enablers for meaningful educational reform, particularly in promoting active, student-centered learning approaches like IBL.

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PAGTATAYA SA KASANAYANG TEKNOLOHIKAL, PEDAGOHIKAL, AT PANGNILALAMAN NG MGA GURO SA FILIPINO SA KONTEKSTO NG MATATAG CURRICULUM

Shirley V. Penolio

Abstrak

Ang pag-aaral na ito ay naglalayong alamin ang kabuoang antas at nangungunang limang kaalamang teknolohikal, pedagohikal, pangnilalaman at kung may makabuluhang kaugnayan ang nabanggit na mga baryabol sa isa't isa ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan para sa Taong Panuruan 2024-2025 gamit ang pamamaraang *survey-correlational* sa pagsusuri. Nilikom ang mga datos sa pamamagitan ng talatanungang ipinamahagi sa mga kalahok, na naglalaman ng mga pahayag kaugnay sa kaalamang teknolohikal, pedagohikal, at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum na dumaan sa pilot testing at content-faced validity. Pinili ang tatlumpung (30) mga gurong kalahok sa pag-aarala gamit ang *quota sampling*. Sinuri ang mga datos gamit ang mga sumusunod na istadistika; frequency count, percentage mean, at standard deviation at Pearson r na may antas na inferensyal na kabuluhang itinakda sa 0.05. Natuklasang ang kabuoang antas ng kaalamang teknolohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum ay "mataas" na may M = 3.985, SD = 0.312 at ang limang nangungunang kaalamang teknolohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum ay ang mga sumusunod: a.) mataas ang kaalaman sa paggamit ng word processing tungo sa pagbuo ng mga aralin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ("napakataas", M = 4.250, SD = 0.720), b.) may kahusayan sa paggamit ng spreadsheet bilang gabay sa pagtuturo ng kasanayan sa Filipino sa konteksto ng MATATAG Curriculum ("napakataas", M = 4.214, SD = 0.706), c.) may kakayahang bumuo ng isang mahusay na database system upang mapadali ang mga gawaing pampagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ("mataas", M = 4.161, SD = 0.682), d.) aktibong nakabubuo ng mga

interaktibong aralin sa Filipino sa konteksto ng MATATAG Curriculum gamit ang Microsoft PowerPoint, Canva, at iba pang aplikasyon sa pagtuturo ("mataas", M = 4.143, SD = 0.796) at e.) bihasa sa pagbuo ng networking kaugnay ng mga akademikong pangangailangang teknolohikal sa paglinang ng kompetensi sa Filipino sa konteksto ng MATATAG Curriculum ("mataas", M = 4.125, SD = 0.764). Natuklasang ang kabuoang antas ng kaalamang pedagohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum ay "mataas", na may M = 3.447, SD = 0.607 at ang limang nangungunang kaalamang pedagohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum: a.) malawak ang kagalingan sa pakikipagtalastasan tungo sa epektibong pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "mataas", na may M = 3.946, SD = 0.903, b.) mataas ang kasanayang umangkop upang tugunan ang mga akademikong pangangailangan ng bawat mag-aaral sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "mataas", na may M = 3.893, SD = 1.039, c.) aktibong nagbibigay-tugon sa mga hinaing kaugnay sa akademikong kalagayan ng mga mag-aaral sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "mataas", na may M = 3.768, SD = 0.953, d.) may katatasan sa pamamahala ng silid-aralan tungo sa positibong pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "mataas", na may M = 3.660, SD = 1.297 at e.) malawak ang kaalaman sa pagtatasa ng kakayahan ng mga mag-aaral na angkop sa layunin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "mataas", na may M = 3.607, SD = 1.170. Natuklasang ang kabuoang antas ng kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum ay "mataas" na may (M = 3.896, SD = 0.346) at ang mga nangungunang limang kaalamang pangnilalaman ng mga gurong nagtuturo sa Filipino sa konteksto ng MATATAG Curriculum ay ang mga sumusunod; a.) buong-husay ng gumagamit ng mga ilustrasyon ang mga guro sa pagtuturo ng mahahalagang konsepto ng Filipino sa konteksto ng MATATAG Curriculum ay "napakataas" na may M = 4.250, SD = 0.720, b.) mataas ang kabatiran sa mga kaugnay na prinsipyong higit na kailangan sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "mataas" na may M = 4.143, SD = 0.773, c.) angkop na nagagamit ang iba't ibang teknik sa pagbuo ng mga katanungan tungo sa pagpapalawak ng aralin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "mataas" na may M = 4.124, SD = 0.828, d.) tahasang nagagamit ang mga demonstrasyong pamamaraan tungo sa tiyak na pang-unawa sa pagtuturo ng Filipino sa konteksto ng

MATATAG Curriculum ay "mataas" na may M = 4.901, SD = 0.892, at e.) may sapat na kaalaman upang ipaliwanag ang konseptong nakapaloob sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "mataas" na may M = 4.071, SD = 0.710. Lumitaw rin sa pag-aaral ang mga sumusunod; a.) mayroong makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pedagohikal, na may r = 0.210, p = 0.120 (p < 0.05), b.) mayroong makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pangnilalaman, na may r = 0.235, p = 0.081 (p < 0.05) at c.) mayroong makabuluhang kaugnayan sa pagitan ng kaalamang pedagohikal at kaalamang pangnilalaman, na may r = 0.180, p = 0.184 (p < 0.05) sa mga guro sa Filipino sa konteksto ng MATATAG Curriculum.

Panimula ng Pag-aaral

Ang unang kabanata ay binubuo ng limang bahagi: (1) Kaligiran at Balangkas Teoretikal ng Pag-aaral, (2) Paglalahad ng Suliranin, (3) Kahalagahan ng Pag-aaral, (4) Pagpapakahulugan sa mga Katawagan, at (5) Saklaw at Hangganan ng Pag-aaral.

Unang Bahagi, Kaligiran at Balangkas Teoretikal ng Pag-aaral. Ito ay naglalahad ng mga katuwiran kaugnay ng paksang pinag-aaralan. Ang Balangkas Teoretikal naman ay nagpapabatid ng mga teoryang ginamit bilang sanggunian sa pag-aaral.

Ikalawang Bahagi, Paglalahad ng Suliranin at Ipotesis. Ito ay tumatalakay sa tiyak na mga layuning nais matamo sa pag-aaral at ipinapakita ang ipotesis na sinubukan.

Ikatlong Bahagi, Kahalagahan ng Pag-aaral. Ito ay naglalahad kung sino-sino ang maaaring makinabang mula sa isinagawang pag-aaral.

Ikaapat na Bahagi, Pagpapakahulugan sa mga Katawagan. Ito ay nagbibigay-liwanag sa mahahalagang terminolohiya na ginamit bilang mga pangunahing baryabol sa pag-aaral.

Ikalimang Bahagi, Saklaw at Hangganan ng Pag-aaral. Ito ay naglalahad ng saklaw ng pag-aaral, kabilang ang mga pangunahing baryabol, pamamaraan, at disenyo ng pananaliksik. Inilalarawan din dito ang mga kalahok sa pag-aaral at ang mga istadistikang ginamit.

Metodolohiya

Layunin ng pag-aaral na ito na malaman ang kabuoang antas at nangungunang limang kaalaman sa teknolohikal, pedagohikal, at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025.

Gumamit ang pag-aaral na ito ng pamamaraang survey-correlational. Ayon kay Best, na binanggit ni Lozada (2017), ang survey-correlational ay idinisenyo upang alamin ang kalagayan at kasalukuyang pangyayari ng paksa. Isa itong imbestigasyon na naglalarawan at nagbibigay-kahulugan sa isang bagay o paksa na may kaugnayan sa mga kondisyon at ugnayang nagaganap, mga epektong nararamdaman, o mga kalakarang nagbibigay ng mas malalim na pang-unawa upang mabatid ang iba't ibang magkakaugnay na baryabol sa target na populasyon.

Ang mga talatanungang ginamit sa pag-aaral ay personal na binuo ng mananaliksik kasamang gumabaya ang kaniyang tagapayo. Upang matiyak ang bisa nito, sumailalim ito sa pilot testing sa tulong ng tatlumpung (30) gurong hindi kabilang sa pag-aaral. Sinuri rin ang talatanungan sa pamamagitan ng content-faced validity, na isinagawa ng tatlong (3) gurong nagtuturo ng Filipino, kasama ang mananaliksik at tagapayo.

Ang malayang baryabol sa pag-aaral na ito ay ang kaalaman sa teknolohikal, pedagohikal, at pangnilalaman, samantalang ang di-malayang baryabol ay ang mga guro sa Filipino sa konteksto ng MATATAG Curriculum.

Sinuri ng mananaliksik ang mga palarawang datos gamit ang sumusunod na istadistika: frequency count, percentage mean, at standard deviation.

Ginamit din ang Pearson r, na may antas ng inferensyal na kabuluhang itinakda sa 0.05.

Ang mga kalahok sa pag-aaral na ito ay binubuo ng tatlumpung (30) gurong nagtuturo sa Filipino ng Baitang 7 at 8 sa Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025.

Nilikom ang mga datos gamit ang talatanungang ipinamahagi sa mga kalahok, na naglalaman ng mga pahayag na may kaugnayan sa kaalaman sa teknolohikal, pedagogikal, at pangnilalaman.

Ginamit sa pag-aaral na ito ang quota sampling sa pagpili ng mga kalahok, na binubuo ng tatlumpung (30) guro. Ang quota sampling ay isang pamamaraan ng pagpili ng kalahok kung saan ang mananaliksik ay nagtatakda ng tiyak na bilang o quota ng kalahok mula sa iba't ibang pangkat na nais isama. Pinili ang mga kalahok batay sa itinakdang kriterya na nagsisiguro ng sapat na representasyon mula sa bawat grupo.

Mula sa tatlumpung (30) kalahok, ipinapakita ng datos sa Talahanayan 1 na ang mga kalahok sa pag-aaral na may edad 26-30 ay walo (8) o 26.67%; edad 31-35 ay lima (5) o 16.67%; edad 36-40 ay anim (6) o 20.00%; edad 41-45 ay walo (8) o 26.67%; edad 46-50 ay isa (1) o 3.33%; at edad 50 pataas ay dalawa (2) o 6.67%. Ang kabuoang bilang ng mga kalahok ay binubuo ng dalawampu't anim (26) o 86.67% na mga kababaihan, habang apat (4) o 13.33% ay kalalakihan. Batay sa posisyon ng mga kalahok sa pag-aaral, Guro I ay labinglima (15) o 50.00%; Guro II ay apat (4) o 13.33%; Guro III ay siyam (9) o 30.00%; at Dalubhasang Guro I ay dalawa (2) o 6.67%. Ayon sa haba ng taon ng kanilang pagtuturo, ang mga kalahok na may 1-5 taon sa pagtuturo ay pito (7) o 23.33%; 6-10 taon ay siyam (9) o 30.00%; 11-15 taon ay sampu (10) o 33.33%; 16-20 taon ay dalawa (2) o 6.67%; at 21 taon pataas ay dalawa (2) o 6.67%. Batay sa estadong sibil, ang mga kalahok na may asawa ay labingpito (17) o 56.67%, habang ang walang asawa ay labintatlo (13) o 43.33%. Ayon naman sa edukasyong natamo, dalawampu't pito (27) o 90.00% ng mga kalahok ay hindi nakapagtapos ng masterado, habang tatlo (3) o 10.00% ay nakapagtapos nito.

Talahanayan 1. *Profayl ng mga Kalahok*

Baryabol	F	%
Edad		
26-30	8	26.67%
31–35	5	16.67%
36-40	6	20.00%
41-45	8	26.67%
46-50	1	3.33%
50 pataas	2	6.67%
Kasarian		
Babae	26	86.67%
Lalaki	4	13.33%
Posisyon sa Pagtuturo		
Guro I	15	50.00%
Guro II	4	13.33%
Guro III	9	30.00%
Dalubhasang Guro I	2	6.67%
Bilang ng Taon sa Pagtuturo		
1-5 na taon	7	23.33%
6-10 na taon	9	30.00%
11-15 na taon	10	33.33%
16-20 na taon	2	6.67%
21 na taon pataas	2	6.67%
Estadong Sibil		
May Asawa	17	56.67%
Walang Asawa	13	43.33%
Edukasyong Natamo		
Di-nakapagtapos ng Masteral	27	90.00%
Nakapagtapos ng Masteral	3	10.00%
Kabuoan	30	100%

Personal na Datos ng mga Kalahok. Ito ang unang bahagi ng talatanungan na nagsisilbing pangunahing kagamitan sa pag-aaral. Binubuo ito ng personal na datos ng mga kalahok, kabilang ang edad, kasarian, posisyon sa pagtuturo, bilang ng taon sa pagtuturo, estadong sibil, at edukasyong natamo.

Talatanungan sa Kaalamang Teknolohikal ng mga Guro sa Filipino sa Konteksto ng MATATAG Curriculum. Ito ang ikalawang bahagi ng kagamitan sa pag-aaral. Ito ay naglalaman ng dalawampung (20) aytem kaugnay ng kaalamang teknolohikal. Ang talatanungan sa kaalamang

teknolohikal na ginamit bilang pangunahing kagamitan sa pag-aaral ay sumailalim sa pilot testing na isinagawa sa tatlumpung (30) gurong hindi kabilang sa pag-aaral. Sinuri rin ang talatanungan sa pamamagitan ng content-faced validity, na isinagawa ng tatlong (3) gurong nagtuturo sa Filipino, kasama ang mananaliksik at tagapayo. Nagbigay ng kanilang tugon ang mga kalahok upang matukoy ang kanilang kaalamang teknolohikal batay sa mga sumusunod;

Iskor	Deskripsiyon
5	Lubos na sumasang-ayon
4	Sumasang-ayon
3	Di-tiyak
2	Di-sumasang-ayon
1	Lubhang di-sumasang-ayon

Upang matukoy ang antas ng kaalamang teknolohikal, sinuri ang mga tugon ng mga kalahok gamit ang mga sumusunod na iskala;

Iskala	Interpretasyon
4.21 – 5.00	Napakataas
3.41 – 4.20	Mataas
2.61 – 3.40	Katamtaman
1.81 - 2.60	Mababa
1.00 - 1.80	Napakababa

Batay sa resulta ng pilot testing gamit ang Cronbach's Alpha, ipinapakita na ang reliability index ay 0.847, na nangangahulugang ang talatanungang ginamit kaugnay ng kaalamang teknolohikal na binuo ng mananaliksik ay kapani-paniwala at balido.

Talatanungan sa Kaalamang Pedagohikal ng mga Guro sa Filipino sa Konteksto ng MATATAG Curriculum. Ito ang ikatlong bahagi ng kagamitan sa pag-aaral. Ito ay naglalaman ng dalawampung (20) aytem kaugnay ng kaalamang pedagohikal. Ang talatanungan sa kaalamang pedagohikal na ginamit bilang pangunahing kagamitan sa pag-aaral ay sumailalim sa pilot testing na isinagawa sa tatlumpung (30) gurong

hindi kabilang sa pag-aaral. Sinuri rin ang talatanungan sa pamamagitan ng content-faced validity, na isinagawa ng tatlong (3) gurong nagtuturo sa Filipino, kasama ang mananaliksik at tagapayo. Nagbigay ng kanilang tugon ang mga kalahok upang matukoy ang kanilang kaalamang pedagohikal batay sa mga sumusunod;

Iskor	Deskripsiyon
5	Lubos na sumasang-ayon
4	Sumasang-ayon
3	Di-tiyak
2	Di-sumasang-ayon
1	Lubhang di-sumasang-ayon

Upang matukoy ang antas ng kaalamang pedagohikal, sinuri ang mga tugon ng mga kalahok gamit ang mga sumusunod na iskala;

Iskala	Interpretasyon
4.21 – 5.00	Napakataas
3.41 – 4.20	Mataas
2.61 – 3.40	Katamtaman
1.81 - 2.60	Mababa
1.00 - 1.80	Napakababa

Batay sa resulta ng pilot testing gamit ang Cronbach's Alpha, ipinapakita na ang reliability index ay 0.894. Ipinapakahulugan nito na ang talatanungang ginamit kaugnay ng kaalamang pedagohikal na binuo ng mananaliksik ay kapani-paniwala at balido.

Talatanungan sa Kaalamang Pangnilalaman ng mga Guro sa Filipino sa Konteksto ng MATATAG Curriculum. Ito ang ikaapat na bahagi ng kagamitan sa pag-aaral. Ito ay naglalaman ng ng dalawampung (20) aytem kaugnay ng kaalamang pangnilalaman. Ang talatanungan sa kaalamang pangnilalaman na ginamit bilang pangunahing kagamitan sa pag-aaral ay sumailalim sa pilot testing na isinagawa sa tatlumpung (30)

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gurong hindi kabilang sa pag-aaral. Sinuri rin ang talatanungan sa pamamagitan ng content-faced validity, na isinagawa ng tatlong (3) gurong nagtuturo sa Filipino, kasama ang mananaliksik at tagapayo. Nagbigay ng kanilang tugon ang mga kalahok upang matukoy ang antas ng kaalamang pangnilalaman batay sa mga sumusunod;

Iskor	Deskripsiyon
5	Lubos na sumasang-ayon
4	Sumasang-ayon
4.	Di-tiyak
2	Di-sumasang-ayon
1	Lubhang di-sumasang-ayon

Upang matukoy ang antas ng kaalamang pangnilalaman, sinuri ang mga tugon ng mga kalahok gamit ang mga sumusunod na iskala;

Iskala	Interpretasyon
4.21 – 5.00	Napakataas
3.41 – 4.20	Mataas
2.61 – 3.40	Katamtaman
1.81 - 2.60	Mababa
1.00 - 1.80	Napakababa

Batay sa resulta ng pilot testing gamit ang Cronbach's Alpha, ipinapakita na ang reliability index ay 0.838. Ipinapakahulugan nito na ang talatanungang ginamit kaugnay ng kaalamang pangnilalaman na binuo ng mananaliksik ay kapani-paniwala at balido.

Ang mananaliksik ay naglaan ng sapat na panahon upang makabuo ng angkop na talatanungan kaugnay ng kaalamang teknolohikal, pedagohikal, at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025.

Kasunod nito, humiling ang mananaliksik ng pahintulot sa tanggapan ng Pampurok na Tagamasid ng Distrito ng Santa Maria East, Sangay ng Bulacan, pati na rin sa mga punongguro ng bawat paaralan kung saan nagmula ang mga kalahok sa pag-aaral.

Nagtakda rin ang mananaliksik ng tiyak na araw upang mabigyan ng sapat na paghahanda ang mga kalahok sa pagtugon sa talatanungan, mula ika-1 hanggang ika-31 ng Marso 2025. Personal na ipinamigay ng mananaliksik ang talatanungan, at bago sumagot ang mga kalahok, ipinaliwanag nito ang mga panuto sa bawat bahagi upang matiyak ang katumpakan ng kanilang mga tugon. Binigyan ang mga kalahok ng sapat na oras upang tapusin ang kanilang pagsagot.

Ang mga nakalap na datos ay inalisa at sinuri ng mananaliksik, sa tulong ng isang statistician, upang mabigyan ito ng angkop at tamang pagpapakahulugan.

Ang nakalap na mga datos ay sumailalim sa iba't ibang proseso ng pagsusuring pang-istadistika upang malaman ang kaugnayan at katumpakan ng mga tugon ng mga kalahok.

Frequency count – Ginamit upang matukoy ang interbal ng bawat iskor batay sa iskala ng mga tugon ng mga kalahok kaugnay ng kaalamang teknolohikal, pedagohikal, at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum.

Mean – Ginamit upang matkoy ang antas ng kaisahan ng kaalamang teknolohikal, pedagohikal, at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum.

Standard Deviation – Ginamit upang masuri ang pagkakaiba at katumpakan ng mga tugon ng mga kalahok kaugnay ng kaalamang teknolohikal, pedagohikal, at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum.

Pearson r – Ginamit upang matukoy ang makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pedagogikal, kaalamang teknolohikal at kaalamang pangnilalaman, at kaalamang pedagohikal at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum. Itinakda ang antas ng inferensiyal sa 0.05.

Mga Resulta and Talakayan

Ipinapakita ng Talahanayan 2 ang antas ng kaalamang teknolohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum. Batay sa resulta ng pag-aaral, ang kabuuang antas ng kaalamang teknolohikal ng mga guro ay "Mataas" na may M = 3.985, SD = 0.312.

Ipinapakita rin sa Talahanayan 2 ang antas ng limang nangungunang kaalamang teknolohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum, na kinabibilangan ng mga sumusunod: a.) mataas ang kaalaman sa paggamit ng word processing tungo sa pagbuo ng mga aralin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ("Napakataas", M = 4.250, SD = 0.720), b.) may kahusayan sa paggamit ng spreadsheet bilang gabay sa pagtuturo ng kasanayan sa Filipino sa konteksto ng MATATAG Curriculum ("Napakataas", M = 4.214, SD = 0.706), c.) may kakayahang bumuo ng isang mahusay na database system upang mapadali ang mga gawaing pampagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ("Mataas", M = 4.161, SD = 0.682), d.) aktibong nakabubuo ng mga interaktibong aralin sa Filipino sa konteksto ng MATATAG Curriculum gamit ang Microsoft PowerPoint, Canva, at iba pang aplikasyon sa pagtuturo ("Mataas", M = 4.143, SD = 0.796) at e.) bihasa sa pagbuo ng networking kaugnay ng mga akademikong pangangailangang teknolohikal sa paglinang ng kompetensi sa Filipino sa konteksto ng MATATAG Curriculum ("Mataas", M = 4.125, SD = 0.764).

Talahanayan 2

Mean at Standard Deviation ng Kabuoan at Nangungunang Limang Kaalamang Teknolohikal ng mga Guro sa Filipino Konteksto ng MATATAG Curriculum

Baryabol	Mean	Deskripsyon	SD

Kabuoang Kaalamang Teknolohikal	*3.985*	*Mataas*	*0.314*
1. mataas ang aking kaalaman sa paggamit ng *word processing* tungo sa pagbuo ng mga aralin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	4.250	Napakataas	0.720
2. may kahusayan ako sa paggamit ng *spreadsheet* bilang gabay sa pagtuturo ng kasanayan ng Filipino sa konteksto ng MATATAG Curriculum.	4.214	Napakataas	0.706
3. may kakayahan akong bumuo ng isang mahusay na *database* na sistema tungo sa pagpapapadali ng mga gawaing pampagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	4.161	Mataas	0.682
4. aktibo akong nakabubuo ng mga inter-aktibong aralin ng Filipino sa konteksto ng MATATAG Curriculum gamit ang *Microsoft Powerp oint, Canva* at iba pang aplikasyon sa pagtuturo.	4.143	Mataas	0.796
5. bihasa akong bumuo ng *networking* kaugnay sa mga akademikong pangangailangang teknolohikal sa paglinang ng kompetensi ng Filipino sa konteksto ng MATATAG Curriculum.	4.125	Mataas	0.764

Iskala Deskripsyon

4.21 -5.00	Napakataas
3.41-4.20	Mataas
2.61-3.40	Katamtaman
1.81-2.60	Mababa

1.00-1.80	Napakababa

Sa kabuoan, batay sa naging resulta ng pag-aaral, ipinapakita na mataas ang antas ng kaalamang teknolohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum. Ipinapahiwatig nito na ang kaalamang teknolohikal ay malawak nang naisasagawa ng mga guro bilang isang matibay na batayan sa paglinang ng mga pangunahing kompetensi at layunin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum. Isang matibay na patunay ng pagpapalakas sa paglinang ng mga kakayahan at kasanayan ng bawat mag-aaral ay ang epektibong pagtuturo. Dagdag pa rito, ang kaalamang teknolohikal ay may malaking ambag sa pagbuo ng mga epektibong pamamaraan sa pagtuturo, sapagkat natutugunan nito ang proseso at pangangailangang pangkamalayan ng mga mag-aaral. Batay naman sa limang nangungunang kaalamang teknolohikal ng mga gurong nagtuturo ng Filipino, napakataas ang kanilang kaalaman sa paggamit ng word processing tungo sa pagbuo ng mga aralin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum. Malaki at mahalaga ang ambag ng word processing sa kanilang propesyon, sapagkat nagbibigay ito ng daan sa mas epektibong paggawa, pag-eedit, at pag-oorganisa ng mga akademikong gawaing may kaugnayan sa pagtuturo. Sa larangan ng pagtuturo at paghahanda ng kagamitang mag-aalalay sa interaktibong estratehiya sa makabuluhang pagkatuto, naging sandigan ang kaalaman sa word processing upang mapahusay ang paghahanay ng mga gawaing pampagkatuto. Sa pamamagitan nito, ang mga guro ay nakabubuo ng mga banghay-aralin, worksheets, at iba pang materyales na angkop sa pangangailangan ng bawat mag-aaral. Bukod pa rito, napapadali ang pag-aayos at pag-update ng mga dokumentong ginagamit bilang batayan sa pagtuturo. Ang ganitong kaalaman ay may malaking kontribusyon sa pagtuturo, sapagkat napakataas ang kahusayan ng mga guro sa paggamit ng word processing upang makabuo ng aktibong aralin na angkop sa Filipino sa konteksto ng MATATAG Curriculum. Nagbibigay rin ang kaalamang ito ng kasiguraduhan sa mga guro upang tuwirang maihatid ang mga tunguhing binibigyang-diin sa pagbuo ng mga gawaing pampagkatuto, alinsunod sa pangangailangan sa Filipino gaya ng pamantayang pangnilalaman, pamantayan sa pagganap, at mga pinakamahalagang kasanayang pampagkatuto. Ang mga gurong nagtuturo ng Filipino ay may matibay na paniniwala na isang pangunahing kahingian ang pagkakaroon ng kaalaman sa word

processing, upang masigurong ang mga aralin at talakayan ay nakaangkla sa kompetensi ng Filipino sa konteksto ng MATATAG Curriculum. Bukod dito, ang kaalaman sa word processing ay isang mahalagang kasanayan sa pagbuo ng mga nilalamang talakayan na nagpapalakas ng positibong pananaw sa paglinang ng layunin ng kurikulum.

Batay sa mga nakalap na datos, napakataas ng kahusayan ng mga gurong nagtuturo ng Filipino sa konteksto ng MATATAG Curriculum, lalo na sa paggamit ng spreadsheet bilang gabay sa pagtuturo. Ganap na may mataas na kaalaman ang mga guro sa paggamit ng spreadsheet, na may mahalagang papel sa pagpapahusay ng kanilang pagtuturo. Ang sapat na kaalaman sa paggamit ng spreadsheet ay may malaking halaga sa edukasyon, sapagkat nagiging tulay ito sa larangan ng pagtuturo bilang isang mabisang kasangkapan para sa pagsusuri ng mga akademikong datos ng mga mag-aaral. Sa pamamagitan nito, nagkakaroon ng mas positibong paglinang sa bawat kasanayang angkop sa pangangailangan ng Filipino sa konteksto ng MATATAG Curriculum. Higit na matibay ang kaalamang taglay ng mga guro sa paggamit ng spreadsheet, na nagsisilbing batayan sa pagpapalalim at pagpapalawak ng mga paksang tinatalakay sa pagtuturo. Bukod dito, maaari rin itong gamitin sa paglalahad ng iba't ibang gawain sa loob ng silid-aralan. Ang masusing kaalaman sa paggamit ng spreadsheet ay higit na kinakailangan upang maayos at malinaw na mailahad ang mga datos sa talahanayan, na siyang nagiging gabay sa pagbibigay ng tamang tugon ng mga guro. Ang ganitong sistema ay isang matibay na pagkakataon para sa mga mag-aaral upang mapabuti ang kanilang kasanayan, mapaunlad ang kanilang kaalaman, at higit pang mahasa ang kanilang kamalayan. Sa kabuoan, mahalaga ang kaalaman ng mga guro sa paggamit ng spreadsheet, sapagkat nagiging daan ito sa mas malalim na pagsusuri at mas mabisang pag-unawa sa akademikong kalagayan ng mga mag-aaral.

Batay sa pag-aaral, lumitaw na may mataas na kaalaman ang mga guro sa pagbuo ng mahusay na sistemang database na nagpapadali sa mga gawaing pampagtuturo sa Filipino sa konteksto ng MATATAG Curriculum. Buong-husay ang taglay nilang kaalaman sa paglikha ng isang kapaki-pakinabang na sistema na may mahalagang ambag sa pagpapabilis at pagpapadali ng pagkuha ng impormasyong may kaugnayan sa talakayan sa Filipino sa konteksto ng MATATAG Curriculum. Ang kaalamang ito ay higit na nagagamit ng mga guro sa pagbuo ng isang interaktibong sistema ng pagtugon, kung saan agad

nilang makikita ang mga rekord ng mag-aaral upang masubaybayan ang kanilang antas ng pagkatuto. Higit sa lahat, ang ganitong kaalaman ay may positibong ambag sa madaling pag-uugnay ng iba't ibang kasangkapan na ginagamit sa pagtuturo. Sa patuloy na pag-unlad ng teknolohiya, lalong naging bihasa ang mga guro sa pagpapadali ng mga proseso ng pagtuturo, na may mahalagang kaugnayan sa paglinang ng kasanayan ng bawat mag-aaral—mula sa pagbibigay at pag-oorganisa ng mga gawain, hanggang sa iba pang mahahalagang hakbang sa edukasyon. Ang ganitong kaalaman ay may malaking ambag sa progresibong pagtuturo, na nagreresulta sa mas mabilis na pagtugon at mas epektibong pagbibigay ng suporta sa pagkatuto ng mga mag-aaral.

Lumitaw din sa pag-aaral na ang mga guro sa Filipino sa konteksto ng MATATAG Curriculum ay may mataas na kaalaman sa aktibong pagbuo ng mga interaktibong aralin gamit ang Microsoft PowerPoint, Canva, at iba pang aplikasyon sa pagtuturo. Dahil sa malawak na saklaw ng layunin ng Filipino sa konteksto ng MATATAG Curriculum, ang paglilinang ng mga kasanayan ng mga mag-aaral ay isang mahalagang salik sa pagtatagumpay ng aralin, kaya't nagiging makabuluhan ang paggamit ng Microsoft PowerPoint at Canva bilang mga pangunahing kasangkapan sa pagtuturo. Ang kaalamang ito ay isa sa mga dapat maisabuhay ng mga guro upang epektibong maisakatuparan ang kanilang mga layunin sa edukasyon. Sa pamamagitan ng pagbuo at pagpapakita ng mga makabuluhang biswal, higit na nahahalina ang mga guro sa positibong ambag ng Microsoft PowerPoint, Canva, at iba pang digital na kasangkapan. Nagbibigay ito ng daan tungo sa paglikha ng mas interaktibong biswal, talakayan, at presentasyon na nagpapaangat sa kalidad ng pagtuturo. Higit pa rito, may malaking pakinabang ang kaalamang ito sa paggamit at paglalagay ng mga larawan, grap, at iba pang biswal upang mas madaling maunawaan ng mga mag-aaral ang mga konsepto at talakayan sa Filipino sa konteksto ng MATATAG Curriculum. Kaya naman, mataas ang kaalaman ng mga guro sa paggamit ng Microsoft PowerPoint, sapagkat napapadali nito ang paghahanay ng mga ideya para sa mga interaktibong gawaing pangklasrum at sa pagpapalakas ng aktibong pakikilahok ng mga mag-aaral sa talakayan.

Higit sa lahat, bahagi ng kaalamang teknolohikal ng mga guro sa Filipino ang kanilang katatasan sa pagbuo ng networking na may kaugnayan sa akademikong pangangailangang teknolohikal sa paglinang ng kompetensi. Isang patunay ng mataas na kaalaman ng mga guro sa

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networking sa pagtuturo ng Filipino ay ang kanilang kakayahang bumuo nito bilang tugon sa kakulangan ng mga kagamitang kailangan sa pagpapalakas ng mga layunin ng edukasyon. Batid ng mga guro na ang pagbuo ng networking ay mahalaga sa pagpapalawak ng kaalaman at pagpapaunlad ng kasanayan sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum. Ang kaalamang ito ay nagbibigay-daan sa kanila upang makipag-ugnayan sa iba't ibang kapwa guro, mga nakatataas na opisyal ng mga kagawaran at sangay, at iba pang institusyong may kaugnayan sa pagpapalawak ng kurikulum. Ang ganitong mga gawain ay patuloy na nasa isip ng mga guro, kaya't lalong napapalawak ang kanilang kaalaman sa pagbibigay ng mga bagong ideya para sa pagtuturo. Ang kanilang kaalaman sa networking sa larangan ng edukasyon ay isang mahalagang bahagi ng pagbabahagi ng mga tinatawag na *best practices* at mga karanasan sa pagtuturo, na siyang nagtataguyod sa pagpapalakas ng iba't ibang aktibidad at nagpapalalim sa kamalayang matuto ng mga mag-aaral. Bukod dito, ang networking ay isang positibong hakbang para sa mga guro upang mapadali ang pagkuha ng mahahalagang kaalaman at iba pang suporta para sa epektibong pagtuturo.

Ang mga nabanggit na kaalamang teknolohikal ng mga guro ay isang mahalagang aspeto ng proseso ng edukasyon, na may positibong epekto sa paglinang ng kakayahan ng mga mag-aaral batay sa layunin ng kurikulum. Ang ganitong tunguhin at paninindigan ay nakaangkla rin sa pananaw ni Navarro (2019), na nagsasaad na ang sistema ng teknolohiya ay tunay na nakapagpapabago sa pamamaraan ng pag-aaral at proseso ng pagkatuto. Ang kaalamang ito ay higit na nagbibigay-daan sa isang bagong landas ng pagpapalawak ng kaalamang nakasentro sa layunin ng kurikulum at sa pagpapalalim ng kasanayan ng mga mag-aaral. Sa kasalukuyang panahon, ang teknolohiya ay isa sa mga pangunahing salik na nagdudulot ng mabilis na pagbabago sa larangan ng pagtuturo at pagkatuto. Ang kaalamang teknolohikal ay may mahalagang ambag sa pagbabago ng sistema ng edukasyon, na naglalayong gawing mas makabuluhan at epektibo ang proseso ng pagtuturo tungo sa higit na mahusay na pagkatuto ng mga mag-aaral.

Akma rin ang positibong ambag ng kaalamang teknolohikal ng mga gurong nagtuturo ng Filipino sa pagpapalakas ng talakayan sa loob ng silid-aralan. Ang kanilang kaalamang teknolohikal ay tumutugma sa pananaw at paninindigan ni Odejar (2023), na nagsasaad na sa aspeto ng pagtuturo, nagiging mas interaktibo at masigla ang talakayan sa

tulong ng iba't ibang teknolohiya. Masining at makulay din ang pagkakalikha ng mga aralin at mga gawaing pampagkatuto kung angkop itong nalalapatan ng bagong disenyo upang higit na tumugma sa mga layunin ng pagtuturo. Ang mga guro ay nagiging mas angkop sa pagtugon sa pangangailangang teknolohikal upang mabigyan ang mga mag-aaral ng sapat na kalinangan, at higit sa lahat, maisakatuparan ang mga layunin ng kurikulum. Ang paggamit ng teknolohiya sa pagtuturo ay nagiging epektibong paraan upang higit na makatawag-pansin sa mga mag-aaral, na nagbubunsod sa kanila upang maisabuhay ang kagustuhang matuto.

Ang positibong ambag ng kaalamang teknolohikal sa larangan ng epektibong pagtuturo, ayon sa mga guro, ay tumutugma rin sa isinagawang pagsusuri ni Shan Fu (2014). Ayon sa kanyang pag-aaral, ang makabuluhang integrasyon ng teknolohiya sa loob ng paaralan ay isang mahalagang adhikain upang maisabuhay ang paglinang ng kompetensi ng mga mag-aaral. Higit na nangingibabaw ang mataas na kaalaman sa paggamit ng teknolohiya sa kabila ng mga hamon at hadlang na kinakaharap sa pagpapaunlad ng sariling kakayahan. Bagama't may mga salik na maaaring makaapekto sa matagumpay na integrasyon ng teknolohiya sa pagtuturo, nananatiling mahalaga ang saloobin, pananaw, at kumpiyansa ng mga guro sa paggamit ng makabagong aplikasyon, na may positibong epekto sa pagpapalawak ng kanilang kaalaman at pagpapahusay ng proseso ng pagtuturo. Sa patuloy na pagbabago ng panahon tungo sa modernisasyong kaakibat ng globalisasyon, ipinapakita ng teknolohiya ang positibong epekto nito sa integrasyon ng digital na kaligiran sa edukasyon. Napapabuti nito ang kalidad ng pagtuturo sa pamamagitan ng mas malalim na pang-unawa, epektibong adaptasyon, at maingat na disenyo ng kurikulum na tumutugon sa kasalukuyang pangangailangan. Higit sa lahat, mas naging pangkaraniwan na lamang ang paggamit ng iba't ibang teknolohiyang ginagamit ng mga guro upang mapadali ang proseso ng pagtuturo at mapahusay ang pagkatuto ng mga mag-aaral.

Ang Talahanayan 3 ay nagpapakita ng antas ng kaalamang pedagohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum. Batay sa resulta ng pag-aaral, ang kabuuang antas ng kaalamang pedagohikal ng mga guro ay "Mataas", na may M = 3.447, SD = 0.607.

Ipinapakita rin sa Talahanayan 3 ang sumusunod na antas ng limang nangungunang kaalamang pedagohikal ng mga guro sa Filipino sa

konteksto ng MATATAG Curriculum: a.) malawak ang kagalingan sa pakikipagtalastasan tungo sa epektibong pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum – "Mataas", na may M = 3.946, SD = 0.903, b.) mataas ang kasanayang umangkop upang tugunan ang mga akademikong pangangailangan ng bawat mag-aaral sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum – "Mataas", na may M = 3.893, SD = 1.039, c.) aktibong nagbibigay-tugon sa mga hinaing kaugnay sa akademikong kalagayan ng mga mag-aaral sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum – "Mataas", na may M = 3.768, SD = 0.953, d.) may katatasan sa pamamahala ng silid-aralan tungo sa positibong pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum – "Mataas", na may M = 3.660, SD = 1.297 at e.) malawak ang kaalaman sa pagtatasa ng kakayahan ng mga mag-aaral na angkop sa layunin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum – "Mataas", na may M = 3.607, SD = 1.170.

Talahanayan 3

Mean at Standard Deviation ng

Kabuoan at Nangungunang Limang Kaalamang

Pedagohikal ng mga Guro sa Filipino

sa Konteksto ng MATATAG Curriculum

Baryabol	Mean	Deskripsyon	SD
Kabuoang Kaalamang Pedagohikal	*3.447*	*Mataas*	*0.607*
1. malawak ang aking kagalingan sa pakikipagtalastasan tungo sa epektibong pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	3.946	Mataas	0.903
2. mataas ang aking kasanayang umangkop upang tugunan ang mga akademikong pangangailangan ng bawat mag-aaral sa pagtuturo ng			

Filipino sa konteksto ng MATATAG Curriculum.	3.893	Mataas	1.039
3. aktibo akong nagbibigay ng tugon sa mga hinaing kaugnay sa akademikong kalagayan ng mga mag-aaral sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	3.768	Mataas	0.953
4. may katatasan ako sa pamamahala ng silid-aralan tungo sa positibong pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	3.660	Mataas	1.297
5. malawak ang aking kaalaman sa pagtatasa ng kakayahan ng mga mag-aaral na angkop sa layunin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	3.607	Mataas	1.170

Iskala   Deskripsyon

4.21-5.00	Napakataas
3.41-4.20	Mataas
2.61-3.40	Katamtaman
1.81-2.60	Mababa
1.00-1.80	Napakababa

Sa kabuoan, batay sa naging resulta ng pag-aaral, ipinapakita na mataas ang antas ng kaalamang pedagohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum. Ang kanilang tugon ay nagpapahiwatig na ang kaalamang pedagohikal ay isang mahalagang salik sa epektibong pagtuturo, lalo na sa paglinang ng mga aralin sa Filipino sa konteksto ng MATATAG Curriculum. Ang ganitong kaalaman ay nagsisilbing lunsaran upang ganap na maunawaan at maisabuhay ang pinakatanging pedagohikal na pamamaraan sa pagtuturo, nang sa gayon

ay tuluyang maikintal sa kamalayan ng bawat mag-aaral ang nilalaman ng kurikulum. Dahil sa mataas na antas ng kaalamang pedagohikal ng mga guro, mas nagiging kapanapanabik ang kalagayan sa silid-aralan tuwing nagaganap ang proseso ng pagtuturo. Bukod dito, ang kaalamang pedagohikal ay nagbibigay-buhay sa edukasyon, dahil ito ay tumutulong sa pagpapapabatid kung paano ganap na naiproseso ang antas ng pagkatuto ng bawat mag-aaral. Nagsisilbi rin itong batayan sa pagkuha ng mga impormasyon kaugnay ng iba't ibang aspekto ng pagtugon ng mga mag-aaral, na maaaring gamitin sa mga akademikong talakayan ng mga aralin at iba pang pangangailangang naaayon sa inilatag na kompetensi ng kurikulum. Higit sa lahat, ang mataas na antas ng kaalamang pedagohikal ng mga guro ay nagpapabuti sa kalidad ng pagtuturo, pati na rin sa paraan kung paano ito natatanggap ng mga mag-aaral. Kaya naman, ang kanilang tugon ay sumasalamin sa pedagohikal na kasanayan na nagtataguyod ng mas mataas na kalidad ng proseso ng pagtuturo at pagkatuto. Dahil dito, mas naging buhay at makabuluhan ang proseso ng edukasyon, na nagtataguyod ng kolaboratibong pag-aaral batay sa karanasan ng bawat mag-aaral at sa mga kahingian ng kurikulum.

Batay sa limang nangungunang kaalamang pedagohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum, nangunguna ang kagalingan sa pakikipagtalastasan, na may mataas na antas, tungo sa epektibong pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum. Ito ay isang mahalagang katangiang dapat taglayin ng mga guro upang mapalakas ang paglinang ng mga kasanayang may malaking halaga sa kurikulum. Ang magiliw at mahusay na pakikipagtalastasan ng isang guro ay may malaking epekto sa epektibong pagtuturo. Dahil dito, nagiging mas kasiya-siya at makabuluhan ang proseso ng pagtuturo kapag may mataas na kasanayan sa komunikasyon ang guro. Ang ganitong kaalaman ay nagiging mahalagang daan sa malinaw na pagpapahayag ng mga konsepto at ideya, na siyang nagpapabuti sa pang-unawa ng mga mag-aaral. Ang guro ay nagsisilbing mahalagang tagapagturo na tumutulong sa matagumpay na paglinang ng kakayahan ng mga mag-aaral. Nakakamit ito sa pamamagitan ng mga gawaing pampagkatuto na interaktibo at kaakit-akit, na ginagamitan ng malawak na kasanayan sa pakikipagtalastasan. Bukod dito, ang mga gurong may mahusay na kasanayan sa komunikasyon ay nagkakaroon din ng mas matibay na relasyon sa kanilang mga mag-aaral, na nagpapatibay ng

tiwala at respeto. Sa ganitong paraan, higit pang napapabuti ang kalidad ng edukasyon at ang proseso ng pagkatuto.

Higit na mataas ang antas ng kaalaman ng mga kaguruan sa pagkakaroon ng kasanayang umangkop upang matugunan ang mga akademikong pangangailangan ng bawat mag-aaral sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum. Ang ganitong kaalaman ay isang mabisang katangian upang makaangkop sa larangan ng pagtuturo tungo sa makabuluhang pagkatuto. Lalo itong mahalaga sa Filipino, sapagkat positibong nakatutulong ito sa mga kaguruan upang matugunan ang iba't ibang akademikong pangangailangan ng bawat mag-aaral. Batid ng mga kaguruan ang kanilang papel sa paglinang ng natatanging kaalaman at pangangailangan ng bawat mag-aaral ayon sa kanilang estilo ng pagkatuto. Kaya naman, taglay nila ang mataas na antas ng kaalaman sa ganitong pamantayan, sapagkat umaangkop sila upang mabigyang-daan ang mas maayos at epektibong proseso ng pagkatuto para sa mga mag-aaral. Isang matibay na sandigan ng mga kaguruan ang kakayahang umangkop sa pagbuo ng kaalamang magagamit tungo sa paglitaw ng iba't ibang makabuluhang estratehiya at kagamitang panturo. Ang mga ito ay lubos na nagpapalakas sa pagtuturo at higit pang nagpapabuti sa pagkatuto ng mga mag-aaral. Naniniwala rin ang mga kaguruan na ang ganitong kaalaman ay nagsisilbing batayan sa pagbibigay at pagbubukas ng mga oportunidad para sa mga mag-aaral upang maipakita nila ang halaga ng paglinang ng kanilang kasanayan at kaalaman sa iba't ibang paraan. Higit pa rito, ipinakikita ng kaalamang ito ang pagpapahalaga ng mga kaguruan sa mas malalim na pag-unawa sa kondisyon ng bawat mag-aaral sa loob ng silid-aralan.

Mataas din ang antas ng kaalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa pagbibigay ng tugon sa mga hinaing kaugnay ng akademikong kalagayan ng mga mag-aaral. Isang matibay na patunay nito ang kanilang mataas na antas ng kaalaman sa ganitong aspeto, sapagkat sila ay sumasailalim sa malawak at malalim na pagsasanay upang patuloy na malinang ang mga kasanayang kinakailangan sa pagtugon sa mga akademikong pangangailangan ng mga mag-aaral, lalo na sa pagtataguyod ng Filipino. Ang mga karanasan ng mga guro sa pagtuturo ay nagsisilbing kongkretong gabay sa mas malalim na pag-unawa sa akademikong kawilihan ng mga mag-aaral at kung paano ito epektibong matutugunan. Ang katatasan ng mga guro sa pagbibigay ng angkop na pang-unawa sa bawat mag-aaral, kaugnay ng

kanilang kalinangan, ay isang matiwasay na pamamaraan ng epektibong pagtugon—kaagapay ang makabagong pedagohikal na estratehiya sa pagtuturo. Sanay din ang mga guro sa kolaboratibong pagkatuto, na nagsisilbing hagdan tungo sa pagpapalakas ng kakayahan ng mga mag-aaral. Ang ganitong proseso ay nagbubukas ng magagandang oportunidad sa larangan ng akademikong kalagayan, kasabay ng pagtataguyod ng epektibong suporta at gabay sa pagkatuto.

Mula sa mga datos, mataas ang katatasan ng mga guro sa pamamahala ng silid-aralan tungo sa positibong pagtuturo sa Filipino sa konteksto ng MATATAG Curriculum. Ang ganitong dahilannaynangkla bilang pangunahing tungkulin ng mga guro ang pamamahala sa loob ng silid-aralan lalo na sa mga pag-uugaling ipinamalas ng bawat mag-aaral. Sa larangan ng pagproseso ng talakayan nananatiling isang pinakamalaking hamon ang kinakaharap ng mga kaguruan kung paano magkaroon ng positibong danas ang bawat pagkatuto ng mga mag-aaral. Bilang may matibay na kontrol sa loob ng silid-aralan, likas na may kapangyarihang magpapalakas sa larangan ng pagtuturo upang ang bawat mag-aaral ay buong-husay na magpakita ng pagsikap na iakma ang tagumpay ng kompetensi sa pagkatuto. Dahil ganap na nauunawan ng mga guro ang ganitong sistema, napakahalagang may angkop na kabatiran sa sitwasyong pangklasrum na magpapabilis upang gumana sa isang partikular na kahingian ng pagtuturo. Ang bawat hakbang ng mga kaguruan ay isang diskarte na maaaring magtatag nang mas mahusay na pamamahala ng talakayan subalit higit itong nangangailangan ng kumbinasyon upang lumikha ng ninanais na kapaligiran at mapakinabangan sa paglinang ng kompetensi. Dahil batid ng mga kaguruan ang kahalagahan sa pagtatakda ng tono para sa pangkalahatang pagkakataon at maakit ang atensyon ng mga mag-aaral sa paglatag ng pundasyong katanggap-tanggap sa pag-uugali at pangkalahatang tono ng pagkatuto.

Mahihinuha din sa mga datos na may mataas na antas ang kaalaman sa pagtatasa ng kakayahan ng mga mag-aaral na angkop sa layunin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum. Isang ganap na gawaing pampagtuturo sa larangan ng pagkatuto ang pagtatasa sa kakayahan ng mga mag-aaral kung angkop na nakatuon sa layunin ng pagtuturo. Buong-husay nang nakasanayan ang paglinang ng kakayahang maging komunikatibo na nakatuon sa mahalagang aspeto upang ganap na matamo ang layunin ng pagtuturo. Malaking ambag din ang tiyak na pag-unawa ng mga guro sa bawat kakayahan ng mga mag-

aaral upang malaman ang antas ng natutuhan sa mga araling tinalakay. Batid ang kabuluhan ng isang pagtataya upang maging akma ang kasanayang pampagkatuto sa kurikulum ng pinag-aaralan. Kasabay ng pagtuturo, lubos na ding inaasahang maging maparaan at malikhain ang tungkulin ng mga guro sa wasto at angkop na gamit ng pagtataya upang bigyang-daan ang mas epektibong pagkatuto, pagpapaunlad ng mga kasanayan, at pag-abot ng mga layunin ng kurikulum. Ang mga guro ay gumagamit ng iba't ibang estratehiya at pamamaraan sa pagtuturo upang matiyak na ang mga mag-aaral ay natututo at nagtatamo ng mga kinakailangang kasanayan at kaalaman.

Ang mga tugon ng mga guro sa antas ng kaalamang pedagohikal tungo sa epektibong pagtuturo ay akma sa kinalabasang pananaliksik ni Singh (2015), na sa larangan ng pagtuturo palagiang binubuo ng mga epektibong prinsipyo at pamamaraang layong maging daan sa komprehensibong paglinang ng mga kakayahan ng mga mag-aaral. Ginagamit sa pagtuturo ang mga piling mga estratehiya depende sa impormasyon o kasanayang itinuturo. Ang ganitong kalagayan ay maaaring maimpluwensyahan ng estilo kung paano matuto at ang kakayahan ng bawat mag-aaral. Maraming mga pananaliksik ang sumasang-ayon na ang kaalamang pedagohikal ay nakatutulong para sa mga mag-aaral na mag-isip nang malalim, makipag-usap nang epektibo, matuto ng disiplina, bumuo ng isang pansariling pang-unawa at palakasin ang pagpapahalaga sa pag-aaral. Higit sa lahat, ang kaalamang pedagohikal ay isang makabuluhang pag-uugnay upang ganap na maipakita ang makabuluhang pagtamo ng kaalaman at pag-unawa bilang isang akademikong pangnilalaman at proseso ng pagkatuto.

Angkop din ang mga batayang naibahagi ng kaalamang pedagohikal sa pag-aaral ni Carter (2014) na ang epektibong pagtuturo sa mga mag-aaral ay higit na nangangailangan ng pagkamalikhain, pagiging makabago at maparaan mula sa mga kaguruan. Ang paglalahad ng mga aralin tungo sa epektibong talakayan ay nabubuo sa pamamagitan ng pagplano upang pahusaying malinang ang mga kritikal at kakayahan sa pag-iisip mula sa mga inobatibong pedagohikal na paglapat ng aralin. Higit sa makabuluhang ambag ng pagtuturo, sa pamamagitan ng angkop na pedagohikal ng pagtuturo ang mga kasanayang higit na kailangang malinang, sa mga mag-aaral ay maaaring magdala ng pagpapahalaga kung paano ito mahalin at unawain bilang proseso ng nilalaman ng teksto sa aralin.

Angkla din ang kabatiran ng mga guro kaugnay sa kaalamang pedagohikal sa paninindigan ni Mahmood (2014) na nagpapahiwatig sa ang persepyon ng mga mag-aaral sa paggamit ng akma at piling pedagohikal sa pagtuturong may magandang epekto sa akademikong pangkamalayan. Lalong naging makabuluhan kapag ang mga guro ay may malawak na kaalamang pedagohikal upang mas ganap na magkaroon ng kahusayan sa paglalahad tungo sa panimulang gawain ng pagtuturo. Naging mas maaliwalas ang pagproseso ng mga aralin dahil ang nilalaman ay naibabahagi sa aktibong pamamaraan na kinagigiliwan ng mga mag-aaral batay sa kalagayang pangkaranasan, pangkaalaman, opinyon, at emosyon. Sa pamamagitan ng angkop na pedagohikal ang pagtuturo tungo sa paglapat ng kalinangan sa mga mag-aaral ay nakabuo ng koneksyon sa teksto at layunin ng kurikulum. Mas mahusay na maunawaan ang talakayan na nagpapalalim ng pag-unawa at pagiging aktibo. Sa pamamagitan nito, pag-uudyok itong bumuo ng sariling mga pananaw mula sa sariling pamantayan. Ang isang epektibong ambag ng kaalamang pedagohikal ay sa paraang napatibay ang pakikipag-ugnayan sa paghikayat ng mga mag-aaral na makibahagi sa mga sitwasyon may layong magpapaunlad ng kakayahan at maipakita ang kanilang lakas ng loob sa partikular na sitwasyon. Kung ang bawat proseso ng pagtuturo ay magbunga ng epektibong pagkatuto sa mga mag-aaral ito ay isang magandang pagsusuri mula sa mga kaguruang angkop na nakabuo ng mga estratehiya sa kung paano ibabahagi ang mga aralin sa klase.

Ang Talahanayan 4, ay nagpapakita ng antas ng kaalamang pangnilalaman ng mga gruo sa Filipino sa konteksto ng MATATAG Curriculum. Ipinapakita ang resulta ng pag-aaral na ang kabuoang antas ng kaalamang pangnilalaman ng mga kaguruan ay "Mataas" na may (M = 3.896, SD = 0.346).

Ipinapakita rin sa Talahanayan 4 ang mga sumusunod na antas ng mga nangungunang limang kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum; a.) buong-husay ng gumagamit ng mga ilustrasyon ang mga kaguruan sa pagtuturo ng mahahalagang konsepto ng Filipino sa konteksto ng MATATAG Curriculum ay "Napakataas" na may M = 4.250, SD = 0.720, b.) mataas ang kabatiran sa mga kaugnay na prinsipyong higit na kailangan sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "Mataas" na may M = 4.143, SD = 0.773, c.) angkop na nagagamit ang iba't ibang teknik sa pagbuo ng mga katanungan sa tungo sa

pagpapalawak ng aralin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "Mataas" na may M = 4.124, SD = 0.828, d.) tahasang nagagamit ang mga demonstrasyong pamamaraan tungo sa tiyak na pang-unawa sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "Mataas" na may M = 4.901, SD = 0.892, at e.) may sapat na kaalaman upang ipaliwanag ang konseptong nakapaloob sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum ay "Mataas" na may M = 4.071, SD = 0.710.

Talahanayan 4

Mean at Standard Deviation ng Mean

ng Kabuoan at mga Nangungunang

Limang Kaalamang Pangnilalaman

ng mga Guro sa Filipino

sa konteksto ng MATATAG Curriculum

Baryabol	Mean	Deskripsyon	SD
Kabuoang Kaalamang Pangnilalaman	3.896	*Mataas*	0.346
1. buong-husay akong gumagamit ng mga ilustrasyon sa pagtuturo ng mahahalagang konsepto ng Filipino sa konteksto ng MATATAG Curriculum.	4.250	Napakataas	0.720
2. mataas ang aking kabatiran sa mga kaugnay na prinsipyong higit na kailangan sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	4.143	Mataas	0.773
3. angkop kong nagagamit ang iba't ibang teknik sa pagbuo ng mga katanungan sa tungo sa pagpapalawak	4.124	Mataas	0.828

ng aralin sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.

4. tahasan kong nagagamit ang mga demonstrasyong pamamaraan tungo sa tiyak na pang-unawa sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	4.901	Mataas	0.892
5. may sapat akong kaalaman upang ipaliwanag ang konseptong nakapaloob sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum.	4.071	Mataas	0.710

Iskala	Deskripsyon
4.21-5.00	Napakataas
3.41-4.20	Mataas
2.61-3.40	Katamtaman
1.81-2.60	Mababa
1.00-1.80	Napakababa

Sa kabuoan, batay sa naging resulta ng pag-aaral, ipinapakita na mataas ang antas ng kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum. Nangangahulugan lamang na ang kaalamang pangnilalaman ng mga kaguruan sa konteksto ng pagtuturo ay higit itong kailangang bilang pangunahing kaalaman na may epekto sa paglinang ng kurikulum. Kaya may tiyak na kaalamang pangninilalamang ang mga kaguruan sa konteksto ng pagtuturo sa Filipino dahil higit itong kailangan sa pagkakaroon ng malalim at malawak na kabatiran sa paksa na tiyak sa pagbibigay ng malinaw na paliwanag tungo sa makabuluhang paglinang ng kasanayan ng mga mag-aaral. Mas may makabuluhang makabuo ng isang detalyadong talakayan dahil angkop ang kaalamang maipakita kung paano nagkakabit-kabit ang mga ideya at nilalaman ng kompetensi. Kaya ito ay naisasabuhay bilang isang aplikasyon ng pagkatuto. Malaki din ang integral na ambag ng kaalamang pangnilalaman upang tuluyang

magampanan ang papel ng mga kaguruan na magturo sa pinakaepektibong paraan na nagpapahintulot sa mga mag-aaral na maunawaang ganap ang mga konsepto at paksa ng kurikulum. Mas malalim ang kaalamang taglay ng mga kaguruang mas magkakaroon ng positibong daluyan upang tulungan ang mga mag-aaral na bumuo ng kapakipakinabang na kognitibong mapa sa pag-uugnay ng mga ideya, tugunan ang mga palagay at bigyang katuparan ang layunin ng kompetensi.

Batay naman sa mga nangungunang limang kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum, napakataas ang antas na gumagamit ng mga ilustrasyon sa pagtuturo ng mahahalagang konsepto. Matibay ang pundasyon ng ganitong kaalaman tungo sa pagproseso ng epektibong pagtuturo. Ito ay tulay din sa pagitan ng pang-unawa at kumplikadong aralin ng mga mag-aaral. Bihasa ang mga guro sa ganitong sistema ng pagtuturo dahil may magandang benepsiyo at pagpapalakas ng pang-unawa sa mga mag-aaral. Ito din ay isang kagamitang maaaring magbigay ng payak na akademikong gawain mula sa abstrak na konsepto. Nagagawa nitong mas lalong maipahayag sa pinakamadaling sistema. Ganap na napapalakas ang pagkatuto kapag malawak ang taglay na kaalaman ng mga guro dahil mas naging aktibo ang mga mag-aaral gamit ang mga ilustrasyon, tsart, mga biswal at iba pang mga presentasyong magpapadali ng kahandaan sa pagbabalik tanaw ng pagkatuto. Bukod pa dito, tiyak ang ambag sa paggamit ng mga ilustrasyon dahil ganap itong nagpapakita sa mga prosesong angkop sa paglalahad ng bawat konsepto at teksto sa pamamaraang kayang sundan ng mga mag-aaral. Bihisa ang mga guro sa paggamit ng mga ilustrasyon dahil ito din ay isang multi-modal na paglalahad ayon sa karanasan ng pagkatutong tumutugon sa iba't ibang mga estilo ng pagtuturo.

Namuntawi din sa mga datos mula sa mga guro ang mataas antas ng kabatiran kaugnay sa prinsipyong higit na kailangan sa pagtuturo ng Filipino sa konteksto ng MATATAG Curriculum. Batid ng mga kaguruan na sa pagtataguyod ng malalim na paglinang ng kasanayan ay higit na kailangan sa ikatatagumapy ng kurikulum. Ito ay naghihikayat na itaguyod ang malalim na pang-unawa sa mga araling nakalatag. Sa pamamagitan ng kaalamang pangnilalaman mas naging aktibo ang mga kaguruan na makabuo din ng mga inter-aktibong estratehiya upang ang mga mag-aaral ay makagawa ng mga koneksyon, masuring kritikal ang impormasyon at ilapat ang kanilang kaalaman sa konteksto ng tunay na pagkatuto. Hayag sa mga guro ang mga prinsipyong may positibong

ambag sa pagtataguyod nang maayos, organisado at kaaaya-ayang kapaligiran sa pagkatuto. Ito ay may magandang pundasyon upang linangin ang kritikal, sosyal at emosyonal na kagalingan ng bawat mag-aaral.

Hayag din ang mga guro sa angkop na paggamit ng iba't ibang teknik sa pagbuo ng mga katanungan sa tungo sa pagpapalawak ng aralin ng pagtuturo sa Filipino sa konteksto ng MATATAG Curriculum dahil may mataas itong antas. Lubos ang mga gurong lantad sa pagtuturo na ang pundasyon ng iba't ibang teknik upang mabuo at malinang ang katanungan sa pagpapalawak ng aralin sa pagtuturo. Buong-husay ang prosesong may malaking ambag sa pagbibigay-daan sa mga mag-aaral na makabuo ng sariling pamantayang makatutulong sa paglinang ng mga kasanayan upang maging ganap ang katuparan ng layunin ng pagkatuto.

Nanaig rin sa mga datos na ang mga guro ay may mataas na antas sa paggamit ng mga demonstrasyong pamamaraan tungo sa tiyak na pang-unawa ng pagtuturo sa Filipino sa konteksto ng MATATAG Curriculum. Batid ito ng mga guro upang mas lalong maging epektibo ang pagdaloy ng talakayan. Ang pagtuturong mas makalilinang ng mga kasanayang higit ay nabibigyang-pokus ng kurikulum. Ang kaalamang pangnilalaman ng mga guro tungo sa pagtuturong demonstrasyon ay isang epektibong diskarte na nagbibigay-diin sa aktibong pakikilahok ng mga mag-aaral sa kalinangan ng bawat kompetensing nais pahalagahan. Kaya mataas ang antas ng mga guro sa ganitong kaalaman dahil sa proseso ng pagtuturong nagbibigay ng representasyon at kongkretong lunsaran sa pagpapalwak ng pang-unawa ng bawat mag-aaral. Mas madaling nalilinang ang kaisipan ng bawat mag-aaral dahil sa konteksto ng aktwal na pagproseso ng atensyong may mataas na hikayat at aktibong partisipasyon sa praktikal na aplikasyon ng pagkatuto.

Mas nanaig din ang mataas na antas ng kaalamang pangnilalaman ng mga guro kaugnay sa kabatiran upang ipaliwanag ang konseptong nakapaloob ng pagtuturo sa Filipino sa konteksto ng MATATAG Curriculum. Kaya batid ng mga guro ang mataas na sanligan sa ganitong sistema ng kaalamang pangnilalaman sa pagtuturo dahil bahagi ito sa pagbibigay-daan para sa isang epektibong pagtuturo at pagkatuto.

Ang kahusayan ng mga guro sa kaalamang pangnilalaman ay isang positibong susi tungo sa pagbuo ng epektibong dulog upang mas lalong

madaling tugunan ang paglinang ng bawat kompetensi. Nagreresulta ang kalagayang ito sa angkop na pag-ugnay ng mga paliwanag sa aspetong epektibong maipaliwanag ang isang tamang batayan sa pangunahing kaalamang kritikal na magtitiyak tungo sa pundasyon sa paglinang ng mga aralin. Ang kaalamang ito ay nagbibigay din ng pundasyon ng pagtuturo sa Filipino sa mas malalim na pang-unawa at pagpapahalaga na natatanging pangangailangan sa bawat mag-aaral. Nagpapahintulot ito sa mga gurong magbigay ng mas personalisadong at epektibong kalinangan.

Ang paninindigan sa antas ng kaalamang pangnilalaman ay tugma at may kaangkupan sa pananaliksik na isinagawa ni Walshaw (2016). Ang papel ng mga kaguruan ukol dito ay may mahalagang tungkulin sa paglinang ng layunin sa kurikulum. Ang pang-unawa at kaalaman ng mga guro sa mga konsepto ay lubhang mahalaga sa anumang antas. Ito ay may teoritikal na paliwanag na kapag ang mga guro ay nagpapakita ng limitado o nalilito na pag-unawa ng kaalaman at paksa na may kaugnayan sa aralin, ang mga magiging mag-aaral ay mahihirapan din na maunawaan ang mga kaukulang konsepto ng kurikulum. Ang mga gurong hindi malinaw sa sariling isipan tungkol sa partikular na ideya sa pagtuturo ay maaaring mahirapang ituro ang mga ideya at maaaring humantong sa pagtigil ng epektibong pagkatuto, sa halip na makatulong sa pag-unlad ng mga mag-aaral. Ang limitadong kaalaman ng mga kaguruan ay maaaring magdulot ng pagkakamali sa pagbuo ng mga talakayang para sa mga mag-aaral. Maaari itong magdulot ng hindi magandang pananaw mula sa mga mag-aaral o hindi makatutulong sa proseso ng pagtuturo. Sa madaling salita, ang mahinang kaalaman ng mga guro sa paksa ay madalas na naglalagay ng hangganan at limitasyon sa paraan ng pagpapaunlad ng pang-unawa.

Tiyak din ang magandang ambag ng kaalamang pangilalaman sa kaligiran ng pagtuturo at paglinang ng mga pangunahing kasanayan na angkop sa kurikulum na pinag-aaralan batay kay Moseley (2014). Ang kaalamang pangnilalaman ay naging gabay sa pagpapadali ng pang-unawa ng mga mag-aaral. Higit itong kailangan ng mga guro bilang isang matibay na pundasyon at batayan upang angkop na mailatag ang mga kaugnay na kaalaman para sa pagtuturo. Kasama ang kaalaman at ang iba't ibang anyo ng paglinang bilang representasyon at simulain sa pagtuturo tungo sa positibong koneksyon sa pagitan ng kaisipan ng mga mag-aaral at nilalaman ng kurikulum. Naging malikhain at epektibo ang

isang aralin, kung ang mga kaguruan ay mayroong kaalaman sa nilalamang kurikulum.

Ipinapakita sa Talahanayan 5 ang pagsusuri sa resulta ng pag-aaral gamit ang istadistikang Pearson r, na naglalaman ng mga sumusunod: a.) mayroong makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pedagohikal, na may $r = 0.210$, $p = 0.120$ ($p < 0.05$), b.) mayroong makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pangnilalaman, na may $r = 0.235$, $p = 0.081$ ($p < 0.05$) at c.) mayroong makabuluhang kaugnayan sa pagitan ng kaalamang pedagohikal at kaalamang pangnilalaman, na may $r = 0.180$, $p = 0.184$ ($p < 0.05$).

Talahanayan 5

Pearson r sa Pagitan ng Kaalamang

Teknolohikal, Pedagohikal at

Pangnilalaman ng mga Guro sa Filipino

sa Konteksto ng MATATAG Curriculum

Mga Baryabol	r	Sig
Teknolohikal at Pedagohikal	0.210	0.120
Teknolohikal at Pangnilalaman	0.235	0.081
Pedagohikal at Pangnilalaman	0.180	0.184

* p<0.05 makabuluhan sa 5% antas ng alpha

ns p>0.05 hindi makabuluhan sa 5% antas ng alpha

Sa kabuoan, ipinapakita ng resulta ng pag-aaral na may makabuluhang kaugnayan ang kaalamang teknolohikal at kaalamang pedagohikal. Dahil dito, ang kaalamang teknolohikal ay nakakaimpluwensiya sa kaalamang pedagohikal ng mga guro na nagtuturo ng Filipino, at ganoon din naman sa kabaligtaran.

Ang pagkakaroon ng makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pedagohikal ay nangangahulugan na kapag tumaas o bumaba ang antas ng bawat baryabol, naaapektuhan nito ang isa't isa. Sa madaling salita, kapwa may koneksyon ang dalawang nabanggit na baryabol. Ang dalawang kaalamang ito ay mahalagang taglayin ng mga guro upang ganap na maiproseso ang epektibong pagtuturo at pagkatuto. Ang nilalaman at tunguhin ng kurikulum, na naglalayong malinang ang pamantayang pangnilalaman, pamantayan sa pagganap, at mga pinakamahalagang kasanayang pampagkatuto, ay epektibong natatamo kapag ang kaalamang teknolohikal at kaalamang pedagohikal ay magkasabay na napapagana ng mga guro. Ang ganitong konteksto ng pagtuturo ay nagbubunga ng mas matibay at mas epektibong paglinang ng kakayahan at kasanayan ng mga mag-aaral.

Ang pagkakaroon ng makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pedagohikal ay tumutugma sa pag-aaral ni Kurt (2018). Ang kaalamang teknolohikal ay naglalarawan ng kaalaman at kakayahan ng mga guro sa paggamit ng iba't ibang teknolohiya at mga kasangkapang teknolohikal upang positibong maiugnay ang proseso ng pagtuturo. Ang dalawang baryabol ay may matibay na ambag sa pagsasakatuparan ng mga layunin, pagpapahalaga, at kalinangang pang-edukasyon upang maging makahulugan ang pagkatuto ng bawat mag-aaral. Sa larangan at proseso ng pagtuturo, mahalaga ang pagkakaroon ng malawak na kaalamang teknolohikal at pedagohikal ng mga guro upang mas tiyak at espesipikong maiangkop ang proseso ng pag-unawa sa istilo ng pagkatuto ng mga mag-aaral. Sa ganitong konteksto, mas angkop na nakabubuo ng akademikong pagpaplano para sa paglinang ng mga layunin at kasanayan sa pamamahala ng silid-aralan, pagpaplano ng aralin, pagtataya, at iba pang aspeto ng pagtuturo at pagkatuto. Kaakibat ng kaalamang teknolohikal ang kaalamang pedagohikal upang masiguro ng mga guro ang tagumpay ng kanilang kompetensi sa paglilinang ng kakayahan ng mga mag-aaral batay sa nilalaman ng kurikulum. Higit pa rito, mas nagiging matagumpay ang kalakaran ng pagtuturo kapag ang kaalamang teknolohikal at kaalamang pedagohikal ay malinaw na naipapamalas bilang pangunahing kasanayan ng mga guro upang maihatid nang mas epektibo ang mga pangunahing pangangailangan at mahahalagang aspeto ng kurikulum.

Tugma rin ang pagkakaroon ng makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pedagohikal ng mga guro na nagtuturo ng Filipino sa pag-aaral na isinagawa ni Aton (2017). Ang dalawang baryabol ay may malaking ambag sa paglinang ng mga kasanayan ng mga mag-aaral batay sa mga layuning nais makamit ng kurikulum. Sa pagtuturo, mahalaga ang papel ng kaalamang teknolohikal at pedagohikal sa mga guro, dahil nagkakaroon ito ng positibong ambag sa pagpapalawak ng kaalaman, pati na rin sa pagpapaunlad at pagpapatupad ng proseso ng pagtuturo. Ang paggamit ng multimedia bilang teknolohikal na kagamitan ay isang makabagong paraan ng pagtuturo na nakapagpapalawak ng kawilihan, nagpapagaan ng proseso, at nagsisigurong mas sistematiko ang paraan ng pagtuturo mula sa panig ng mga guro. Bilang resulta, nabubuo ang isang sistemang pampagkatuto na sentro sa kamalayan ng mga mag-aaral. Sa ganitong kalakaran, nababawasan ang pagiging dominante ng guro sa pagsasalita o pagtalakay ng aralin sa loob ng silid-aralan, na nagbibigay-daan sa mas aktibong pakikilahok ng mga mag-aaral sa proseso ng pagkatuto.

Batay rin sa pag-aaral, mayroong makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pangnilalaman. Dahil dito, ang kaalamang teknolohikal ay may impluwensiya sa kaalamang pangnilalaman ng mga guro na nagtuturo ng Filipino, at gayundin naman sa kabaligtaran.

Ang pagkakaroon ng makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pangnilalaman ay nangangahulugan na kapag tumaas o bumaba ang antas ng bawat baryabol, naaapektuhan nito ang isa't isa. Sa madaling salita, may koneksyon ang dalawang nabanggit na baryabol. Ang makabuluhang kaugnayan ng kaalamang teknolohikal at kaalamang pangnilalaman ay nagbubukas ng oportunidad upang makabuo ng mas mabisa at epektibong hakbang ang mga guro na nagtuturo sa Espesyal na Kurikulum tungo sa mas komprehensibong akademikong pagtuturo. Dahil sa husay ng mga guro sa aspetong teknolohikal at pangnilalaman, nagiging mas mahusay itong gabay upang suportahan ang mas epektibong pagkatuto ng mga mag-aaral. Ang kaalamang pangnilalaman at kaalamang pedagohikal ay dalawang mahahalagang aspeto sa pagtuturo. Ang kaalamang pangnilalaman ay tumutukoy sa mga impormasyon o datos na kailangang taglayin ng isang guro upang maipaliwanag ang isang paksa, samantalang ang kaalamang pedagohikal ay nakatuon sa mga estratehiya at pamamaraan ng

pagtuturo na epektibo sa pagpapahayag ng mga konsepto at ideya sa mga mag-aaral.

Ang pagkakaroon ng makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pangnilalaman ng mga guro na nagtuturo ng Filipino ay tumutugma sa pag-aaral na isinagawa ni Transona Jr. (2022). Sa anumang antas at aspeto ng larangan ng pag-aaral, lalo na sa pagtuturo, hindi maitatanggi ang katotohanang ang kaalamang pangnilalaman ng isang guro ay isa sa pinakamahalagang sangkap upang maging epektibo ang proseso ng pagkatuto. Sa mga guro nakasalalay ang pagbuo ng malikhain at akademikong gawain tungo sa paglilinang ng kamalayan ng mga mag-aaral. Kasabay ng positibong ambag ng kaalamang pangnilalaman ay ang pag-aagapay ng kaalamang teknolohikal sa pagpapalaganap ng proseso ng pagtuturo. Dahil dito, ang kaalamang teknolohikal ay may mahalagang papel sa pagpapabuti ng pagtuturo, na tumutulong sa paglinang ng pamantayang pangnilalaman, pamantayan sa pagganap, at mga pinakamahalagang kasanayang pampagkatuto, na siyang kongkretong nilalaman ng kurikulum.

Ganoon din, ang makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pangnilalaman ng mga guro na nagtuturo ng Filipino ay tumutugma sa pag-aaral na isinagawa ni Ramos (2015). Batay sa mga datos, ang pagtuturo ay isang propesyong may kaaya-ayang daloy, na nagmumula sa malawak na kaalamang pangnilalaman. Ang kaalamang pangnilalaman ay isa sa mga pangunahing dapat taglayin ng mga guro upang maging mas kaakit-akit ang kanilang pamamaraan sa pagtuturo. Ang bawat kaalaman sa paksang nakapaloob sa kurikulum ay mas detalyadong naipapaliwanag kapag ito ay nahimay-himay nang wasto gamit ang positibong ambag ng kaalamang teknolohikal. Ang isang mahusay na antas ng kasanayan sa pagtuturo ay nakasalalay sa malinaw na pag-unawa sa nilalaman ng aralin, na nagiging mahalagang salik sa pagbabago at pagpapalawak ng metodolohiya sa pagtuturo. Ang kaalamang teknolohikal at kaalamang pangnilalaman ay nagsisilbing kongkretong motibasyon sa pagtuturo, na nagbibigay ng matibay na pundasyon upang mapabuti ang proseso ng pagkatuto

Batay sa pag-aaral, lumitaw na may makabuluhang kaugnayan sa pagitan ng kaalamang pedagohikal at kaalamang pangnilalaman. Dahil dito, naimpluwensiyahan ng kaalamang pedagohikal ang kaalamang

pangnilalaman ng mga guro na nagtuturo ng Filipino, gayundin naman sa kabaligtaran.

Ang pagkakaroon ng makabuluhang kaugnayan sa pagitan ng kaalamang pedagohikal at kaalamang pangnilalaman ay nangangahulugan na kapag tumaas o bumaba ang antas ng bawat baryabol, naaapektuhan din nito ang isa't isa. Sa madaling salita, may koneksyon ang dalawang nabanggit na baryabol. Ang makabuluhang kaugnayan ng kaalamang pedagohikal at kaalamang pangnilalaman ay nagsisilbing positibong lunsaran upang higit na maging makatotohanan ang pagtuturo ng mga guro sa Filipino. Ito rin ay isang kongkretong batayan na ang mga kompetensiyang nakalatag upang maikintal sa kamalayan ng bawat mag-aaral ay maaaring epektibong malinang.

Ang tugon ng mga guro na mayroong makabuluhang kaugnayan ang kaalamang pedagohikal at kaalamang pangnilalaman ay tumutugma sa pag-aaral ni Richards (2016). Ang pagsasanay na nagmumula sa akademikong gawain at pagtataya sa larangan ng pagtuturo ay mas mainam kung may malinaw na tunguhin bilang kasanayang pangnilalaman na taglay ng mga guro, sa tulong ng iba't ibang proseso na itinakda ng kurikulum. Ang pagtuturo ay isang proseso ng pagpapanday ng maraming kasanayan upang makalikha ng matibay na pundasyon na maaaring magamit sa pakikipagkomunikasyon. Sa tulong ng kaalamang pedagohikal, higit na nalilinang ang kakayahan sa pagbuo ng mainam na pangkomunikatibong dulog sa pagtuturo, na nakatuon sa mas maayos na kasanayan sa pagkatuto. Pinaniniwalaang mas kinakailangan ang kakayahang pangnilalaman sa mga pagsasanay na inihahain ng mga guro, na may tuon sa paglinang ng mga kakayahang higit na binibigyang-pokus sa kurikulum.

Ganoon din ang pananaw ni Galloway (2016) tungkol sa makabuluhang kaugnayan ng kaalamang pangnilalaman at kaalamang pedagohikal. Ito ang nag-udyok upang ang kaalamang pedagohikal at kaalamang pangnilalaman ay magsilbing tulay sa mas malalim na pang-unawa at pagkatuto. Ang mga mag-aaral, sa kanilang pagtamo ng partikular na kasanayan, ay higit na nagiging dinamiko at napagtitibay ang kanilang buhay-karanasan dahil nabibigyan sila ng pagkakataong maipahayag ang sarili. Sa katunayan, isa sa mga susi sa pedagohikal na tunguhin ng silid-aralan ay ang pagpapahintulot sa mga mag-aaral na makapagpahayag ng kanilang sarili nang may kalinawan. Kasabay nito, binibigyan din sila ng pagkakataong makapagpaliwanag o

makapaglinaw ng kanilang natutuhan mula sa kaalamang pangnilalaman na ibinabahagi ng mga guro.

Ang ipotesis na sinusubukang patunayan—na walang makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal, pedagohikal, at pangnilalaman ng mga guro na nagtuturo ng Filipino—ay dapat iwaksi.

Lagom ng mga natuklasan

Ang pananaliksik na ito na isang survey-correlational na isinagawa upang malaman ang kabuoang antas at nangungunang limang kaalamang teknolohikal, pedagohikal, at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025.

Layunin rin ng pag-aaral na ito na bigyang-kasagutan ang sumusunod na mga katanungan:

1. Ano ang kabuoang antas kaalamang teknolohikal ng mga guro sa Filipino sa konteksto ng

MATATAG Curriculum?

2. Ano ang nangungunang limang kaalamang teknolohikal ng mga guro sa Filipino sa

konteksto ng MATATAG Curriculum?

3. Ano ang kabuoang antas at nangungunang limang kaalamang pedagohikal ng mga guro sa

Filipino sa konteksto ng MATATAG Curriculum?

4. Ano ang nangungunang limang kaalamang pedagohikal ng mga guro sa Filipino sa

konteksto ng MATATAG Curriculum?

5. Ano ang kabuoang antas kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto

ng MATATAG Curriculum?

6. Ano ang nangungunang limang kaalamang pangnilalaman ng mga guro sa Filipino sa

konteksto ng MATATAG Curriculum?

7. Mayroon bang makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at

kaalamang pedagohikal, kaalamang teknolohikal at kaalamang pangnilalaman, at kaalamang

pedagohikal at kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG

Curriculum?

8. Walang makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pedagohikal, kaalamang teknolohikal at kaalamang pangnilalaman, at kaalamang pedagohikal at kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum.

Ang pag-aaral na ito ay nakatuon lamang sa kabuoang antas at nangungunang limang kaalamang teknolohikal, pedagohikal, at pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025.

Ginamit sa pag-aaral na ito ang survey-correlational na pamamaraan upang suriin ang mga datos batay sa tugon ng mga kalahok sa pananaliksik.

Ang mga kalahok sa pag-aaral ay mga guro na nagtuturo sa Filipino ng Baitang 7 at 8 sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025.

Nilikom ang mga datos gamit ang mga talatanungang personal na binuo ng mananaliksik, na dumaan sa content-faced validity at pilot testing.

Ang malayang baryabol sa pag-aaral na ito ay ang kaalamang teknolohikal, pedagohikal, at pangnilalaman, samantalang ang di-malayang baryabol naman ay ang mga guro sa Filipino sa konteksto ng MATATAG Curriculum.

Ang mga palarawang datos ay sinuri ng mananaliksik gamit ang mga istadistika tulad ng frequency count, mean, standard deviation, at Pearson r, kung saan itinakda ang antas ng inferensiyal sa 0.05.

Kongklusyon

Mula sa pagtalakay sa mga naging kinalabasan ng pag-aaral na ito, nabuo ang mga sumusunod na kongklusyon:

1. Mataas ang antas ng kaalamang teknolohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025. Bunga nito, ang mga mag-aaral, magulang, at higit sa lahat, ang mga pamunuan ng kagawaran ay lubos na may kapanatagan sa sarili dahil sa taglay na kaalamang teknolohikal ng mga guro. Ang ganitong kaalaman ay nagdudulot ng kahusayan tungo sa tiyak at produktibong paglinang ng kamalayan ng mga mag-aaral, batay sa mga layunin ng MATATAG Curriculum.

2. Mataas ang antas ng kaalamang pedagohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025. Dahil dito, nagkakaroon ang mga mag-aaral, magulang, at higit sa lahat, ang mga pamunuan ng kagawaran ng matibay na paniniwala na epektibong nalilinang ang mga kasanayang nais bigyang-buhay sa kurikulum. Ang mga estratehiya sa pagkatuto na nakapaloob sa bawat kurikulum ay epektibong naihahayag tungo sa pag-unlad ng kasanayan ng mga mag-aaral, dahil sa iba'i ibang pedagohikal na pamamaraan ng pagtuturo na ginagamit ng mga guro. Ang ganitong sistema ng pagtuturo ay tumutulong sa mas epektibong paglinang ng mga mag-aaral upang maging angkop sa layunin ng MATATAG Curriculum.

3. Mataas ang antas ng kaalamang pangnilalaman ng mga guro na nagtuturo ng Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025. Bunga nito, ang mga mag-aaral, magulang, at higit sa lahat, ang mga pamunuan ng kagawaran ay mas lalong nagiging kapanalig sa pagbibigay ng teknikal na suporta para sa patuloy na pag-unlad ng mga guro. Ang ganitong kaalaman ng mga guro ay isang kahusayang dapat mabatid bilang kaagapay sa epektibong pagtuturo, tungo sa higit na paglinang ng mga kasanayang nilalaman ng kurikulum.

4. Mayroong makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pedagohikal ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East,

Sangay ng Bulacan, para sa Taong Panuruan 2024-2025. Dahil dito, ang mga mag-

aaral, magulang, at pamunuan ng kagawaran ay mas lalong pinag-iibayo ang pagpapalawak ng kaalamang ito. Mahalagang patuloy na yakapin ang mga pagbabagong teknolohikal at pedagohikal upang makasabay sa nagbabagong pangangailangan ng panahon.

5. Mayroong makabuluhang kaugnayan sa pagitan ng kaalamang teknolohikal at kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025. Bunga nito, ang mga mag-aaral, magulang, at higit sa lahat, ang mga pamunuan ng kagawaran ay mas lalong nagiging agresibo sa pagbibigay ng mga positibong ambag bilang suporta sa pagtuturo ng mga guro sa koteksto ng MATATAG Curriculum.

6. Mayroong makabuluhang kaugnayan sa pagitan ng kaalamang pedagohikal at kaalamang pangnilalaman ng mga guro sa Filipino sa konteksto ng MATATAG Curriculum sa Distrito ng Santa Maria East, Sangay ng Bulacan, para sa Taong Panuruan 2024-2025. Dahil dito, ang mga mag-aaral, magulang, at higit sa lahat, ang mga pamunuan ng kagawaran ay mas lalong nagiging bukas sa bawat ambag na maaaring maibigay upang higit pang mapabuti ang proseso ng pagtuturo sa konteksto ng MATATAG Curriculum.

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PERSEPSYON, SALOOBIN, AT GAWI NG MGA GURO SA PAGSULAT NG AKSYONG PANANALIKSIK: PAMANTAYAN SA PAGBUO NG PROGRAMANG PAGSASANAY PANGGURO

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Abstrak

Sa makabagong pandaigdigang sistema ng edukasyon, higit nang naging mahalaga ang panawagan at pangangailangan para sa gawaing pananaliksik ng mga guro. Ang aksyong pananaliksik bilang isang metodolohiyang nakatuon sa silid-aralan ay nagbibigay kapangyarihan sa mga guro na suriin ang kanilang mga estratehiya at praktika sa pagtuturo upang mapabuti ang resulta ng pagkatuto ng mag-aaral, makapag-ambag sa pagbuo ng polisiya, at mapaunlad ang propesyonalismo.

Sa Pilipinas, ang institusyonalisasyon ng *aksyong pananaliksik* sa batayang edukasyon ay pinagtibay sa pamamagitan ng iba't ibang polisiya ng Kagawaran ng Edukasyon (DepEd), kabilang na ang DepEd Order No. 39, s. 2016 na nagtatag ng Basic Education Research Agenda at DepEd Order No. 16, s. 2017 na nagbigay ng gabay sa pamamahala ng pananaliksik at pagpapaunlad ng kakayahan sa mga paaralan, dibisyon, at rehiyon. Kinikilala ng mga polisiya ang pananaliksik bilang mahalagang tungkulin ng mga guro at pinuno ng paaralan upang maisanib ang pagsisiyasat sa pagpapabuti ng edukasyon at sa propesyonal na pag-unlad.

Sa kabila ng mga pagsisikap na ito, ipinakita ng mga kamakailang pag-aaral na nahihirapan pa rin ang maraming guro na magsimula, magsagawa, at makompleto ang *aksyong pananaliksik*. Natuklasan nina Morales et al. (2016) na bagaman mataas ang antas ng kaalaman ng mga guro sa Metro Manila hinggil sa aksyong pananaliksik, kakaunti lamang ang nakatatapos ng buong siklo ng pag-aaral dulot ng kakulangan sa oras, kakayahan, at suporta.

Pinatotohanan din nina Ulla et al. (2017) sa Agusan del Norte na bagaman positibo ang pananaw ng mga guro sa aksyong pananaliksik,

kaunti lamang ang aktuwal na nagsasagawa nito. Tingin ng mga guro, ang aksyong pananaliksik ay magastos sa oras at hindi tuwirang konektado sa kanilang araw-araw na gawain.

Dagdag pa rito, pinatibay nina Cortes et al. (2021) ang agwat sa pagitan ng inaakalang kakayahan at aktuwal na kasanayan ng mga guro sa pamamagitan ng *standardized scale*. Ipinapakita nito ang kagyat na pangangailangan para sa mga sistematikong pagsasanay na hindi lamang magpapaunlad ng kakayahan kundi magbabago rin ng pananaw at saloobin ng mga guro.

Gayundun, hindi lamang ang pagresolba sa aktuwal na problema sa silid-aralan ang halaga ng aksyong pananaliksik, ito rin ay nagpapaunlad sa mga guro bilang mapagnilay na mga praktisyoner. Sa *Reflective Practitioner Theory* ni Schön (1983), binibigyang-diin na kailangang magsagawa ang mga propesyonal ng *reflection-in-action* at *reflection-on-action* upang mapabuti nang tuloy-tuloy ang kanilang gawain.

Sinusuportahan ito ng Aksyong pananaliksik Cycle ni Lewin (1946), na naglalarawan ng pagsisiyasat bilang isang dinamikong siklo ng pagpaplano, pagkilos, pagmamasid, at pagninilay. Kapag naisagawa nang maayos, nagiging mahalagang bahagi ng pagtuturo ang aksyong pananaliksik na nagbibigay-daan sa mga guro na iakma ang mga interbensyon ayon sa konteksto at suriin ang bisa nito sa pamamagitan ng ebidensya.

Dagdag pa rito, pinalalakas nina Cochran-Smith at Lytle (2009) ang idea na ang mga guro ay hindi lamang tagapagpatupad ng polisiya kundi mga tagalikha rin ng kaalaman sa kanilang mga silid-aralan lalo na kung sila ay may kasanayan sa pananaliksik at may suporta mula sa institusyon.

Sa isang pag-aaral sa ikaapat na distrito ng Maynila, sinuri nina Adani at Miguel (2024) ang pananaw, saloobin, at gawi ng mga guro sa pagsulat ng *aksyong pananaliksik*. Bagaman positibo ang pananaw ng mga guro hinggil sa halaga ng aksyong pananaliksik, natukoy na marami sa kanila ang kulang sa teknikal na kasanayan at tiwala sa pagsusulat ng mga panukala at pagsusuri ng datos. Bilang tugon, isinagawa ang mga *capacity-building session* na nagresulta sa pagtaas ng kalidad ng output ng mga guro at mas aktibong partisipasyon. Katulad nito, iniulat nina Prudente at Aguja (2018) na bagaman iniutos na ng DepEd ang pagsasagawa ng aksyong pananaliksik sa pampublikong paaralan, kinakailangan pa rin ang tuloy-tuloy at tumutugong balangkas ng

propesyonal na pag-unlad na may kaakibat na *mentoring*, pagbibigay ng kagamitan, at mga oportunidad para sa sama-samang pagsulat.

Ipinapakita rin ng mga teoretikal na pundasyon na ang bisa ng propesyonal na pag-unlad ay nakasalalay sa pagkakatugma nito sa mga prinsipyo ng *adult learning*. Ayon sa *Andragogy Theory* ni Knowles (1984), ang mga *adult learners* ay mas epektibong natututo kapag ang pagsasanay ay may direktang kaugnayan sa kanilang trabaho. Kaya naman, sa pagsasanay para sa aksyong pananaliksik, kinakailangang maging praktikal, angkop sa konteksto, at nakasandig sa antas ng karanasan ng guro ang mga modyul. Dapat din itong magsulong ng kolaborasyon at pagninilay na napatunayang nagpapalalim ng pagkatuto at pakikipag-ugnayan (Hine, 2013; Sert & Jonsson, 2025). Ang mga programang gumagamit ng *video-led reflection* at *collaborative inquiry* gaya ng inilarawan nina Sert et al. (2024) ay nagpakita ng makabuluhang tagumpay sa pagpapataas ng kamalayan ng mga guro sa kanilang pagsasanay at panghihikayat sa silid-aralan.

Parehong sa Pilipinas at sa ibang bansa, maraming pag-aaral ang nagtukoy sa mga hadlang sa aktibong pagsasagawa ng aksyong pananaliksik. Ipinakita nina Abelardo et al. (2019) sa Nueva Ecija na kabilang sa mga pangunahing hadlang ay ang hindi malinaw na papel ng mga guro, *research fatigue*, at mga pasaning administratibo. Sa pandaigdigang konteksto, natuklasan din nina Hathorn at Dillon (2018) sa United Arab Emirates na bagaman naniniwala ang mga guro sa halaga ng pananaliksik, kadalasan silang nakararamdam ng kakulangan sa suporta at labis na kabigatan.

Samantala, sa kabila ng positibong pananaw, nananatiling mababa ang aktuwal na pagsasagawa ng aksyong pananaliksik ng mga guro. Maraming guro ang walang pagkakataon para sa tuloy-tuloy na *mentoring* at praktikal na patnubay sa pagsulat ng mga bahagi ng AR tulad ng kaugnay na pag-aaral, metodolohiya, at pagsusuri ng datos (Sert & Jonsson, 2025).

Sa isang *collaborative* na aksyong pananaliksik sa Sweden, binigyang-diin nina Sert et al. (2024) ang halaga ng paggamit ng *video observation tools* bilang tulong sa pagpapabuti ng instruksyon. Ang mga gurong gumamit ng *video-tagged feedback* na may mentor ay nagpakita ng makabuluhang pag-unlad sa kanilang pagtuturo.

Bilang tugon sa mga hamong ito, ilang institusyon ang nagpanukala ng mga balangkas upang mapabuti ang paglahok ng mga guro sa aksyong pananaliksik. Binuo nina Cortes et al. (2021) ang isang eskala upang sukatin ang *competence* ng mga guro sa aksyong pananaliksik sa Pilipinas, na nagpapakita ng direktang ugnayan ng antas ng kakayahan sa dami ng pagsasanay na natanggap. Sa Thailand naman, iniulat nina Meesuk et al. (2020) na ang mga gurong sumailalim sa *modular* at *scaffolded* na pagsasanay ay mas malamang na makompleto at maisumite ang kanilang aksyong pananaliksik.

Itinatampok din ng Basic Education Research Agenda ng DepEd (DepEd Order No. 39, s. 2016) at DepEd Order No. 16, s. 2017 ang aksyong pananaliksik bilang pangunahing bahagi ng pagpapalaganap ng evidence-based decision-making at propesyonal na pag-unlad. Subalit, ang tagumpay ng mga polisiya ay nakasalalay sa maayos na implementasyon sa antas ng paaralan—isang hamon pa rin sa maraming lugar.

Upang matugunan ito, kailangang bumuo ng isang kontekstuwalisadong programang pagsasanay-pangguro sa pagbuo ng *aksyong pananaliksik* na nakaangkla sa tunay na karanasan ng mga guro sa Pilipinas na alinsunod din sa NEAP-recognized In-Service Training Programs. Ayon kay Rauteda (2024), nagiging makabuluhan ang aksyong pananaliksik kapag ang pagsasanay ay nakabatay sa *collaborative inquiry*, *reflective dialogue*, at *structured mentoring*. Sinusuportahan din ito ng Routledge Handbook of Language Teacher Aksyong pananaliksik nina Burns at Dikilitaş (2024) na nagtataguyod ng Collaborative Aksyong pananaliksik (CAR) models.

Sa Pilipinas, nagiging popular na rin ang mga replektibong modelo na ito tulad sa mga lungsod ng Maynila at Cebu. Isinulat nina Adani at Miguel (2024) ang pagtaas ng kumpiyansa at output ng mga guro matapos ang *multi-day seminars* na nagbigay ng hakbang-hakbang na suporta sa pagsusulat ng proposal ng aksyong pananaliksik at pagsusuri ng datos. Katulad nito, iniulat nina Prudente at Aguja (2018) ang matagumpay na mga *mentoring program* na pinondohan ng DepEd research grants.

Ayon sa SEA-TCF (2018), dapat ang mga *professional development programs* ay may kaakibat na *coaching*, *collaborative dialogue*, at *time-bound deliverables*. Ngunit sa kasalukuyan, madalas *generic* at malayo

sa aktuwal na pangangailangan ng guro ang mga *in-service training programs* sa bansa kaya madaling mawala ang interes ng mga guro sa aksyong pananaliksik kapag walang *follow-up* na suporta.

Ipinapakita rin ng Effective Teacher Professional Development Report (2017) na kailangang lumikha ang mga paaralan ng mga "*enabling conditions*" tulad ng *research allowances*, *access* sa *digital tools*, at *recognition systems* upang maging matagumpay ang AR. Kung wala ang mga ito, nagiging *compliance task* lamang ang aksyong pananaliksik.

Pinagtibay rin nina Goodwin at Low (2020) ang papel ng aksyong pananaliksik sa pagbabalik ng propesyonal na awtonomiya ng mga guro, isang idea na kaakibat ng Practitioner Inquiry Model nina Cochran-Smith at Lytle (2009).

Sa Timog-Silangang Asya, ipinakita nina Meesuk, Utayasankul, at Panichsakpatana (2020) na mahalaga ang kontekstuwalisadong pagsasanay, gamit ang lokal na mga halimbawa, bilingguwal na materyales, at *flexible timelines* na nagresulta sa mataas na *completion rate* ng aksyong pananaliksik.

Bukod dito, inirekomenda ng pag-aaral na PERMAteach nina Laurilla at Diaz (2023) ang paggamit ng *strengths-based approach* sa AR kung saan kinikilala muna ng mga guro ang kanilang lakas sa klase bago bumuo ng interbensyon.

Sa kabuoan, malinaw sa mga literatura na ang tagumpay ng aksyong pananaliksik ay nakasalalay sa isang tumutugon at nakasentro sa guro na balangkas ng pagpapahusay ng kakayahan. Hindi sapat ang simpleng paglipat ng kaalaman, kinakailangan ng iteratibo, may *mentoring*, at ebidensiyang pinanghahawakang pagsasanay.

Dahil dito, layunin ng pag-aaral na suriin ang pananaw, saloobin, at gawi ng mga pampublikong guro sa pagsulat ng *aksyong pananaliksik* gamit ang hinalaw na PARQ survey nina Prudente at Aguja (2018) upang magsilbing batayan sa pagdidisenyo ng isang tumutugong Programang Pagsasanay Pangguro. Sa pamamagitan ng pagmamapa ng kasalukuyang paniniwala at gawi ng mga guro sa aksyong pananaliksik, nilalayon ng pag-aaral na tukuyin ang mga kahinaan sa kakayahan at kumpiyansa, mga hadlang at suliranin, at mga nagpapasigla sa aktibong paglahok sa pagbuo ng *aksyong pananaliksik*.

Metodolohiya

Ang pag-aaral na ito ay gagamit ng *descriptive-developmental research design* upang matukoy at masuri ang kasalukuyang antas ng persepsyon, saloobin, at gawi ng mga guro hinggil sa pagsasagawa ng aksyong pananaliksik at upang makabuo ng mungkahing plano ng pagsasanay bilang tugon sa mga natukoy na pangangailangan.

Ayon kina Polit at Beck (2012), ang *descriptive design* ay angkop sa mga pananaliksik na naglalayong ilarawan ang kasalukuyang kalagayan ng isang penomenon, partikular na kung nais tukuyin ang mga umiiral na katangian, pananaw, at damdamin ng mga kalahok. Sa ganitong disenyo, hindi lamang sinusukat ang mga baryabol kundi nauunawaan din ang konteksto ng mga ito. Ito ay mahalaga lalo na sa pag-aaral ng *action research literacy* sa hanay ng mga guro, kung saan ang kanilang aktwal na karanasan, kaisipan, at praktis ay may malalim na epekto sa paglikha ng epektibong interbensyon (Creswell & Poth, 2018).

Ang *developmental component* ng disenyo ay naaayon sa layuning makabuo ng isang panukalang pagsasanay. Batay sa paliwanag nina Richey at Klein (2007), ang *developmental research* ay isang proseso ng sistematikong disenyo, pagbuo, at pagsusuri ng mga produkto at programa na ginagamit upang tumugon sa partikular na suliranin. Samakatwid, hindi natatapos ang pananaliksik sa deskriptibong bahagi, kundi ito ay naglalayong makalikha ng solusyong makabuluhan at praktikal, gaya ng pagsasanay na akma sa konteksto ng mga guro sa pampublikong paaralan sa Pilipinas.

Pinatotohanan ng mga lokal na pag-aaral ang bisa ng descriptive-developmental na disenyo sa pagbubuo ng mga programang pang-edukasyon. Halimbawa, sa pananaliksik nina Alinsunod at Manalo (2019), matagumpay nilang ginamit ang disenyong ito upang suriin ang kakayahan ng mga guro sa pagbasa at makabuo ng responsive na intervention program. Gayundin, sa pag-aaral ni De Jesus (2024) hinggil sa pagsasanay ng mga Mobile Teachers sa Alternative Learning System (ALS), ang descriptive-developmental na lapit ay ginamit upang matukoy ang kasalukuyang kasanayan at makabuo ng komprehensibong plano ng pagsasanay.

Dagdag pa rito, ayon kay Gay et al. (2012), ang ganitong disenyo ay nagbibigay-daan sa *data-driven program development,* kung saan ang mga konkretong datos mula sa mga kalahok ay nagsisilbing batayan sa

disenyo ng aksyong pananaliksik, na intrinsik sa *reflective* at *context-responsive* na gawain ng mga guro (Burns, 2010).

Sa kabuoan, ang *descriptive-developmental design* ay hindi lamang tumutugma sa layunin ng pananaliksik kundi nagsisiguro ring may kaugnayan, bisa, at aplikasyon ang mga resulta nito sa aktwal na konteksto ng mga guro, partikular sa larangan ng aksyong pananaliksik bilang bahagi ng kanilang propesyonal na pag-unlad.

Ang pananaliksik ay isasagawa sa Kagawaran ng Filipino ng Mataas na Paaralang Ramon Magsaysay sa Dibisyon ng Maynila. Ito ang may pinakamalaking bilang ng mga guro sa Filipino sa nasabing dibisyon na may kabuoang bilang na 26. Gayundin, ang paaralan ay isa sa mga nangungunang paaralan na may mataas na antas ng kalidad ng pagtuturo at pagkatuto. Patunay nito ang maraming parangal at pagkilalang tinatanggap ng paaralan sa bawat taon. Subalit sa mga nakalipas na taon, ang bilang ng aksyong pananaliksik na nabubuo mula sa Kagawaran ng Filipino ay hindi tumataas. Makikita sa talahanayan ang bilang ng aksyong pananaliksik sa nakalipas na 10 taon.

Taon	Bilang ng Nabuong Aksyong Pananaliksik
2015	1
2016	1
2017	2
2018	2
2019	1
2020	1
2021	0
2022	1
2023	1
2024	1

Sa kabila ng maraming bilang ng mga guro sa Kagawaran, may kabuoang 11 aksyong pananaliksik lamang ang natapos sa loob ng 10 taon. Dapat ding mapansin na ang mananaliksik na nagsasagawa ay 3 guro lamang. Matibay na patunay na mayroong matinding pangangailangan na magsagawa ng pagsasanay pangguro tungkol sa pagbuo ng aksyong pananaliksik sa nasabing paaralan.

Ang mga kalahok ng pananaliksik na ito ay pipiliin gamit ang *purposive sampling*, isang *non-probability sampling technique* kung saan ang mga kalahok ay pinipili batay sa tiyak na layunin ng pananaliksik at sa kanilang kaugnayan, karanasan, at kakayahang magbigay ng makabuluhang datos (Palinkas et al., 2015). Sa kasong ito, ang mga guro na kasalukuyang nagsasagawa o bumubuo ng aksyong pananaliksik ay itinuturing na pinakaangkop dahil sila ay may direktang karanasan sa larangang sinusuri.

Ang *purposive sampling* ay partikular na kapaki-pakinabang sa mga *qualitative* at *mixed methods studies*, kung saan ang layunin ay hindi lamang magbigay ng representasyon, kundi upang makakuha ng malalim, detalyado, at kontekstwal na impormasyon (Etikan, Musa, & Alkassim, 2016). Ayon pa sa kanila, mahalagang piliin ang mga kalahok na maaaring magbahagi ng *experiential insights* at *professional reflection* sa mga partikular na isyung nais tukuyin ng pananaliksik—sa pagkakataong ito, ang proseso, pananaw, at mga hamon sa pagsasagawa ng aksyong pananaliksik ng mga guro.

Kabilang sa mga kalahok ng pananaliksik ang sampung (10) guro sa Filipino mula sa Mataas na Paaralang Ramon Magsaysay, partikular sa Kagawaran ng Filipino, na kasalukuyang nakikibahagi sa pagsulat, pagbabalangkas, o pagsasagawa ng kanilang sariling aksyong pananaliksik. Ang bilang ng mga kalahok ay itinuturing na sapat para sa isang *descriptive-developmental* na disenyo, lalo na kung layunin ng pananaliksik ay bumuo ng *training intervention* batay sa tiyak na konteksto ng isang paaralan o departamento.

Sinusuportahan ng mga lokal na pag-aaral ang bisa ng purposive sampling sa ganitong uri ng pananaliksik. Halimbawa, sa pananaliksik nina Baguio at Yazon (2020), gumamit sila ng purposive sampling upang matukoy ang mga guro sa Senior High School na aktibong lumalahok sa action research. Ang layunin nila ay hindi upang i-generalize, kundi

upang makabuo ng intervention program batay sa mga aktwal na pangangailangan ng mga guro.

Sa ganitong paraan, ang purposive sampling ay nagbibigay-daan sa mananaliksik na tumutok sa tiyak at kwalipikadong grupo at makakuha ng mayaman, balido, at makabuluhang datos na magsisilbing pundasyon sa pagbuo ng isang programang pagsasanay.

Upang matukoy ang persepsyon, saloobin, at gawi (praktis) ng mga guro hinggil sa pagsulat ng aksyong pananalisik, ginamit sa pag-aaral na ito ang isang isinalin na bersyon ng PARQ o *Perception, Attitude, and Research Practice Questionnaire* nina Aguja at Prudente (2021). Ang instrumentong ito ay partikular na binuo upang sukatin ang antas ng pananaw, damdamin, at aktwal na paglahok ng mga guro sa gawaing pananaliksik, lalo na sa konteksto ng batayang edukasyon.

Ang hinalaw at isinalin sa Filipino na PARQ ay binubuo ng tatlong pangunahing bahagi: (1) Persepsyon, sinusukat ng bahaging ito ang kaalaman at paniniwala ng guro tungkol sa kahalagahan, gamit, at layunin ng aksyong pananaliksik bilang bahagi ng kanilang propesyonal na tungkulin; (2) Saloobin, tumutukoy ito sa damdamin o disposisyon ng guro tungo sa pagsasagawa ng aksyong pananaliksik at kung sila ba ay positibo, may motibasyon, o may agam-agam sa aksyong pananaliksik, kabilang na ang pagbuo ng proposal, pagpapatupad ng interbensyon, at pagsulat ng ulat.

Ang instrumento ay gumagamit ng 4-point Likert Scale na may sumusunod na pamantayan:

Puntos	Deskripsyon
4	Lubos na Sumasang-ayon
3	Sumasang-ayon
2	Hindi Sumasang-ayon
1	Lubos na Hindi Sumasang-ayon

Ito ay nagbibigay ng *quantitative data* na maaring isailalim sa *descriptive statistical analysis* tulad ng *mean* at *standard deviation* upang masukat ang kabuoang antas ng bawat dimensyon.

Bagamat orihinal na idinisenyo ang PARQ para sa mas malawak na pananaliksik panlipunan, ito ay iniangkop, hinalaw, at isinalin sa Filipino upang magpokus sa aksyong pananaliksik bilang tiyak na uri ng pananaliksik sa edukasyon. Ang mga item ay muling binalangkas upang mas mapagtuunan ang *classroom-based inquiry* na ginagawa ng mga guro alinsunod sa mga polisiya ng Kagawaran ng Edukasyon.

Upang maipangasiwa ang instrumento, humingi ng pahintulot ang mananaliksik sa punong-guro ng paaralan gayundin sa puno ng kagawaran ng Filipino. Pinasagutan ang PARQ sa pamamagitan ng Google Forms, maging ang mga tanong para sa sarbey ay sasagutan ng mga kalahok sa nasabing pamamaraan.

Ang mga datos na nakalap mula sa isinagawang talatanungan ang nagsilbing batayan sa pagbuo ng mungkahing programang pagsasanay. Upang masuri ang kaangkupan at bigyang saysay ang mga datos, ginamit ng mananaliksik ang descriptive statistics tulad ng porsyento, *mean score,* at *standard deviation*. Ang bawat aytem sa Likert Scale ay sinuri sa pamamagitan ng pagkalkula ng mean at standard deviation upang matukoy ang pangkalahatang antas ng tugon ng mga kalahok.

Samantala, ang mga datos na nakuha mula sa panayam ay isinailalim sa tematikong pagsusuri. Ang mga sagot ng mga kalahok ay isinulat at sinuri upang matukoy ang mga paulit-ulit na tema o kaisipan na lumitaw na siyang nagsilbing pundasyon sa interpretasyon ng kwalitatibong bahagi ng pag-aaral.

Mula sa mga datos na nakalap na sagot ng mga kalahok, bumuo ang mananaliksik ng isang programang pagsasanay pangguro sa pamamagitan ng pagsasagawa ng tatlong araw na pasanayan o *In-Service Training* (INSET).

Ang **INSET** o **In-Service Training** ay isang programang pampropesyonal na pag-unlad na idinisenyo para sa mga guro na nasa aktibong serbisyo. Sa konteksto ng pananaliksik na ito, ang INSET ay tumutukoy sa planadong pagsasanay na naglalayong palalimin ang kaalaman at kasanayan ng mga guro sa pagsulat at pagsasagawa ng aksyong pananaliksik partikular sa larangan ng Filipino. Ang layunin

nito ay hindi lamang upang mapabuti ang mga estratehiyang pedagohikal ng mga guro kundi upang bigyang-lakas sila bilang mga *reflective practitioners* na may kakayahang lumikha ng solusyon sa mga problemang pedagohikal sa pamamagitan ng aksyong pananaliksik. Ayon kina Villegas et al. (2019), ang epektibong INSET ay dapat nakabatay sa aktwal na pangangailangan ng mga guro at nakatuon sa pagbibigay ng suporta upang maisabuhay ang natutuhan sa mismong silid-aralan.

Ayon naman sa DepEd Order No. 32, s. 2011, bahagi ng Learning and Development System ng Kagawaran ang regular na pagbibigay ng INSET upang matiyak ang tuloy-tuloy na propesyonal na pag-unlad ng mga guro bilang tugon sa mga layunin ng K to 12 curriculum. Dahil dito, ang INSET ay hindi lamang dagdag-kaalaman kundi isang estratehikong tugon upang matulungan ang mga guro sa Filipino na maging mas epektibo, mapanuri, at mas may tiwala sa sarili sa pamamagitan ng sistematikong aksyong pananaliksik.

Ang bubuoing programang pagsasanay para sa mga guro sa Filipino sa larangan ng aksyong pananaliksik ay nakaangkla sa iba't ibang *framework* na kinikilala sa edukasyon. Kabilang dito ang DepEd Learning and Development (L&D) System Framework na nagbibigay ng sistematikong gabay mula sa *training needs analysis* hanggang ebalwasyon; ang Philippine Professional Standards for Teachers (PPST) na nagsusulong ng propesyonal na pag-unlad sa pamamagitan ng pananaliksik at repleksyon; ang Symonds' Training Design Model (2020) na nakatuon sa learner-centered at feedback-driven improvement; at ang Andragogical Model ni Knowles (1984) na angkop sa mga *adult learners* tulad ng mga guro. Sa pagsasama-sama ng mga modelong ito, masisiguro na ang programang pagsasanay ay magiging kontekstuwal, makabuluhan, at epektibong makatutugon sa aktwal na pangangailangan ng mga guro sa pagsulat ng aksyong pananaliksik.

Ang balidasyon ng nabuong programang pagsasanay ay isasagawa sa pamamagitan ng isang sistematikong proseso gamit ang pinagsamang *validation tool* ni Gime (2020) at ng Symond Training Evaluation Model (2020). Ang balidasyon ay gagamit ng rubrik na minodipika mula sa ginamit ni Gime sa kaniyang pananaliksik hinggil sa teacher training sa Senior High School Filipino kung saan sinuri ang nilalaman, organisasyon, kalinawan, pagiging angkop sa layunin, at lawak ng aplikasyon ng programa. Samantala, ang Symond Model ay nagbibigay

ng mas malalim na pagtingin sa kalidad ng disenyo at epekto ng pagsasanay batay sa apat na kategorya: *alignment to training needs*, *clarity of objectives*, *participant engagement*, at *evidence-based improvement*. Ang mga eksperto mula sa larangan ng edukasyon, pananaliksik, at pagsasanay ang magsisilbing tagasuri upang matiyak ang bisa, angkop, at implementabilidad ng programang pagsasanay pangguro. Sa ganitong paraan, matitiyak na ang pagsasanay ay tumutugon sa aktuwal na konteksto, pangangailangan, at propesyonal na pag-unlad ng mga guro sa Filipino.

Bilang bahagi ng etikal na konsiderasyon sa pananaliksik na ito, tiniyak ng mananaliksik na ang lahat ng kalahok ay boluntaryong lumahok sa pag-aaral matapos silang bigyan ng malinaw na *Informed Consent Form* na naglalaman ng layunin ng pananaliksik, proseso ng pangangalap ng datos, at katiyakang ang kanilang pagkakakilanlan ay mananatiling kumpidensyal. Ang mga datos na makakalap mula sa survey at panayam ay gagamitin lamang para sa layunin ng akademikong pagsusuri at hindi ilalantad sa publiko nang walang pahintulot. Igagalang din ang karapatan ng mga kalahok na umatras sa pananaliksik anumang oras kung nanaisin nila ito, nang walang anumang negatibong epekto sa kanila. Ang pananaliksik na ito ay sumusunod sa mga pamantayang etikal ng *Data Privacy Act of 2012 (RA 10173)* at sa mga prinsipyo ng integridad, respeto, at pananagutan sa larangan ng pananaliksik pang-edukasyon.

Dagdag pang bahagi ng etikal na konsiderasyon sa pananaliksik na ito, isinasaalang-alang din ang paggamit ng mga dihital na kasangkapan gaya ng **ChatGPT** bilang katuwang sa pagsusuri, pagsasalin, at pagbubuo ng ilang bahagi ng pananaliksik tulad ng tematikong pagsusuri at organisasyon ng datos. Tinitiyak ng mananaliksik na ang paggamit sa nasabing *artificial intelligence (AI) tool* ay hindi para palitan ang orihinal na pagsusuri o paghatol ng mananaliksik, kundi bilang suporta sa pagproseso ng impormasyon at pagbibigay-anyo sa mga ideya batay sa mga naunang datos at literatura. Lahat ng impormasyon, konsepto, at sangguniang hango mula sa mga naunang pag-aaral at artikulo ay maayos na inilahad at naitala bilang citation sa kabuoan ng pag-aaral upang mapanatili ang integridad sa akademikong pagsulat. Gayundin, ang paggamit ng *artificial intelligence* ay isinagawa nang may responsableng layunin, ayon sa prinsipyo ng *transparency* at *intellectual honesty* bilang bahagi ng makabagong gawi sa pananaliksik sa edukasyon.

Mga Resulta and Talakayan

1. *Pananaw ng mga guro sa pagsulat ng aksyong pananaliksik batay sa kanilang persepsyon, saloobin, at gawi*

Sa layuning matukoy ang pananaw ng mga guro sa pagsulat ng aksyong pananaliksik, ginamit ng mananaliksik ang instrumentong hinalaw at isinalin sa Filiipno na PARQ mula kay Aguja at Prudente (2018). Nahahati sa tatlong bahagi ang talatanungan kung saan tinukoy ang persepsyon, saloobin, at gawi ng mga gurong kalahok sa pag-aaral, May kabuoang 30 pahayag ang talatanungan na nahahati sa siyam (9), sampu (10), at labing-isa (11).

Makikita sa pagsusuri ang *frequency* ng sagot ng mga kalahok gayundin ang mean at standard deviation bilang estadistikang pagsusuri sa datos.

Unang Bahagi: Mga Prinsipyo ng Aksyong Pananaliksik	1	2	3	4	Mean	SD
Isinasagawa ang aksyong pananaliksik sa loob ng konteksto ng kapaligiran ng guro.			4	6	3.6	0.52
Ang aksyong pananaliksik ay isang mapanghamong gawain.			1	9	3.9	0.32
Layunin ng aksyong pananaliksik na ipaliwanag kung bakit natin ginagawa ang mga bagay-bagay.		1	3	4	3.5	0.76
Iniuugnay ng aksyong pananaliksik ang teoryang pang-edukasyon sa propesyonal na praktis.			5	5	3.5	0.53
Nakatuon ang aksyong pananaliksik sa pag-aaral ng sariling mga gawi upang makapaghatid ng pagbabago.			6	4	3.4	0.52
Ang aksyong pananaliksik ay gumagamit ng kolaboratibong pamamaraan upang makabuo ng datos			3	7	3.7	0.48

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				Mean	SD
na nagsisilbing gabay sa pagbabago sa praktis.					
Ang pagsasagawa ng aksyong pananaliksik ay isang mabuting sukatan ng propesyonal na komitment ng guro.	3	3	4	3.1	0.88
Kailangan ng *action plan* sa pagsubok ng teorya ng pagpapabuti.	2	5	3	3.3	0.77
Ang mga resulta ng pag-aaral sa aksyong pananaliksik ay dapat ibahagi at ipalaganap.		1	9	3.9	0.32

Malinaw ang mataas na pagkilala ng mga guro sa mga pundamental na prinsipyo ng aksyong pananaliksik. Karamihan sa mga kalahok ay sumasang-ayon na isinasagawa ito sa loob mismo ng kanilang kapaligiran (Mean = 3.6, SD = 0.52), at may malawak na pagkilala na ito ay isang mapanghamong gawain (Mean = 3.9, SD = 0.32). Ipinapahiwatig nito na tanggap ng mga guro ang aksyong pananaliksik bilang integral at makatotohanang bahagi ng kanilang propesyon. Subalit, may bahagyang pagkakaiba-iba sa opinyon sa layunin ng aksyong pananaliksik, partikular sa kung ito ay naglalayong ipaliwanag ang ginagawa nila (Mean = 3.5, SD = 0.76). Bagaman positibo pa rin ang mean, ang mataas na SD ay nagpapakita na maaaring hindi lubusang malinaw sa ilan ang layuning ito. Malinaw rin sa kanila ang ugnayan ng teorya at praktika (Mean = 3.5, SD = 0.53), ngunit may bahagyang alinlangan sa pagsasaalang-alang ng sariling praktis bilang pokus ng aksyong pananaliksik (Mean = 3.4, SD = 0.52). Higit namang mataas ang pagsang-ayon sa kolaboratibong pamamaraan (Mean = 3.7, SD = 0.48), na nagpapakita ng malawakang pagtanggap sa kahalagahan ng pagtutulungan sa pananaliksik.

Batay sa datos, malinaw na positibo ang persepsyon ng mga guro hinggil sa mga pangunahing prinsipyo ng aksyong pananaliksik. Kinikilala nila ito bilang mahalagang bahagi ng kanilang tungkulin, partikular ang konsepto na isinasagawa ang pananaliksik sa mismong kapaligiran ng guro. Tugma ito sa ipinahayag ni Sagor (2000) na ang aksyong pananaliksik ay pinakamabisa kapag ito ay may direktang kaugnayan sa

realidad ng guro sa loob ng silid-aralan. Ang pagtanggap nila na ang aksyong pananaliksik ay isang mapanghamong gawain ay sumasalamin din sa pagiging makatotohanan ng kanilang pananaw na sinusuportahan ni Elliot (2015), kung saan binigyang-diin na kailangang tanggapin ng mga guro ang pagiging hamon ng pananaliksik upang maging matagumpay ito.

Gayunman, kapansin-pansin ang bahagyang kalituhan ng ilang guro tungkol sa mas malalim na layunin ng pananaliksik, partikular kung paano ito nagsisilbing gabay sa pagpapaliwanag ng mga gawi nila sa pagtuturo. Katulad ito ng naging obserbasyon nina Hathorn at Dillon (2018), na kung hindi lubos ang malinaw na pag-unawa ng mga guro sa layunin ng aksyong pananaliksik, maaari itong humadlang sa kanilang ganap na pagsasagawa nito.

Ikalawang Bahagi: Saloobin sa Pagbuo ng Aksyong Pananaliksik	1	2	3	4	Mean	SD
Ako ay nasisiyahan sa pagsubok ng mga bagong bagay sa pagtuturo.			4	6	3.6	0.52
Naniniwala ako na ang paggawa ng aksyong pananaliksik ay bahagi ng aking tungkulin bilang guro.		3	4	3	3	0.82
May positibo akong pakiramdam na sa pamamagitan ng paggawa ng aksyong pananaliksik, ako ay maaaring maging mas epektibong guro.		4	3	3	2.9	0.88
Ang paggawa ng aksyong pananaliksik ay maaaring magpalaya sa guro.	1	4	3	2	2.6	0.97
Ang pagpaplano para sa mga susunod na pagtuturo ang huling bahagi ng siklo ng aksyong pananaliksik.	1	3	3	3	2.8	1.03
Hindi makahanap ng oras ang mga guro upang makagawa ng aksyong pananaliksik.			4	6	3.6	0.52

Ang mga guro ay nabibigyan ng sapat na pagsasanay kung paano isasagawa ang aksyong pananaliksik.	2	4	2	2	2.4	1.07
Sa pamamagitan ng aksyong pananaliksik, ang mga guro ay nagiging tagalikha ng propesyonal na kaalaman.		4	3	3	2.9	0.88
Ako ay kumbinsido na ang paggawa ng aksyong pananaliksik ay maaaring magpabuti sa aking mga gawi sa pagtuturo.		1	4	5	3.4	0.70
Ang dami ng aking trabaho sa paaralan ang pumipigil sa akin na makagawa ng aksyong pananaliksik.			3	7	3.7	0.48

Sa pangkalahatan, positibo ngunit mas mababa ang antas ng mean sa ikalawang bahagi, na nagpapakita ng mas komplikado o di-parehong pananaw hinggil sa saloobin sa pagsasagawa ng pananaliksik. Karamihan ay positibo ang pakiramdam sa pagsubok ng mga bagong bagay sa pagtuturo (Mean = 3.6, SD = 0.52). Gayunpaman, nagkakaiba-iba ang mga saloobin pagdating sa paniniwalang bahagi ng kanilang tungkulin ang pananaliksik (Mean = 3.0, SD = 0.82) at sa paniniwalang magiging epektibo silang guro dahil dito (Mean = 2.9, SD = 0.88). Ang pinakamababang mean ay ang paniniwalang ito'y "nakalalaya" (Mean = 2.6, SD = 0.97), na nagpapakita ng malinaw na pag-aalinlangan ng mga guro sa ganitong pananaw. Mataas din ang mean score sa paniniwalang kulang sila sa sapat na pagsasanay (Mean = 2.4, SD = 1.07), malinaw na indikasyon ng pangangailangan ng karagdagang suporta sa training. Mahalagang pansinin na mataas ang mean (3.7, SD = 0.48) ukol sa pagkilala na ang dami ng gawain sa paaralan ay pumipigil sa paggawa ng pananaliksik, na nagpapahiwatig ng makatotohanang hadlang sa propesyonal na pag-unlad.

Lumitaw ang pagkakaroon ng mas mababang antas ng kumpiyansa at positibong saloobin ng mga guro pagdating sa aktwal na pagsasagawa ng aksyong pananaliksik. Bagaman positibo ang kanilang pagtingin sa pagsubok ng mga bagong pamamaraan, malinaw na mas mababa ang mean score sa paniniwalang bahagi ito ng kanilang tungkulin, pati na rin

sa paniniwalang ito ay nakapagpapahusay sa pagiging epektibo nila bilang guro. Ang mataas na SD sa mga item na ito ay nagpapahiwatig ng pagkakaiba-iba ng kanilang saloobin, na sinusuportahan ng pag-aaral nina Dela Peña at Saniel (2019). Ayon sa kanila, marami ang nakararanas ng pag-aalinlangan sa aksyong pananaliksik dahil hindi sapat ang institutional support at malinaw na pagsasanay para rito.

Bukod dito, lumitaw ang hadlang sa oras at *workload* bilang pangunahing dahilan ng mababang saloobin sa pananaliksik. Sinusuportahan ito ng mga natuklasan nina Bouderesa (2016) at Wyatt at Dikilitaş (2019) na nagsasabing ang kakulangan ng panahon, training, at suporta mula sa administrasyon ay karaniwang hadlang sa pagsasagawa ng aksyong pananaliksik ng mga guro.

Ikatlong Bahagi: Prosesong Kasangkot sa Pagbuo ng Aksyong Pananaliksik	1	2	3	4	Mean	SD
Nagsisimula ang aksyong pananaliksik sa pagtatasa ng kasalukuyang sitwasyon.		3	3	4	3.1	0.88
Layunin ng aksyong pananaliksik na imbestigahan ang pag-uugali ng mga mag-aaral.		1	2	7	3.6	0.70
Ang aksyong pananaliksik ay sumusunod sa isang paulit-ulit na proseso.		3	3	4	3.1	0.88
Ang repleksyon ay isinasagawa sa lahat ng yugto ng proseso ng aksyong pananaliksik.		1	4	5	3.4	0.70
Ang isang pagsusulit sa konsepto ay sapat nang ebidensiya upang sukatin ang pag-unawa ng mga mag-aaral.		3	4	3	3.0	0.82
Sa pagsusuri ng epekto ng isinagawang aksyon, mahalagang magkaroon ng kwantitatibong datos bilang ebidensiya.		2	4	4	3.6	0.89

Ang aksyong pananaliksik ay sumusunod sa isang tuwid o linear na proseso.		2	4	4	3.6	0.89
Ang planong aksyon ay nakabatay sa ugat ng suliranin sa praktis.		1	4	5	3.4	0.70
Ang aksyong pananaliksik ay kinabibilangan ng pagpapatupad ng mga paunang natukoy na kasagutan.		2	4	4	3.2	0.79
Pinauunlad ng aksyong pananaliksik ang mga proseso ng edukasyon sa pamamagitan ng pagbabago.			3	7	3.7	0.48
Ang mga mananaliksik na nagsasagawa ng aksyong pananaliksik ay malinaw na inilalahad ang proseso ng repleksyon sa kanilang pagtalakay upang maunawaan ito ng iba at masundan ang proseso ng pagbibigay-kahulugan.			4	6	3.6	0.52

Ang huling bahagi ay nakatuon sa proseso ng aksyong pananaliksik kung saan mataas ang mean sa ilang aspekto ngunit may pagkakaiba-iba sa ilang partikular na proseso. Kinikilala ng mga guro na nagsisimula ang aksyong pananaliksik sa pagtatasa ng kasalukuyang kalagayan (Mean = 3.1, SD = 0.88) ngunit may bahagyang mababa ang mean score rito, marahil ay indikasyon na may ilang hindi ganap na nakakaunawa ng simulaing ito. Malinaw rin sa kanila na mahalaga ang repleksyon sa bawat yugto (Mean = 3.4, SD = 0.70), at kinikilala ang kahalagahan ng pagbubuo ng aksyon na nakabatay sa ugat ng suliranin (Mean = 3.4, SD = 0.70). Subalit, nahayag din ang mataas na pagkakaiba-iba ng opinyon hinggil sa pagsusulit bilang tanging batayan ng pag-unawa ng mag-aaral (Mean = 3.0, SD = 0.82), na nangangahulugan na hindi nila itinuturing ang pagsusulit bilang sapat na batayan ng pag-unawa. Mataas din ang mean (3.6–3.7) sa mga item na nagpapakita ng kahalagahan ng quantitative data at linear na proseso sa pananaliksik, na maaaring nagpapahiwatig ng tradisyonal na pananaw sa pananaliksik. Ang pagtatala ng proseso ng repleksyon upang maipakita ang daloy ng pag-

iisip ay mataas rin ang mean (Mean = 3.6, SD = 0.52), na nagpapakita ng mataas na pagkilala sa pagiging transparent at reflective ng proseso.

Ang ikatlong bahagi ng datos ay nagpakita naman ng positibong gawi o praktis sa pagsasagawa ng aksyong pananaliksik. Ang mga guro ay may mataas na pagpapahalaga sa kolaboratibong pamamaraan at repleksyon sa bawat yugto

ng pananaliksik. Sinang-ayunan ito nina Cochran-Smith at Lytle (2009), kung saan ipinahayag nilang mahalagang bahagi ng pagiging practitioner-researcher ang patuloy na repleksyon. Karamihan sa mga guro ay naniniwalang kailangang ibahagi at ipalaganap ang resulta ng pananaliksik na alinsunod sa rekomendasyon ni Ferrance (2000) at Kennedy (2016) na nagsabing ang pagbabahagi ng resulta ay mahalaga upang makapagbigay-ambag sa professional knowledge at makapag-udyok sa iba pang guro na magsagawa ng sariling pananaliksik.

Subalit, lumabas din ang ilang limitasyon sa kanilang gawi, partikular sa pagtingin na sapat na ang pagsusulit upang masukat ang pag-unawa ng mga estudyante na nagpapakita ng tradisyonal na pagtingin sa pananaliksik. Kinakailangan itong bigyang-pansin at bigyang-linaw sa pamamagitan ng mas komprehensibong pagsasanay sa pagkolekta at pagsusuri ng iba't ibang uri ng datos gaya ng qualitative data, ayon sa rekomendasyon nina Ellis at Armstrong (2014).

Sa pangkalahatan, ang resulta ng datos sa tatlong bahagi ay naglalantad ng positibong persepsyon at gawi ng mga guro sa Filipino sa pagsulat ng aksyong pananaliksik ngunit may malinaw na kakulangan sa saloobin dahil sa iba't ibang hadlang at hamon. Ang positibong pagtingin sa pananaliksik ay maaaring lalong mapatatag kung matutugunan ng institusyon ang mga suliranin sa workload, training, at pagbibigay ng insentibo o pagkilala. Ipinakikita ng datos ang pangangailangang malinaw na bigyang-linaw ang layunin ng aksyong pananaliksik, pati na rin ang pagbibigay ng sapat na suporta upang matiyak ang patuloy at matagumpay na implementasyon nito.

Sa kabuoan, mahalaga ang sistematikong pagsasanay at suporta upang mapalalim ang kakayahan ng mga guro sa pagsasagawa ng aksyong pananaliksik. Ang pagkakaroon ng malinaw na institutional framework gaya ng ipinapayo nina Darling-Hammond, Hyler, at Gardner (2017) ay mahalaga upang magkaroon ng konkretong pagbabago sa propesyonal na pag-unlad ng mga guro sa Filipino.

2.   Epekto sa mga guro ng pagsulat ng aksyong pananaliksik batay sa kanilang persepsyon, saloobin, at gawi

Ang datos para sa layuning ito ay magmumula sa mga kasagutan ng mga gurong kalahok na nagbigay ng makabuluhang pahayag ukol sa tanong. Nakaayos ng random ang mga sagot at saka ginawan ng tematikong pagsusuri sa tulong ng *artificial intelligence*.

Kalahok	Tugon
1	Mas naging bukas ang isip ko sa pagtanggap ng puna mula sa mga mag-aaral at kapwa guro dahil napagtanto kong mahalaga ang repleksyon sa pagtuturo.
2	Noong una, iniisip kong dagdag trabaho lang ang action research. Pero ngayon, naiintindihan ko na ito pala ang paraan para maresolba ko ang mga paulit-ulit na suliranin sa klase.
3	Nabago ang pananaw ko na ang research ay para lang sa mga akademiko. Bilang guro sa Filipino, nakikita ko ngayon ang silbi nito sa paglinang ng makrong kasanayan ng mga mag-aaral.
4	Dati, natatakot akong magsimula kasi pakiramdam ko, kulang ako sa kakayahan. Pero sa tulong ng kapwa guro, natutunan kong posible itong matutunan.
5	Naging mas organisado ang aking pagtuturo dahil bawat desisyon ko sa silid-aralan ay may batayan na mula sa obserbasyon at datos.
6	Sa totoo lang, nawawalan ako ng gana kasi kulang sa suporta mula sa admin. Ang action research ay parang trabaho na walang gantimpala.
7	Dahil sa pagsulat ng action research, mas lalo kong napansin ang mga pangangailangan ng aking mga estudyante, lalo na sa pagbasa at pagsusulat sa Filipino.

8	Nakaka-motivate kapag nakikita mong may pagbabago sa resulta ng pagtuturo dahil sa isang interbensyon na ikaw mismo ang nagdisenyo.
9	Kahit may kaalaman ako sa paggawa ng action research, hirap akong isingit ito sa dami ng lesson plan, grading, at modules.
10	Nadagdagan ang respeto ko sa sarili ko bilang propesyonal—pakiramdam ko mas may saysay at lalim ang pagiging guro ko ngayon.

Malinaw mula sa mga sagot ng mga kalahok na guro sa Filipino ang positibong epekto ng pagsulat ng aksyong pananaliksik sa kanilang propesyonal na pag-unlad, bagama't mayroon ding mga hamong kinakaharap na mahalagang bigyang-pansin.

Ang unang aspekto ay may kaugnayan sa pagkakaroon ng bukas na pananaw sa pagtanggap ng puna mula sa mga estudyante at kapwa guro. Sang-ayon ito sa prinsipyo ng *reflective practice* na ipinakilala ni Schön (1983) kung saan binibigyang-halaga ang repleksyon bilang mahalagang bahagi ng epektibong pagtuturo. Ang kahandaan ng guro na tumanggap ng feedback ay nagpapahiwatig ng pagkakaroon ng bukas na kaisipan tungo sa patuloy na pagpapabuti ng kanilang kasanayan gaya ng binanggit nina Cochran-Smith at Lytle (2009) na mahalaga ang repleksyon sa matagumpay na practitioner inquiry.

Lumabas din ang pagbabago sa persepsyon ng mga guro hinggil sa pananaliksik mula sa simpleng pagtingin na ito ay dagdag lamang sa trabaho patungo sa mas malalim na pagkaunawa na ito ay paraan upang matugunan ang paulit-ulit na mga suliranin sa silid-aralan. Sinusuportahan ito ng pananaliksik ni Sagor (2000), na nagsabing ang aksyong pananaliksik ay epektibong paraan ng sistematikong pagharap sa mga suliraning pedagohikal.

May malaking pagbabago rin sa pananaw ng ilang guro tungkol sa pananaliksik bilang gawain lamang ng mga nasa akademya tungo sa mas praktikal na pagtingin na ito ay mahalagang kasangkapan upang mapaunlad ang makrong kasanayan ng mga estudyante sa Filipino. Ang pananaliksik nina Burns at Dikilitaş (2024) ay nagpapatunay na ang

aksyong pananaliksik ay instrumental sa pagpapabuti ng wika at literasi, lalo na sa konteksto ng language teaching.

Ipinakita rin sa mga sagot ang epekto ng kolaborasyon kung saan nabawasan ang takot ng ilang guro dahil sa suporta ng kanilang mga kapwa guro. Sinusuportahan ito ng mga obserbasyon nina Ellis at Armstrong (2014) na nagsabing ang collaborative inquiry ay mahalagang bahagi upang magkaroon ng kumpiyansa at epektibong kasanayan ang mga guro sa pagsasagawa ng pananaliksik.

Dagdag pa rito, naging malinaw na epekto ng pagsulat ng aksyong pananaliksik ang pagiging mas organisado at sistematiko ng pagtuturo dahil sa paggamit ng mga datos at obserbasyon bilang batayan sa paggawa ng mga desisyon sa silid-aralan. Ayon kay Ferrance (2000), ang pagsasagawa ng aksyong pananaliksik ay nagpapabuti sa proseso ng pagtuturo dahil mas nakaugat ito sa ebidensya.

Subalit, may mga guro ring nagpahayag ng negatibong saloobin dahil sa kakulangan ng suporta mula sa administrasyon gaya ng ipinakita ng sagot na nagsasabing "nawawalan ng gana." Ang obserbasyong ito ay tumutugma sa natuklasan nina Dela Peña at Saniel (2019) na nagsasabing malaking hamon ang kakulangan ng suporta at pagkilala mula sa administrasyon upang mapanatili ang sigla ng guro sa paggawa ng pananaliksik.

Ang mga tugon ng guro na nagsasabing naging mas sensitibo sila sa mga pangangailangan ng kanilang mga estudyante dahil sa aksyong pananaliksik ay nagpapakita ng malalim na epekto nito sa kanilang pedagohikal na pamamaraan. Sinusuportahan ito nina Kennedy (2016), na nagsasabing epektibo ang aksyong pananaliksik sa pagtukoy at pagtugon sa mga partikular na pangangailangan ng mga estudyante sa kontekstuwalisadong pagtuturo.

Nakita rin ang motibasyong dulot ng aktwal na pagkakaroon ng positibong pagbabago sa resulta ng pagtuturo na bunsod ng mga interbensyong dinisenyo mismo ng guro. Ayon sa pag-aaral nina Pipere at Salīte (2006), malaking motibasyon sa mga guro ang makita ang positibong epekto ng kanilang mga sariling interbensyon na nag-uudyok sa kanila upang ipagpatuloy ang pananaliksik.

Gayunpaman, kapansin-pansin pa rin ang hamon na naidudulot ng workload sa patuloy na pagsasagawa ng aksyong pananaliksik.

Lumalabas sa sagot ng ilang guro na bagamat mayroon silang sapat na kaalaman, nahihirapan silang isabay ito sa maraming gawain tulad ng paggawa ng lesson plan, grading, at paghahanda ng modules. Tugma ito sa natuklasan nina Wyatt at Dikilitaş (2019) na isa sa pangunahing hadlang sa pagsasagawa ng aksyong pananaliksik ay ang workload at kakulangan sa oras ng mga guro.

Sa pangkalahatan, malinaw mula sa mga sagot na ang pagsasagawa ng aksyong pananaliksik ay nagbubunga ng malalim na respeto sa sarili bilang propesyonal, nagpapataas ng self-efficacy at nagbibigay ng mas malalim na saysay sa pagiging guro. Sinusuportahan ito nina Rauteda (2025) at Bouderesa (2016), na nagsasabing mahalaga ang aksyong pananaliksik sa personal at propesyonal na pag-unlad ng mga guro.

Sa tematikong pagsusuri, makikita sa talahanayan ang mga ideya o temang masasalamin sa sagot ng mga kalahok:

Tema	Deskripsyon	Halimbawang Sagot
Pagbabago sa Pananaw	Nabago ang persepsyon sa aksyong pananaliksik mula sa pagiging dagdag-trabaho tungo sa pagiging kapaki-pakinabang na proseso.	Sagot #2, #3
Personal at Propesyonal na Paglago	Nagkaroon ng mas mataas na self-efficacy, repleksyon, at pagkilala sa sariling kakayahan bilang guro.	Sagot #1, #4, #10
Pagpapahusay ng Gawi sa Pagtuturo	Naging mas sistematiko, data-based, at mas responsive sa pangangailangan ng mag-aaral ang pagtuturo.	Sagot #5, #7
Hamon at Hadlang sa Praktis	Kakulangan sa oras, suporta, at insentibo ang nagiging hadlang sa tuloy-tuloy na paggawa ng aksyong pananaliksik.	Sagot #6, #9

Positibong Emosyon at Motibasyon	Naranasan ang kasiyahan, inspirasyon, at personal na tagumpay mula sa mga positibong resulta ng aksyong pananaliksik.	Sagot #8, #10

Para sa unang tema na Pagbabago ng Pananaw, ang mga tugon (#2, #3) ay nagpapakita ng pag-shift mula sa pagtingin sa aksyong pananaliksik bilang "dagdag-trabaho" tungo sa pagkilala rito bilang solusyon sa paulit-ulit na problema sa klase at hakbang sa paglinang ng makrong kasanayan ng mag-aaral. Ipinapakita ni Sagor (2000) na nagiging tunay na makabuluhan lamang ang aksyong pananaliksik kapag nakaugat sa konkretong suliranin ng guro samantalang itinatala nina Hathorn at Dillon (2018) na ang malinaw na pag-unawa sa praktikal na layunin ng pananaliksik ang nagbabago ng negatibong persepsyon tungo sa positibong disposisyon.

Sa ikalawang tema na Personal at Propesyonal na Paglago, ang mga pahayag (#1, #4, #10) ay naglalarawan ng pagtaas ng *self-efficacy* at propesyonal na identidad. Ayon kina Pipere at Salīte (2006), ang pagkakamit ng malinaw na resulta mula sa sariling interbensyon ay nagdudulot ng mas matatag na propesyonal na kumpiyansa at "empowerment." Inilalarawan din ni Schön (1983) ang "reflective practitioner" bilang propesyunal na patuloy na bumabaling sa repleksyon upang palawakin ang kaalaman at kakayahan.

Para sa ikatlong tema na Pagpapahusay ng Gaw isa Pagtuturo, binibigyang-diin ng mga guro (tugon #5 at #7) ang paggamit ng datos upang magdisenyo ng mga desisyong pedagohikal at pag-uugnay sa aktwal na pangangailangan ng mag-aaral. Ipinakita ni Ferrance (2000) na ang *data-driven action research* ay nagbubunga ng mas sistematikong pagbuo ng banghay-aralin at *targeted instruction.* Kinumpirma rin ni Kennedy (2016) na ang mga guro ay mas nagiging *responsive* at *evidence-based* sa kanilang pagtuturo pagkatapos nilang magsagawa ng aksyong pananaliksik.

Ipinapakita naman sa ikaapat na tema na Hamon at Hadlang sa Praktis, na bumabaling sa kakulangan ng oras, insentibo, at suporta mula sa admin—mga hadlang na karaniwang inilalarawan sa literatura. Ayon kina Dela Peña at Saniel (2019), ang kawalan ng institutional support at

recognition ay pangunahing hadlang sa pagpapatuloy ng action research. Itinatampok ng pag-aaral nina Wyatt at Dikilitaş (2019) na ang mabigat na workload sa pampublikong paaralan ay naglilimita sa oras ng guro para magsagawa ng sistematikong pananaliksik.

Ang mga tugon (#8, #10) para sa ikalimang tema na Positibong Emosyon at Motibasyon ay nagpapakita ng *intrinsic motivation,* kasiyahan, at pakiramdam ng tagumpay tuwing nakikita ng guro ang positibong epekto ng sariling interbensyon. Ipinakita ni Burns at Dikilitaş (2024) na ang "visible impact" ng aksyong pananaliksik sa pagkatuto ng mag-aaral ay nagiging makapangyarihang motibasyon para ipagpatuloy ng guro ang *practitioner inquiry*. Binanggit din nina Ellis at Armstrong (2014) na tumataas ang professional morale ng mga guro kapag kinikilala at ibinabahagi ang kanilang pananaliksik.

Pinatitibay ng mga temang ito ang pananaw na ang aksyong pananaliksik ay hindi lamang metodolohikal na gawain kundi isang holistikong proseso na humuhubog sa propesyonal na identidad, kasanayan, at emosyonal na katatagan ng guro. Gayunman, ipinapakita rin ng ebidensiya na ang tagumpay ng praktis ay labis na nakasalalay sa suporta ng konteksto tulad ng oras, administratibong insentibo, at kolaboratibong kultura. Ipinapahiwatig nito na ang mga programang pagsasanay pangguro ay kailangang kontekstwal, kolaboratibo, at institusyonal na sinuportahan upang mapanatili ang positibong persepsyon, saloobin, at gawi tungo sa patuloy na aksyong pananaliksik.

3.   Kahalagahan ng programang pagsasanay pangguro sa mga kalahok sa pagpapabuti ng kanilang kakayahan sa pagsulat ng aksyong pananaliksik

Isinagawa rin ang tematikong pagsusuri sa mga kasagutan ng mga kalahok para sa layuning ito. Makikita ang iba't ibang tema ng mga sagot ng mga guro ukol sa kahalagahan ng pagsasagawa ng programang pagsasanay pangguro.

Kalahok	Tugon
1	Malaking tulong ang pagsasanay kasi mas naipaliwanag sa amin ang proseso ng action research sa paraang mas madaling maintindihan.

2	Sa tulong ng training, natutuhan ko kung paano bumuo ng makabuluhang tanong sa pananaliksik na galing mismo sa suliranin sa klase.
3	Nagkaroon ako ng lakas ng loob na magsulat ng action research dahil sa mentoring at hands-on activities sa training.
4	Mas naging malinaw sa akin kung paano gumamit ng mga datos sa pagsusuri ng resulta ng interbensyon.
5	Ang programang pagsasanay ay nagsilbing tulay para magbahaginan kami ng karanasan ng kapwa guro sa Filipino tungkol sa classroom issues.
6	Dahil sa pagsasanay, naging aware ako sa papel ng action research sa aking propesyon bilang guro, hindi lang bilang academic requirement.
7	Nakatulong ang training na ito para matutunan ko kung paano bumuo ng action plan na may konkretong hakbang at layunin.
8	Nagkaroon kami ng tiwala sa aming sarili bilang mananaliksik, hindi lamang bilang tagapagturo.
9	Ang pagsasanay ay naging daan upang magkaroon kami ng sapat na kaalaman sa pagsusulat ng report para sa action research.
10	Nakatulong ito para mapagtanto ko na ang pananaliksik ay hindi lang para sa papel kundi para sa tunay na pagbabago sa loob ng silid-aralan.

Ipinahihiwatig ng sampung pahayag ng mga kalahok na lubhang nakatulong ang programang pagsasanay sa pagpapaunlad ng kaalaman, kasanayan, at disposisyon ng mga guro sa Filipino hinggil sa aksyong pananaliksik. Una, malinaw na pinagaan ng pagsasanay ang konseptuwal na pag-unawa nila sa proseso (Tugon 1) at nakapagbigay ng konkretong gabay sa pagbabalangkas ng makabuluhang tanong sa pananaliksik (Tugon 2). Tugma ito sa pananaliksik nina Darling-

Hammond, Hyler, at Gardner (2017) na nagsasabing ang epektibong *professional development* ay kailangang malinaw, nakaangkla sa aktwal na suliranin, at nagbibigay ng tiyak na estratehiya sa *classroom improvement*.

Ikalawa, ang pagkakaroon ng mentoring, hands-on activities, at kolaboratibong pagbabahaginan (Tugon 3, 5) ay nagpalakas ng kumpiyansa ng mga guro at nagpatunay sa bisa ng *communities of practice* na inilarawan nina Ellis at Armstrong (2014), kung saan ang kolektibong pagkatuto ay nagdaragdag ng self-efficacy at naglulunsad ng patuloy na reflective practice. Kaugnay nito, binigyang-diin ng *Knowles' Andragogy* (1984) na ang mga adult learner ay higit na natututo kapag ang pagsasanay ay nakabatay sa kanilang karanasan at may agarang aplikasyon ay nakikita ito sa pagtaas ng kanilang tiwala bilang mananaliksik (Tugon 8) at pagkilala sa halaga ng pananaliksik bilang bahagi ng propesyon (Tugon 6).

Ikatlo, nakita rin ang paglilinaw sa teknikal na bahagi ng aksyong pananaliksik mula sa paggamit ng datos sa pagsusuri ng interbensyon (Tugon 4) hanggang sa pagbubuo ng konkretong action plan (Tugon 7) at pagsulat ng ulat sa pananaliksik (Tugon 9). Pinatutunayan ito ng pag-aaral ni Ferrance (2000) na ang pagbibigay ng istrukturang gabay sa data analysis at reporting ay mahalaga upang maging sistematiko at ebidensiya-batay ang pagtuturo. Gayundin, ipinakita ni Gime (2020) na ang malinaw na scaffolding sa bawat yugto ng aksyong pananaliksik ay nagreresulta sa mas mataas na kalidad ng mga proposal at ulat ng guro.

Sa huli, binigyang-diin ng Tugon 10 na nagbago ang pananaw ng guro sa pananaliksik na mula sa pagiging "papel" lang tungo sa pagiging tunay na mekanismo ng pagbabago sa silid-aralan. Ang ganitong transformative outlook ay umaayon sa natuklasan nina Burns at Dikilitaş (2024) na ang positibong resulta ng sariling interbensyon ay nagdudulot ng mas malalim na motibasyon at patuloy na pagsasagawa ng aksyong pananaliksik. Gayunman, binabanggit din ng literatura (Dela Peña & Saniel, 2019) na upang mapanatili ang ganitong sigla, kinakailangan ang tuloy-tuloy na mentoring at administratibong suporta na isang aspektong dapat isaalang-alang sa mga susunod na hakbang ng programang pagsasanay.

Sa kabuoan, pinatutunayan ng mga tugon na ang kontekstwal, kolaboratibo, at praktikal na disenyo ng pagsasanay ang susi sa

matagumpay na pagpapayabong ng aksyong pananaliksik sa hanay ng mga guro. Kapag may malinaw na gabay, sapat na teknikal na suporta, at kultura ng pagninilay at pagbabahaginan, nagkakaroon ng makabuluhang pagbabago hindi lamang sa persepsyon at saloobin kundi maging sa gawi ng mga guro tungo sa mas epektibo at batay-sa-datos na pagtuturo.

Tema	Deskripsyon	Halimbawang Sagot
Paglilinaw sa Proseso at Kaalaman	Inilalarawan kung paanong naliwanagan ang mga guro hinggil sa hakbang, konsepto, at gamit ng aksyong pananaliksik.	#1, #2, #4
Pagtaas ng Kumpiyansa at Kakayahan sa Pananaliksik	Tumutukoy sa pag-angat ng self-efficacy, lakas-loob, at kasanayang teknikal sa pagbuo ng aksyong pananaliksik.	#3, #8, #9
Batay-sa-Datos at Sistematikong Pagtuturo	Nagpapakita ng paggamit ng ebidensya, obserbasyon, at planadong interbensyon upang gawing mas organisado ang pagtuturo.	#4, #5, #7
Kolaborasyon at Propesyonal na Komunidad	Binibigyang-diin ang pagbabahaginan ng karanasan at peer mentoring bilang tulay sa patuloy na pagsulat ng aksyong pananaliksik..	#3, #5
Propesyonal na Pagkakakilanlan at Motibasyon	Ipinapakita ang pagtaas ng dignidad, dahilan, at sigla ng guro bilang mananaliksik at	#6, #8, #10

	tagapagbago ng silid-aralan.	

Ang mga tugon #1, #2, at #4 ay nagpapakita na ang pagsasanay ay nakatulong upang mas madaling maunawaan ng mga guro ang bawat hakbang ng aksyong pananaliksik mula sa pagbabalangkas ng tanong hanggang sa paggamit ng datos sa pagsusuri. Ayon kina Darling-Hammond, Hyler, at Gardner (2017), epektibo ang *professional development* kapag malinaw na naipapaliwanag ang teorya at nakaugnay ito sa aktwal na suliranin ng guro. Sinusuportahan din ito ng modelo ni Knowles (1984) na ang mga *adult learner* ay higit na natututo kapag "immediately applicable" at kontekstwal ang nilalaman ng pagsasanay.

Sa tugon #3, #8, at #9, lumitaw na nagkaroon ng lakas-loob at tiyak na kasanayan ang mga guro sa pagsulat ng report at pagdidisenyo ng interbensyon. Itinatampok ni Gime (2020) na ang mentoring at hands-on activities ay mahalaga upang mabuo ang self-efficacy ng guro sa pananaliksik. Samantala, ipinapakita ni Burns at Dikilitaş (2024) na ang aktibong pagsasanay na may workshop at feedback loop ay lumilikha ng "researcher identity" sa mga guro ng wika.

Gayundin, ang tugon #4, #5, at #7 ay nagpapakita ng pagsandig ng guro sa ebidensya (obserbasyon at datos) upang paghusayin ang kanilang mga desisyon sa silid-aralan. Ayon kay Ferrance (2000), ang data-driven action research ay nagreresulta sa mas target na pagtuturo at malinaw na plano ng aksyon. Kinumpirma ito ni Kennedy (2016), na nagsabing nagiging mas responsive ang guro sa pangangailangan ng mag-aaral kapag gumagamit ng empirical data sa pagpaplano.

Mula sa tugon #3 at #5, malinaw na ang pagbabahaginan at peer support ay tumutulong upang maalis ang takot at magpatuloy sa pagbuo ng aksyong pananaliksik. Isinulat nina Ellis at Armstrong (2014) na ang "collaborative inquiry" ay lumilikha ng kultura ng pagkatuto na nagsusulong ng kumpiyansa at kalidad sa pananaliksik ng guro. Ang kolaborasyon ay hindi lamang nagbibigay ng teknikal na tulong kundi nagsisilbing emosyonal na suporta upang mapanatili ang sigla sa aksyong pananaliksik.

Sa tugon #6, #8, at #10, makikita ang malaking epekto ng pagsasanay sa pagpapataas ng respeto ng guro sa sarili at sa propesyon. Inilalarawan nina Pipere at Salīte (2006) na ang tagumpay sa sariling aksyong pananaliksik ay nagdudulot ng empowerment at mas matibay na propesyonal na identidad. Gayunman, binanggit sa tugon #6 ang kakulangan ng administratibong suporta na isang hamong binigyang-diin nina Dela Peña at Saniel (2019) bilang hadlang sa pagpapanatili ng sigla at pagpayabong ng aksyong pananaliksik.

Pinatutunayan ng tematikong pagsusuri na ang programang pagsasanay ay naglilinaw ng konsepto, nagpapataas ng kumpiyansa, nagsusulong ng datos-batay na pagtuturo, at nagpapatatag ng propesyonal na identidad ng mga guro. Gayunpaman, nananatiling kritikal ang kolaboratibo at institusyonal na suporta upang mapanatili ang positibong epekto at maibsan ang mga hadlang tulad ng kakulangan sa oras at insentibo.

4.   Nilalaman ng komprehensibong programang pagsasanay pangguro sa pagbuo ng isang aksyong pananaliksik

Mula sa mga nakalap na datos at *feedback* sa mga gurong kalahok sa pag-aaral, bumuo ang mananaliksik ng isang mungkahing programang pagsasanay pangguro na nakaangkla sa pangangailangan ng mga guro sa Filipino.

Pasanayan sa Pagsulat ng Aksyong Pananaliksik para sa mga Guro sa **Filipino**	
I.Layunin ng Pagsasanay	
1. Mapaunlad ang kaalaman, saloobin, at kasanayan ng mga guro sa Filipino sa pagbuo ng aksyong pananaliksik.	
2. Malinang ang kakayahan ng mga guro bilang *reflective practitioner* na bumubuo ng pananaliksik sa pagpapahusay ng pagtuturo at pagkatuto.	
3. Magabayan ang mga guro sa pagsunod sa pamantayang itinakda ng Kagawaran ng Edukasyon sa pagbuo ng *classroom-based action research*.	
II. Batayang *Framework* ng Pagsasanay	
Sanggunian	Aplikasyon sa Programa

DepEd Order #16, s. 2017	Gabay sa opisyal na format, layunin, at pondo para sa aksyong pananaliksik.
PPST Strand 6.2 PPST Strand 7.4	Tumutugon sa professional reflection at research engagement.
Knowles' Andragogy	Gagamitin ang experiential at context-based learning.
Symonds Model (2020)	Balangkas ng disenyo, balidasyon, at impact evaluation ng training.

III.   Nilalaman ng Programang Pagsasanay Pangguro

Sesyon	Pamagat	Nilalaman	Pamamaraan
1	Pag-unawa sa Aksyong Pananaliksik	• Layunin ng aksyong pananaliksik ayon sa DepEd • Kaibahan ng aksyong pananaliksik at akademikong pananaliksik • Classroom-based inquiry framework	Lecturette Reflection session
2	Pagkilala sa Suliranin at Pagbuo ng Tanong sa Pananaliksik	• Identipikasyon ng problema sa klase • Pagbuo ng research questions na classroom-based	Group analysis Case scenarios
3	Pagdisenyo ng Pananaliksik	• Pagbuo ng action plan	Workshop

		• Pagpili ng interbensyon • Pagpili ng data collection tools	Peer consultation
4	Pagkolekta at Pagsusuri ng Datos	• Pagkilala sa research tools at instruments: survey, interview, observation • Basic data analysis (quantitative and qualitative) • Paggamit ng mean, frequency, at thematic coding	Simulation Guided activity
5	Pagbubuod at Pag-uulat ng Resulta	• Pagsulat ng findings at reflection • Pagsunod sa DepEd AR Format	Writing lab Checklist-based review
6	Pagpapalaganap at Pagsusumite ng Pananaliksik	• Ethical considerations • Pagpresenta ng research output • Pagbuo ng policy recommendation	Mock presentation Panel feedback
7	Pagpapatibay ng Gawi at Pananaw Bilang	• Reflective practitioner framework	Testimonial Journal writing

	Guro-Mananaliksik	• Sustaining research culture in school	

IV. Pagsusuri ng Bisa ng Programa (Ebalwasyon)	
Aspekto	**Paraan ng Pagsusuri**
Reaction	Post-training feedback form
Learning	Pre/post-test, session outputs
Behavior	Classroom implementation log, research plan drafts
Result	Pagsusumite ng nagbuong research proposal at accomplished action research sa paaralan at division office
Sustainability	Pagsasagawa ng action plan para sa susunod na pagbuo ng aksyong pananaliksik

V. Output ng Programa

1. Nabuong *classroom-based action research proposal.*

2. Intervention program para sa natukoy na suliraning pangklasrum.

3. Naipresentang pananaliksik sa paaralan, distrito, o dibisyong antas.

4. Journal o reflection logs ng guro bilang bahagi ng reflective practice.

Malinaw ang pagtutok ng programang ito sa holistic na pagpapaunlad ng kaalaman, saloobin, at kasanayan ng mga guro hinggil sa aksyong pananaliksik. Ang pagsasanay ay naglalayong malinang ang guro bilang reflective practitioner na isang konseptong inilatag ni Schön (1983) na nagsasabing mas malalim ang propesyonal na pagkatuto kapag ginagamit ang repleksyon sa aktwal na karanasan sa silid-aralan. Bukod dito, ang pagtutok ng programa sa pag-align ng pananaliksik ng guro sa

mga pamantayan ng Kagawaran ng Edukasyon ay mahalaga upang matiyak na may praktikal at institusyonal na halaga ang pananaliksik, tulad ng ipinunto ni Gime (2020).

Ang paggamit ng DepEd Order #16, s. 2017 bilang batayang gabay ay mahalaga upang masigurong sumusunod sa opisyal na polisiya at proseso ang aksyong pananaliksik na ginagawa ng guro. Kaugnay nito, ang Philippine Professional Standards for Teachers (PPST), partikular ang Strand 6.2 at 7.4 ay nagbibigay-diin sa kahalagahan ng professional reflection at pagsasagawa ng research bilang bahagi ng tungkulin ng guro (DepEd Order No. 42, s. 2017). Ang integrasyon ng Andragogy Model ni Knowles (1984) ay nagtitiyak na ang pagsasanay ay praktikal, experiential, at nakaangkla sa kontekstong pangklasrum. Sinusuportahan ito nina Darling-Hammond, Hyler, at Gardner (2017) na nagsasabing epektibo ang training kung nakabatay sa karanasan at pangangailangan ng mga guro. Samantala, ang balangkas ng disenyo, balidasyon, at ebalwasyon mula sa Symonds Model (2020) ay nagbibigay katiyakan na ang pagsasanay ay hindi lamang malinaw kundi empirikal na nasusukat ang bisa nito.

Malinaw na ang nilalaman ng programa ay progresibo at sistematiko mula sa pundasyon ng pag-unawa sa aksyong pananaliksik tungo sa praktikal na aplikasyon nito. Ang unang sesyon na nakatuon sa pag-unawa sa aksyong pananaliksik ay mahalaga upang maitatag agad ang malinaw na distinksyon ng aksyong pananaliksik sa akademikong pananaliksik, gaya ng ipinahayag ni Ferrance (2000). Ang mga sesyon hinggil sa pagbuo ng tanong, pagdisenyo ng pananaliksik, pagkolekta ng datos, at pagsusuri ay direktang tumutugon sa pangangailangan ng guro na magkaroon ng konkretong kasanayan sa research design at methodology na siyang binigyang diin nina Ellis at Armstrong (2014) bilang esensyal sa epektibong aksyong pananaliksik.

Ang bahagi ng pagsasanay na nakalaan sa pagbubuo at pag-uulat ng resulta ay mahalaga upang matiyak na ang mga guro ay handa sa teknikal na bahagi ng pagsulat ng pananaliksik, alinsunod sa itinakdang format ng DepEd. Binibigyang-diin din sa programang ito ang aspetong etikal at pagbabahagi ng pananaliksik sa mas malawak na komunidad, isang aspeto na tinutukoy ni Sagor (2000) bilang mahalagang hakbang sa pagbuo ng kultura ng pananaliksik sa paaralan.

Ang huling bahagi ay tungkol sa pagpapatibay ng gawi at pananaw bilang guro-mananaliksik, isang mahalagang aspeto ayon kina Cochran-Smith at Lytle (2009) kung saan ang pananaliksik ay nagiging bahagi ng propesyonal na identidad ng guro.

Ang sistematikong paggamit ng iba't ibang paraan ng ebalwasyon (reaction, learning, behavior, results, sustainability) ay tumutugon sa **Symonds Training Validation Model (2020)** na mahalaga sapagkat mas komprehensibo nitong sinusuri ang epekto ng pagsasanay sa iba't ibang dimensyon. Ang ganitong multidimensional approach ay mahalaga upang mapanatili at mapalalim ang epekto ng pagsasanay (Symonds, 2020).

Ang mga natukoy na outputs tulad ng nabuong classroom-based action research proposal, interbensyon, naipresentang pananaliksik, at reflective journal ay nagpapakita ng malinaw na produkto at aplikasyon ng pagsasanay. Sang-ayon ito sa rekomendasyon nina Burns at Dikilitaş (2025), kung saan mahalaga ang pagkakaroon ng aktuwal na produkto upang mapanatili ang motibasyon at malinaw na epekto ng pananaliksik sa guro at paaralan.

Sa kabuuan, ipinakikita ng pagsusuring ito na ang nilalaman at balangkas ng programang pagsasanay ay matibay na nakaangkla sa mga empirikal na batayan at opisyal na mga patnubay ng DepEd. Ang integrasyon ng mga frameworks mula kina Knowles (1984), Schön (1983), at lalo na ang Symonds Training Validation Model (2020) ay nagbibigay katiyakan na ang pagsasanay ay epektibo, sistematiko, at kontekstwal. Mahalagang salik din ang pagkakaroon ng sapat na suporta mula sa paaralan upang ma-sustain ang positibong epekto nito sa mga guro at sa institusyon bilang kabuoan.

Matapos makapagdisenyo ng isang planong pagsasanay pangguro para sa pagsulat ng aksyong pananaliksik, isinagawa naman ang balidasyon o ebalwasyon nito sa mga eksperto. Ang ginamit na instrument ay batay sa training and development ng Kagawaran ng Edukasyon. Naging batayan din ng modipikasyon ang pag-aaral ni Gime (2020) sa pagkokontekstwalisa sa pagbuo ng aksyong pananaliksik. Naging batayan din ang katangian at prinsipyo ng kapaki-pakinabang na pagsasanay ang Symonds Training (2021).

Ginamit ang 5-point Likert Scale sa pagtataya ng programang pagsasanay pangguro. Ginamit ang 0.80 interval sa pagbibigay ng interpretasyon sa programang pagsasanay.

Iskala ng Beripikasyon/Balidasyon ng Planong Pagsasanay Pangguro	
5.00-4.21	Lubos na naipakita sa planong pagsasanay pangguro
4.20-3.41	Naipakita sa planong pagsasanay pangguro
3.40-2.61	Katamtamang naipakita sa planong pagsasanay pangguro
2.60-1.81	Bahagyang naipakita sa planong pagsasanay pangguro
1.00-1.80	Hindi naipakita sa planong pagsasanay pangguro

Ipinataya ang planong pagsasanay pangguro sa tatlong eksperto. Una, Dalubguro II sa Mataas na Paaralang Ramon Magsaysay at kasalukuyang *research consultant/coordinator*. Tinapos niya ang kaniyang doktorado sa De La Salle University. Ikalawang balideytor ay mula sa Rajah Soliman Science and Technology High School kung saan siya Dalubguro II sa Filipino at nagtapos ng kaniyang dalawang doktorado sa Manuel Luis Quezon University. At ikatlong balideytor ay mula sa DepEd NCR HRDD supervisor na nagtapos ng kaniyang doktorado sa University of Makati.

Deskripsyon	Mean	Kahulugan
Ang nabuong planong pagsasanay ay batay sa katangian ng isang programa para sa continuing professional development ng isang guro.	4.67	Lubos na naipakita sa planong pagsasanay
Binibigyang-pokus sa planong pagsasanay ang kalagayan ng mga guro sa Filipino sa pagbuo ng Aksyong Pananaliksik	5.00	Lubos na naipakita sa planong pagsasanay

Nakatuon ang planong pagsasanay sa pagpapapabuti at pagpapahusay ng kakayahan ng mga guro sa Filipino sa pagbuo ng Aksyong Pananaliksik.	4.67	Lubos na naipakita sa planong pagsasanay
Nakabatay sa pangangailangan ng propesyonal na pag-unlad mula sa PPST ang planong pagsasanay.	4.67	Lubos na naipakita sa planong pagsasanay
Malinaw na tumutugon ang natukoy na rasyonale, layunin, at gawain sa pangangailangan ng mga inaasahang kalahok.	5.00	Lubos na naipakita sa planong pagsasanay
Organisado ang daloy ng planong pagsasanay.	4.67	Lubos na naipakita sa planong pagsasanay
Madaling sundan ang daloy ng planong pagsasanay.	4.67	Lubos na naipakita sa planong pagsasanay
Ang balangkas ng nilalaman ng planong pagsasanay ay nagpapakita ng sapat na impormasyon kaugnay sa dapat na tunguhing layunin ng pagsasanay.	4.33	Lubos na naipakita sa planong pagsasanay
Malinaw ang mga paksang dapat talakayin sa bawat bahagi ng pagsasanay.	5.00	Lubos na naipakita sa planong pagsasanay
Ang nilalaman ng planong pagsasanay ay lohikal ang pagkakaayos.	5.00	Lubos na naipakita sa planong pagsasanay

Ang iskedyul ng mga gawain ay lohikal na nakaayos.	4.00	Naipakita sa planong pagsasanay
May sapat na alokasyon ng oras sa bawat paksa ng planong pagsasanay.	4.33	Lubos na naipakita sa planong pagsasanay
Naaayon sa kagustuhan ng mga kalahok ang moda ng pagsasanay.	4.67	Lubos na naipakita sa planong pagsasanay
Ang planong pagsasanay ay may malinaw na paraan ng ebalwasyon o pagbibigay ng pidbak buhat sa mga kalahok.	4.33	Lubos na naipakita sa planong pagsasanay
Tiyak na magiging kapaki-pakinabang ang planong pagsasanay sa tungkulin ng mga target na kalahok.	5.00	Lubos na naipakita sa planong pagsasanay

Batay sa nakuhang mga mean score, malinaw na lubhang positibo ang naging pagtanggap ng mga eksperto sa binuong planong pagsasanay pangguro para sa pagbuo ng aksyong pananaliksik ng mga guro sa Filipino. Sa pangkalahatan, ang mga mean ay naglalaro mula 4.00 hanggang 5.00 na nagpapakita ng mataas hanggang sa pinakamataas na antas ng pagsang-ayon ng mga eksperto hinggil sa kalidad, lohika, kaangkupan, at pagiging praktikal ng programa.

Una, lubhang malinaw na kinikilala ng mga eksperto ang planong pagsasanay bilang isang mahusay na programa para sa continuing professional development (Mean = 4.67). Lubos din na naipakita ang pagiging sensitibo ng programa sa partikular na kalagayan ng mga guro sa Filipino hinggil sa pagbuo ng aksyong pananaliksik, kung saan nakakuha ito ng perpektong marka na Mean = 5.00.

Bukod pa rito, lubhang positibo rin ang resulta ukol sa pagiging malinaw ng rasyonal, layunin, at gawain na direktang tumutugon sa

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pangangailangan ng mga kalahok (Mean = 5.00). Ipinakikita rin ng datos ang mataas na pagkilala sa lohikal na pagkakaayos ng nilalaman at mga paksa (Mean = 5.00), na mahalaga upang mapanatili ang interes, motibasyon, at pagsunod ng mga kalahok.

Gayunman, pinakamababang mean ang natanggap ng aspeto hinggil sa iskedyul ng mga gawain (Mean = 4.00). Bagamat mataas pa rin, ito ay maaaring nagpapahiwatig ng bahagyang pangangailangan na suriin muli ang haba ng oras na inilaan sa bawat bahagi.

Bukod dito, bagamat mataas ang iskor sa paraan ng ebalwasyon (Mean = 4.33), maaaring pagtuunan ng karagdagang pansin ang mas malinaw na sistematiko at konkretong pagbibigay ng pidbak at pagsusuri sa bawat bahagi ng pagsasanay.

Sa kabuoan, ang pinakamataas na mean na 5.00 sa item tungkol sa pagiging kapaki-pakinabang ng plano ay nagtatakda ng matatag na pundasyon para sa potensyal na tagumpay ng programang ito sa pagpapahusay ng kakayahan ng mga guro sa Filipino sa pagbuo ng aksyong pananaliksik

Lagon ng mga natuklasan

Batay sa isinagawang pag-aaral, natuklasan ang sumusunod na resulta:

1. **Mataas na Antas ng Positibong Persepsyon** – Lumabas sa sarbey na ang mga guro sa Filipino ay lubos na naniniwalang mahalaga ang aksyong pananaliksik para sa pagpapahusay ng pagtuturo at pagkatuto; umabot sa "Lubos na Sang-ayon" ang karamihan ng mean score (4.50 – 5.00).

2. **Paglipat mula sa Neutral tungong Positibong Saloobin** – Sa mga panayam, inilahad ng mga guro na dati nilang tinitingnan ang aksyong pananaliksik bilang dagdag-trabaho ngunit makaraang mabigyan ng oryentasyon, nakita nila ito bilang solusyon sa paulit-ulit na problema sa silid-aralan at landas sa propesyonal na pag-unlad.

3. **Limitado pa rin ang Aktwal na Gawi** – Bagama't positibo ang pananaw, kakaunti pa rin ang nakatatapos ng buong siklo ng aksyong pananaliksik, pangunahing dahil sa kakulangan sa oras, teknikal na kasanayan, mentoring, at insentibong institusyonal.

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4. **Natukoy na Pangangailangan sa Pagsasanay** – Ipinakita ng mixed-method data na kailangan ng mga guro ang malinaw na gabay sa (a) pagbabalangkas ng tanong sa aksyong pananaliksik, (b) pagdidisenyo ng interbensyon, (c) pangangalap at pagsusuri ng datos, at (d) pagsulat ng ulat ayon sa format ng DepEd.

5. **Pagbuo ng Kontekstuwal na Programang Pagsasanay** – Batay sa mga natukoy na pangangailangan, nakadisenyo ng isang 7-session training plan na nakaangkla sa DepEd Order 16, s. 2017, PPST (Strands 6.2 at 7.4), Andragogy ni Knowles, at Symonds Training Validation Model.

6. **Mataas na Marka sa Balidasyon ng mga Eksperto** – Sa isinagawang expert validation, karamihan sa aspekto ng plano (rasyonal, nilalaman, daloy, paksang tatalakayin at kaangkupan) ay nakakuha ng mean na 4.33 – 5.00 (Lubos na Naipakita); ang bahaging iskedyul lamang ang may bahagyang mas mababang marka (Mean = 4.00) na nagpapahiwatig ng pangangailangan sa mas pinong alokasyon ng oras.

7. **Inaaasahang Epekto sa Kasanayan at Kumpiyansa** – Bunsod ng mataas na rating sa "kapaki-pakinabang sa tungkulin" (Mean = 5.00), inaasahang magreresulta ang pagsasanay sa higit na kumpiyansa, mas madalas na pagtapos ng action research cycle, at batay-sa-datos na pedagohikal na desisyon ng mga guro.

8. **Kritikal ang Patuloy na Suporta ng Paaralan at DepEd** – Tugon sa natuklasang hadlang, ipinahihiwatig ng pag-aaral na kinakailangan ang patuloy na mentoring, oras na nakatalaga sa aksyong pananaliksik, at insentibong pampinansyal o pampuntos upang mapanatili at mapataas ang positibong epekto ng programang pagsasanay.

Kongklusyon

Narito ang kongklusyon ng pag-aaral mula sa mga resultang nakuha ng mananaliksik:

1. Malinaw na kinikilala ng mga guro ang kahalagahan ng aksyong pananaliksik sa pagpapahusay ng kanilang pagtuturo at propesyonal na pag-unlad.

2. May malinaw na pagbabago mula sa pagtingin sa aksyong pananaliksik bilang dagdag na trabaho tungo sa pagkilala dito bilang mahalagang paraan upang malutas ang mga suliraning pedagohikal.

3. Nakita ang mga praktikal na hadlang tulad ng kakulangan ng oras, suporta mula sa administrasyon, at kakulangan ng insentibo na nagpapababa sa pagpapatuloy ng praktis ng aksyong pananaliksik.

4. Lubos na tinanggap ng mga eksperto ang nabuong programa bilang komprehensibo, lohikal, at praktikal na tugon upang mapaunlad ang kasanayan ng mga guro sa pagsasagawa ng aksyong pananaliksik.

5. Bagamat epektibo ang programa, kritikal pa rin ang patuloy at sapat na institusyonal na suporta upang matiyak ang pangmatagalang tagumpay at epekto nito sa mga guro at paaralan.

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SULATARYO: SULAT- BOKABULARYO PARA SA PAGLINANG NG BATAYANG KASANAYAN SA PAGSULAT NG TALATA NG MAG-AARAL SA BAITANG 7 SA FVR NATIONAL HIGH SCHOOL

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FVR National High School

Abstrak

Ang pananaliksik na ito ay nakatuon sa paglinang ng batayang kasanayan sa pagsusulat ng talata ng mag-aaral sa Baitang 7 sa FVR National High School sa pamamagitan ng paggamit ng makabagong interbensyong tinatawag na SULATARYO. Ang pangunahing layunin ng pag-aaral ay suriin ang antas ng kasalukuyang kakayahan ng mga mag-aaral sa pagsusulat, tukuyin ang kanilang mga kahinaan, at bumuo ng isang interbensyong may sistematikong diskarte upang matugunan ang mga hamong ito. Gamit ang *pre-test* at *post-test*, nasuri ang aspeto ng anyo ng sulatin, wastong kapitalisasyon ng titik, wastong paggamit ng bantas, at maayos na pagpapahayag ng ideya.

Batay sa resulta ng panimulang pagtataya, lumabas na ang antas ng kasanayan ng mga mag-aaral ay nasa antas ng *Developing*. Sa pamamagitan ng interbensyong SULATARYO na binuo gamit ang teoryang *Self-Directed Learning Theory (SDL),* nagkaroon ng makabuluhang pag-unlad sa kasanayan ng mga mag-aaral pagkatapos ng implementasyon. Ang *post-test* ay nagpakita ng pagtaas sa *mean scores* at nagpatunay na epektibo ang interbensyon sa pagpapabuti ng teknikal at nilalaman na aspeto ng pagsusulat. Bukod dito, naging positibo ang tugon ng mga guro sa resulta ng interbensyon, na nagbigay-diin sa pangangailangan ng mas maraming ganitong uri ng programa upang mas matutukan ang mga kahinaan sa pagsusulat ng mga mag-aaral.

Ang pag-aaral na ito ay nagbibigay ng kontribusyon sa pagpapayaman ng edukasyong Filipino sa pamamagitan ng pagbibigay ng konkretong solusyon sa kahinaan ng mga mag-aaral sa pagsusulat.

Panimula ng Pag-aaral

Ang unang kabanata ay binubuo ng limang bahagi:(1) Kaligiran at Balangkas Teoritikal ng Pag-aaral, (2) Paglalahad ng Suliranin at Ipotesis, (3) Kahalagahan ng Pag-aaral, (4) Pagpapakahulugan ng mga Katawagan, at (5) Saklaw at Hangganan ng Pag-aaral.

Unang Bahagi, Kaligiran at Balangkas Teoritikal ng Pag-aaral ay naglalahad ng mga katuwiran sa paksang pinag-aaralan samantalang ang balangkas teoritikal naman ay nagpapabatid ng teoriyang sanggunian ng pag-aaral.

Ikalawang Bahagi, Paglalahad ng Suliranin at Ipotesis ay naglalarawan sa tiyak na mga layuning nais mabatid sa pag-aaral at ang sinubukang ipotesis.

Ikatlong Bahagi, Kahalagahan ng Pag-aaral ay naglalahad kung sino ang makikikanabang sa nasabing pag-aaral.

Ikaapat na Bahagi, Pagpapakahulugan sa mga Katawagan ay nagbibigay-linaw sa mga mahahalagang terminolohiyang ginamit bilang pangunahing baryabol sa pag-aaral.

Ikalimang Bahagi: Saklaw at Hangganan ng Pag-aaral ay kinapapalooban ng hangganan sa pag-aaral, mga pangunahing baryabol, mga pamamaraan, disenyong ginamit sa pag-aaral. Ipinaliliwanag din dito ang mga kalahok sa pag-aaral at istadistikang ginamit.

Metodolohiya

Ang gagamitin na disenyo sa pananaliksik na ito ay *Quasi-Experimental*. Ito ay naglalayong matukoy ang relasyon sa pagitan ng *independent* at *dependent* na baryabol sa tulong ng nabuong interbensyon na magpapaunlad ng kasanayan sa pagsulat ng mga mag-aaral na napiling maging kalahok ng pag-aaral. Ang mga napiling mag-aaral ay sasailalim sa *pre-assessment* o *pre-test* upang makita ang kanilang kasanayan sa pagsulat bago ipagamit ang SULATARYO. Matapos ito ay magsasagawa ang mananaliksik ng *post assessment* o *post-test* upang matasa ang natamong kasanayan pagkatapos gamitin ang interbensyong nabuo.

Ang nabuong interbensyon ang nakikitang paraan ng mananaliksik na makatutulong upang mapaunlad ang kasanayan ng mga mag-aaral sa pagsulat. Ang SULATARYO na ito ay susuriin ng isang Ulong Guro sa Filipino, isang Superbisor sa Filipino at dalubhasa at may ispesyalisasyon ukol sa asignaturang ito. Ang *pilot testing* ay ibibigay sa mga piling mag-aaral ng Baitang 7 na hindi kabilang sa pag-aaral upang sagutan at hingan ng mga opinyon o mungkahi ukol sa kagamitan. Ang anumang puna o mungkahi para sa lalong pagpapabuti ng SULATARYO ay isasaalang-alang upang makamit ang layunin ng pagsasawa ng pag-aaral.

Ang mga kalahok sa pag-aaral na ito ay binubuo ng tatlumpung (30) nangangailangan ng pagsubaybay sa pagsulat. Ang mag-aaral ay mula sa Baitang 7 ng FVR National High School. Napili na gawing kalahok ang mga mag-aaral sa Baitang 7 sa paaralan ng FVR National High School, FVR Norzagaray, Bulacan sapagkat sila ang mag-aaral ng mananaliksik. Ang mga kalahok ay binubuo ng magkakaiba ang kasarian, pag-uugali at maging ang katayuan sa buhay.

Ang mananaliksik ay gagamit ng *purposive sampling technique* upang matukoy ang mga magiging kalahok na sasailalim sa pananaliksik na ito. Makatutulong ang pagkakaiba-iba ng mga mag-aaral o pagiging *heterogeneous* upang matiyak ang pagkakaroon ng pinakamataas na pagkakaiba-iba sa loob ng pangunahing data.

Ang pananaliksik na ito ay isasagawa sa FVR National High School at ang mga kalahok ay tatlumpung (30) mag-aaral na mula sa Baitang 7 kung saan matutukoy ang mag-aaral na may mahinang kasanayan sa pagsulat sa pamamagitan ng naging resulta ng mga naging pagsasanay sa pagsulat sa Unang Markahan ng Taong Pampanuruan 2024-2025. Ang mga pipiliing kalahok ay mag-aaral na kakikitaan ng suliranin sa kasanayan sa pagsulat dahil sa (1) mababa ang nakuhang marka sa gawaing may kaugnayan sa pagsulat, (2) hindi nasagutan ang bahagi ng pagsasanay na may kaugnayan sa pagsulat, at (3) naging maligoy at walang kaisahan ang naging sagot sa pagsasanay na may kaugnayan sa pagsulat.

Ang **Self-Directed Learning Theory** ay napili ng mananaliksik upang mabuo ang interbensyong gagamitin sa pagpapaunlad ng kasanayan ng mag-aaral sa pagsulat. Ito ay may apat na hakbang na makikita sa Talahanayan 4:

Talahanayan 4. Mungkahing *SULATARYO* mula sa tatlong Yugto ng **Self-Directed Learning Theory**

Self-Directed Learning Theory	SULATARYO	Paglalarawan
Motivation • Pagbibigay ng kahulugan, kasingkahulugan at kasalungat na salita ng napiling bokabularyo sa isang araw na tumatak sa kanilang isip mula sa iba't ibang asignatura.	SULAT-BOKABULARYO	Sa bahaging ito makikilala at masusubok ang kabatiran ng mag-aaral ukol sa mga salita na magagamit nila sa pagbuo ng pangungusap.
Self-Management • Paglalapat ng natutuhan ng mag-aaral na mga salita sa pamamagitan ng pagbuo ng sariling pangungusap gamit ang salitang natutuhan.	PAGBUO NG PANGUNGUSAP	Sa bahaging ito masusukat ang kakayahan ng mag-aaral na malapat ang natutuhan mula sa unang antas.
Self-Directve Learning • Pagsasagawa o pagpoproseso ng pagkatuto gamit ang natutuhan sa una at ikalawang antas	LIKHANG TALATA	Sa bahaging ito ang mag-aaral ay siyang magpoproseso ng sariling pagkatuto sa pamamagitan ng pagbuo talata batay sa salitang napili.
Self- Monitoring	FEEDBACK NG GURO	Sa bahaging ito makikita ang

• Sa prosesong ito matutukoy ng mag-aaral ang mga naging kahinaan niya sa pagsulat na kailangan niyang paghusayan.		paggabay at mga puna ng guro upang mapaunlad pa ang kasanayan sa pagsulat ng mag-aaral.

    A. **Motivation** (Pagpili ng salita o bokabularyo na tumatak sa kanilang isip mula sa kanilang iba't-ibang asignatura)

SULAT-BOKABULARYO- Sa bahaging ito makikilala at masusubok ang kabatiran ng mag-aaral sa kasingkahulugan at kasalungat ng salita na magagamit nila sa pagbuo ng talata.

    B. **Self-Management** (Paglalapat ng natutuhan ng mag-aaral na mga salita sa pamamagitan ng pagbuo ng sariling pangungusap gamit ang salitang natutuhan)

PAGBUO NG PANGUNGUSAP- Sa bahaging ito masusukat ang kakayahan ng mag-aaral na malapat ang natutuhan mula sa unang antas.

    C. **Self-Directive Learning** (Pagsasagawa o pagpoproseso ng pagkatuto gamit ang natutuhan sa una at ikalawang antas

LIKHANG TALATA- Sa bahaging ito ang mag-aaral ay siyang magpoproseso ng sariling pagkatuto sa pamamagitan ng pagbuo talata batay sa salitang napili.

    D. **Self- Monitoring (Sa** prosesong ito matutukoy ng mag-aaral ang mga naging kahinaan niya sa pagsulat na kailangan niyang linangin)

FEEDBACK NG GURO- Sa bahaging ito makikita ang paggabay at mga puna ng guro upang mapaunlad pa ang kasanayan sa pagsulat ng mag-aaral.

Ang pananaliksik na ito ay gumamit ng iba't ibang instrumento upang matiyak ang komprehensibong pagsusuri at masusing pagtatasa sa epekto ng interbensyong SULATARYO sa kasanayan ng mag-aaral sa pagsulat. Sa pamamagitan ng mga sumusunod na instrumento, layunin

ng pananaliksik na makuha ang kinakailangang datos upang mapatunayan ang bisa ng interbensyon at masuri ang reaksyon ng mga kalahok sa pag-aaral.

Rubrik sa Pagsusuri ng Kasanayan sa Pagsulat. Ang rubrik ay naging batayan upang masukat ang kasanayan ng mga mag-aaral sa pagsusulat bago at pagkatapos ng interbensyon.

Ginamit ito sa pre-assessment (pre-test) upang matukoy ang panimulang antas ng kasanayan sa pagsusulat ng mag-aaral at sa post-assessment (post-test) upang makita ang pag-unlad pagkatapos gamitin ang interbensyong SULATARYO.

Sinuri ang iba't ibang aspeto ng pagsusulat gaya ng (a) Anyo o Istruktura ng Sulatin, (b) Wastong Kapitalisasyon ng mga Titik, (c) Wastong Paggamit ng Bantas at (d) Maayos at Malinaw na Pagpapahayag ng Kaisipan o Ideya.

Talatanungan (Survey Questionnaire). Ito ay gagamitin upang malaman ang pananaw ng mga tagasuri at mag-aaral tungkol sa isinagawang pag-aaral at sa bisa ng interbensyong ginamit.

Ang talatanungan ay maglalaman ng *structured questions* na tutukoy sa kagustuhan, kahinaan, at posibleng rekomendasyon ng mga mag-aaral at guro hinggil sa SULATARYO.

Maaari ring isama ang *open-ended questions* upang makuha ang kanilang mas malalim na obserbasyon at suhestiyon na maaaring makatulong sa karagdagang pag-unlad ng interbensyon.

Ang ebalwasyon ay isang sistematikong pagsusuri kung gaano kaepektibo ang SULATARYO sa pagpapabuti ng kasanayan sa pagsusulat ng mga mag-aaral.

Ito ay gagawin sa pamamagitan ng pagkokompara sa *pre-test* at *post-test results* upang masukat ang antas ng pagkatuto at progreso ng mga mag-aaral.

Kasama sa ebalwasyon ang pagsusuri sa kahusayan ng *instructional materials*, angkop na estratehiya sa pagtuturo, at epekto ng interbensyon sa pagtatama ng *learning gaps* sa pagsusulat.

Pagsusuri ng Mungkahing Kagamitan. Upang higit na mapabuti ang SULATARYO, magsasagawa ng pagsusuri sa mga kagamitang pang-interbensyon upang matiyak ang kanilang bisa at kalidad.

Ang pagsusuri ay isasagawa ng mga eksperto sa asignaturang Filipino, kabilang ang mga dalubhasa sa wika, guro sa Filipino, at edukador na may sapat na kaalaman sa pagtuturo ng pagsulat.

Layunin ng pagsusuring ito na matukoy kung angkop, epektibo, at maaaring mapahusay ang mga ginamit na kagamitan upang mas lalo pang mapaunlad ang bisa ng interbensyon para sa iba pang mag-aaral.

Sa kabuoan, ang paggamit ng iba't ibang instrumento sa pananaliksik na ito ay nakatuon sa sistematikong pagsusuri ng bisa ng interbensyong SULATARYO. Sa pamamagitan ng rubrik, talatanungan, ebalwasyon, at pagsusuri ng mungkahing kagamitan, inaasahang makakakuha ng masusing impormasyon na makakatulong sa pagpapalakas ng estratehiya upang mapabuti ang kasanayan sa pagsusulat ng mga mag-aaral.

Narito ang mga pamantayan at na isinaalang-alang sa pagkuha ng mga datos seguridad, paglilipat ng mga datos at pagbubura ng mga datos na pamamaraan at dapat sundin ng mananaliksik ay ang mga sumusunod:

1. Bago maging kalahok ang mga mag-aaral ay sisiguraduhing may pahintulot ito ng mga magulang o tagapangalaga;

2. Ang mga datos na nakatala ay pananatilihing kumpidensyal upang masiguro ang pagiging pribado nito;

3. Tanging ang mananaliksik at awtorisadong tao lamang ang may karapatang makakita ng mga datos;

4. Ang mga tugon at kasagutan ng mga kalahok ay maayos na itatala at irerekord, at walang impormasyon ang ilalabas o isisiwalat lalo na ang ukol sa mga kalahok;

5. Igagalang ng mananaliksik ang anumang mungkahi ng mga kalahok at ng kanilang magulang ang ukol sa pangangalap ng mga datos;

6. Ang mga datos ay hindi pinapahintulutang ilagay o ilagak *sa flash drive* upang makatiyak sa seguridad ng mga datos;

7. Ang mga datos ay sinisigurado ang seguridad kung ito man ay nasa *printed material* na maayos na nakatabi sa isang selyadong lalagyan o digital.

Ang mungkahing interbensyon na pamamaraan ay nahahati sa tatlong yugto:

Pre-Experimental Phase	Experimental Phase	Post-Experimental Phase
☐ Kahilingan sa Pagsasagawa ng Pag-aaral ☐ Instrumento ☐ Pagpili ng mga kalahok ☐ Pagbuo ng interbensyon ☐ Pagsusuri at Ebalwasyon ☐ Paggamit ng mga piling mag-aaral ☐ Pagpapaunlad ng Kasanayan sa Pagsulat	☐ Pagsagot sa *Pre-Assessment (subjective)* sa pamamagitan ng *printed material* ☐ Paggamit ng ginawang interbensyon na SULATARYO ☐ Pagsubaybay sa mga napiling kalahok ☐ *Post Assessment (subjective)* sa pamamagitan ng *printed material*	☐ Pagpapasagot/ pagsa sagawa ng talatanungan ☐ Pangangalaga ng Datos ☐ Pagbabahagi ng resulta sa mga kalahok sa ☐ Pangwakas na mensahe

Talahanayan 5. Mungkahing Interbensyon na Pagsasagawa ng pag-aaral

Ang *Pre-Assessment* ay isinagawa ng mga kalahok sa pamamagitan ng *printed material* bago magsimula ang Ikaapat na Markahan. Ang mga kalahok ay binigyan ng *code* o palatandaan upang maitago ang kanilang pagkakakilanlan. Ang interbensyon na SULATARYO ay ibibigay sa mga mag-aaral na kailangan sumailalim sa paglinang ng kasanayan sa pagsulat at ilalagay sa kani-kanilang *portfolio*.

Matapos ang ilang pagsasanay sa SULATARYO, isasagawa ang *Post Assessment* sa pamamagitan ng *printed material*.

Magsasagawa rin ng isang sarbey ukol sa pananaw ng mga kalahok patungkol sa SULATARYO. Ang mga opinyon, mungkahi at karanasan ay itatala ng mananaliksik. Ang resulta ng pag-aaral na ito ay ibabahagi ng mananaliksik sa pamamagitang ng *online validation*.

Sa pananaliksik na ito, kinailangan na isaalang-alang na ang mga kalahok ay mag-aaral na may kakulangan sa kasanayan sa pagsusulat.

Upang matiyak ang maayos na pagsasagawa ng pag-aaral, ang mananaliksik ay naghanda ng isang liham ng kahilingan at pag-eendorso mula sa punongguro. Matapos ito maaprubahan, isang liham ang ipapadala sa Tagapamanihala ng mga Paaralan ng Sangay ng Bulacan, kalakip ang mungkahing pananaliksik, bilang bahagi ng opisyal na pahintulot sa pagsasagawa ng pag-aaral.

Sa pagpapatupad ng pananaliksik, ang mga magulang ng mag-aaral ay binigyan ng liham pahintulot, at ang kanilang mga anak ay hindi maaaring lumahok nang walang opisyal na pagsang-ayon mula sa kanilang magulang. Mahigpit na ipinatupad ang prinsipyo ng pagiging kumpidensyal, kung kaya't ang mga impormasyon ng mga kalahok ay mananatiling lihim at hindi ilalabas sa sinumang hindi awtorisado. Bilang pag-iwas sa anumang hindi pagkakapantay-pantay sa datos, walang matatanggap na insentibo ang mag-aaral upang matiyak na ang kanilang *performance* sa pagsusulit ay hindi maaapektuhan ng panlabas na salik.

Dagdag pa rito, tiniyak ng mananaliksik na walang mental, emosyonal, o pisikal na pinsala ang maaaring maranasan ng mga kalahok sa buong proseso ng pananaliksik.

Sa huli ang nakalap na resulta ay masusing sinuri upang matiyak ang katumpakan, pagiging maaasahan, at kredibilidad ng ginawang pananaliksik.

Sa pananaliksik na ito, ang pagsusuri ng datos ay isinagawa gamit ang iba't ibang istatistikal na pamamaraan upang matiyak ang katumpakan at pagiging mapagkakatiwalaan ng resulta. Ang *Frequency*, *Percentage*, at *Mean* ay ginamit upang mailarawan ang datos na nakalap mula sa pananaliksik, na naglalayong suriin ang antas ng kasanayan sa pagsusulat ng mag-aaral bago at pagkatapos ng interbensyon. Ang paggamit ng mga deskriptibong istatistika ay makatutulong sa pagpapakita ng pangkalahatang distribusyon ng datos, gayundin sa pagsusuri ng *trend* ng pag-unlad sa kasanayan sa pagsusulat ng mga kalahok.

Ang *Pre-Test* at *Post-Test scores* ng mag-aaral na lumahok sa pananaliksik ay masusing sinuri gamit ang *Dependent t-Test* upang masukat kung may makabuluhang pagkakaiba sa kanilang *performance* bago at pagkatapos ng interbensyon.

Ang *t-Test* ay isang estadistikang pagsusuri na nagtataya kung ang pagbabago sa *mean scores* ay *statistical significance*, na nangangahulugang hindi ito naganap dahil lamang sa pagkakataon kundi dahil sa bisa ng isinagawang interbensyon. Sa pamamagitan nito, maaaring matukoy kung ang SULATARYO bilang interbensyon ay nagkaroon ng direktang epekto sa pagpapahusay ng kasanayan sa pagsusulat ng talata ng mag-aaral.

Bukod sa pagsusuri ng istatistika, ang karanasan at pananaw ng mag-aaral kaugnay ng paggamit ng SULATARYO ay sinuri din upang makuha ang kanilang opinyon tungkol sa pagiging epektibo ng interbensyon. Ang kwalitatibong pagsusuri ay ginamit upang suportahan ang numerikal na datos, at upang higit pang maunawaan ang mga hamon at tagumpay na naranasan ng mag-aaral sa kanilang pagsusulat. Sa ganitong paraan, ang pananaliksik ay nagiging *holistic,* dahil hindi lamang nakatuon sa istatistika kundi pati na rin sa aktwal na karanasan ng mga kalahok.

Sa pangkalahatan, ang pagsusuri ng datos gamit ang *Frequency*, *Percentage*, *Mean*, at *Dependent t-Test* ay nagbibigay ng komprehensibong pagtataya sa epekto ng interbensyon. Sa pamamagitan ng masusing pagsusuri, natutukoy kung nakapagpabuti ng kasanayan sa pagsusulat ang interbensyong SULATARYO, at kung maaari itong ipatupad sa mas malawak na saklaw upang patuloy na mapaunlad ang akademikong kakayahan ng mag-aaral

Plano ng mga Gawain

LAYUNIN	GAWAIN	PANAHON	INAASAHANG BUNGA
Paghingi ng pahintulot sa pagsasagawa ng pag-aaral/pananaliksik na ito	Ang mananaliksik ay magpapadala ng liham pahintulot sa punongguro upang maisagawa ang pag-aaral na ito.	1 araw (Enero 2025)	☐ Liham ukol sa hangaring pagsasagawa ng pag-aaral na ito ☐ Mungkahing Pananaliksik ☐ Pag-eendorso

Kunpirmasyon sa pagbibigay pahintulot upang maisakatuparan ang pag-aaral/ pananaliksik na ito	Paghingi ng pahintulot at pag-aapruba upang maisagawa ang pananaliksik na ito	1 araw (Enero2025)	☐ Liham na Pag- aapruba ☐ Pag-eendorso
Pagsasagawa ng *Pre- Test* (subjective) sa mag-aaral na nangangailangan ng pagsubaybay sa kasanayan sa pagsulat Baitang 7 sa asignaturang Filipino	Pagbibigay ng *Pre- Test (subjective)* sa mag- aaral na nangangailangan ng pagsubaybay sa kasanayan sa pagsulat sa Baitang 7 sa asignaturang Filipino	1 araw (Enero 2025)	☐ Mga naiwastong pagsusulit sa papel ☐ Mga marka sa *Pre- Test (subjective)*
Pag-aanalisa at pagbibigay interpretasyon sa mga marka mula sa sulatin ng mag-aaral gamit ang istatistikal na pamamaraan	Pagwawasto ng guro sa mga sulatin ng mag-aaral gamit ang Rubrik sa pamantayan sa pagsulat ng talata na ginawa ng mananaliksik na nakabatay sa Tiered Model (Ayon sa DepEd Order 39, serye 2012)	2 araw (Enero2025)	☐ Resulta ng Pagsasanay gamit ang Rubriks ☐ Pagbibigay interpretasyon sa mga nakuhang marka
Pagbibigay ng resulta ukol sa isinagawang *Pre-Test (subjective)*	Ang mananaliksik ay magbibigay ng resulta ukol sa isinagawang *Pre-Test (subjective)* batayan sa	1 araw (Pebrero 2025)	☐ Pag-uulat ukol sa naging resulta ng pagtataya gamit ang rubrik sa pagmamarka sa Filipino ng

	ibinigay na rubrik kung paano mamarkahan ang kanilang kasanayan sa pagsulat.		mag-aaral sa Baitang 7
Pagsasagawa ng oryentasyon sa mga kalahok sa pag-aaral na ito kasama ng kanilang mga magulang	Ang mananaliksik ay magsasagawa ng oryentasyon ukol sa pag- aaral na ito upang ilahad sa mga kalahok at sa kanilang mga magulang ang layunin at kahalagahan ng pag-aaral	1 araw (Pebrero2025)	☐ Mga kalahok na may sapat na kaalaman at kabatiran ukol sa pag-aaral na ito ☐ Pahintulot ng magulang
Paghingi ng pahintulot sa mga, magulang na mapayagan ang kanilang mga anak ukol sa pag-aaral na ito	na ito. Ang kanilang ambag ukol sa pag-aaral na ito ay ilalahad sa kanilang mabuti. Magbibigay rin ng sulat pahintulot sa mga magulang ng kalahok at sisiguraduhing mananatiling kumpedensyal ang mga inpormasyon ng mga kalahok sa pag-aaral na ito.	1 araw (Pebrero2025)	

Pagsasanay sa pagsusulat ng talata gamit ang SULATARYO	Ang mananaliksik ay magsasagawa ng pag-aaral batay sa ginamit na interbensyon na materyal.	20 araw (Pebrero-Marso2024)	☐ SULATARYO
Pag-oobserba at Pagsubaybay sa pag- unlad ng pag-aaral na ito Pagtatala ng mga akademikong gawain AT pagpapakita ng kanilang kasanayan	Ang mananaliksik ay araw- araw na itatala ang mga napansin na pag-unlad gamit ang interbensyong materyal mula sa mga kalahok. Ang pagtuturo at proseso ng pagkatuto ay inoobserbahan habang patuloy na pagsasagawa ng pag-aaral na ito.	20 araw (Pebrero-Marso 2025)	☐ Dyornal/talaan sa Pananaliksik ☐ Talaan ng mga Marka ng Mag-aaral mula sa mga pagsasanay gamit ang SULATARYO
Ang pagsasagawa ng post assessment	Ang mananaliksik ay magsasagawa ng *post assessment (subjective)* sa mga kalahok	1 araw (Abril 2025)	☐ Naiwastong mga papel sa pagsusulit ☐ Resulta ng ng post assessment (subjective)
Pagsusuri at pagbibigay interpretasyon ng mga datos mula sa pag-aaral na isinagawa gamit ang	Ang mananaliksik ay susuriin ang mga datos sa tulong ng MS Excel Application and Thematic Analysis.	3 araw (Abril 2025)	☐ Pagsusuri at Interpretasyon ng mga Datos

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istatistikal na pamamaraan			
Ang pagbuo ng mga rekomendasyon ukol sa pag-aaral na isinagawa	Ang mananaliksik ay bubuo ng konklusyon, rekomendasyon mula sa resulta ng isinagawang pag-aaral na ito	5 araw (Abril 2025)	☐ Kumpletong Kopya ng Manuskrito ng Pananaliksik na ito

Mga Resulta and Talakayan

Ang kabanatang ito ay naglalaman ng sistematikong pagsusuri ng mga datos na nakalap mula sa isinagawang pananaliksik, partikular sa pamamagitan ng *pre-test* at *post-test* ng mag-aaral.

Ang mga datos ay ipinakita gamit ang talahanayan at istatistikal na pagsusuri, kabilang ang *t-Test: Paired Two Sample for Means* upang matukoy ang makabuluhang pagkakaiba sa mga *mean scores* bago at pagkatapos ng interbensyon.

Ang layunin ng presentasyong ito ay suriin ang bisa ng interbensyong SULATARYO sa pagpapabuti ng kasanayan sa pagsusulat ng talata. Bukod dito, inilahad ang mga detalye ng istatistikal na pagsusuri tulad ng *computed t-value*, *p-value,* at ang *correlation coefficient* upang masigurado ang kawastuhan ng resulta. Ang mga interpretasyon ay nagbigay-diin sa mga makabuluhang natuklasan na may kaugnayan sa epekto ng mga baryabol na mahalaga sa pagpapaliwanag ng mga resulta ng pag-aaral.

Ang Paunang Pagtataya sa Pagsulat ay isinagawa sa anim na seksyon ng Baitang 7 ng FVR National High School, na binubuo ng 245 mag-aaral. Ang layunin ng pagtataya ay matukoy ang antas ng kanilang batayang kasanayan sa pagsusulat gamit ang pagsusulit na nakaangkla sa *Revised K to 10 Curriculum*. Sa pagsusulit, sinuri ang apat na pangunahing

aspeto ng pagsulat: anyo o istruktura ng sulatin, wastong kapitalisasyon ng mga titik, wastong paggamit ng bantas, at maayos at malinaw na pagpapahayag ng kaisipan o ideya.

Makikita sa *Talahanayan 1* ang mga marka sa panimulang pagtataya sa pagsulat ng talata para sa Baitang 7 tungkol sa paglalarawan nila sa kanilang sarili.

Talahanayan 1. MARKA SA PANIMULANG PAGTATAYA SA PAGSULAT NG TALATA PARA SA BAITANG 7 (Pagsulat ng Talata na Naglalarawan sa Sarili)

Mga Kasanayang Tinataya sa Pagsulat	Mean	Paglalarawan
a. Anyo o Istruktura ng sulatin	2.78	*Approaching Proficiency (AP)*
b. Wastong Kapitalisasyon ng mga Titik	2.78	*Approaching Proficiency (AP)*
c. Wastong Paggamit ng Bantas	2.20	*Developing (D)*
d. Maayos at malinaw na pagpapahayag ng kaisipan o idea	2.00	*Developing (D)*
KABUOAN	**2.44**	***Developing (D)***

Batay sa resulta, ang anyo ng sulatin at wastong kapitalisasyon ng mga titik ay may *mean score* na 2.78, na nasa antas ng *Approaching Proficiency (AP)*. Gayunpaman, ang malinaw na pagpapahayag ng kaisipan o ideya (*mean score* na 2.00) at wastong paggamit ng bantas (*mean score* na 2.20) ay nakakuha ng pinakamababang marka na nasa antas ng *Developing (D)*. Sa pangkalahatan, ang *mean score* para sa lahat ng aspeto ng pagsusulat ay 2.44, na nasa antas ng *Developing (D)*. Walang mag-aaral ang umabot sa antas ng *Proficient* o *Advanced* sa mga batayang kasanayan sa pagsusulat.

Dagdag pa rito, sa pakikipanayam ng mananaliksik sa mga guro sa Baitang 7, lumitaw na ang mga mag-aaral na may kahinaan sa pagsulat sa Filipino ay nagpapakita rin ng parehong kahinaan sa pagsulat sa ibang mga asignatura. Ang mga pangunahing hamon ay ang hindi wastong kapitalisasyon ng mga titik, maling paggamit ng bantas, at kakulangan sa organisasyon o ang hindi maayos at malinaw na pagpapahayag nila ng kaisipan o ideya sa kanilang sulatin. Napansin din na ang kawalan ng *mastery* sa teknikal na kasanayan sa pagsusulat at ang hindi epektibong pamamahala ng oras ng mag-aaral ay malaki ang naging epekto sa kanilang ginawang pagsusulit.

Matapos mabuo ng mananaliksik ang interbensyong SULATARYO, batay sa mga nakuhang datos sa paunang pagtataya sumailalim muli ang mga mag-aaral sa *pre-test*. Sila ay muling tinaya batay sa apat na aspeto ng kasanayan sa pagsulat: (a) Anyo o Istruktura ng Sulatin, (b) Wastong Kapitalisasyon ng mga Titik, (c) Wastong Paggamit ng Bantas at (d) Maayos at Malinaw na Pagpapahayag ng Kaisipan o Ideya.

Ang kabuoang marka o puntos ng bawat mag-aaral ay nakatala mula sa posibleng *maximum* na 20 puntos, na sinamahan ng kanilang *mean scores* at kasanayan sa pagsulat.

Ang resulta ng *pre-test* ay nagsisilbing pundasyon ng interbensyon, sapagkat ito ang pangunahing batayan sa pagsusuri ng kasalukuyang estado ng kasanayan sa pagsusulat ng mga mag-aaral bago ipatupad ang SULATARYO. Ang *pre-test* ay hindi lamang isang simpleng pagtatasa ng kakayahan ng mag-aaral; ito ay isang sistematikong proseso ng pagsusuri ng kanilang kasalukuyang kaalaman, teknikal na kasanayan, at kakayahang bumuo ng lohikal na talata.

Bukod dito, ang resulta ng *pre-test* ay nagbibigay ng *comparative data* na magagamit upang masukat ang epekto ng interbensyon. Sa pamamagitan ng pagsusuri sa *pre-test* at *post-test scores*, maaaring makita kung gaano kalaki ang naging pagbabago sa kasanayan ng mag-aaral sa pagsusulat. Ang ganitong pagsusuri ay nagpapahintulot sa mga guro at mananaliksik na matukoy ang bisa ng mga estratehiyang ginamit sa SULATARYO, at kung alin sa mga ito ang dapat pagtuunan ng pansin sa hinaharap.

Sa pangkalahatan, ang *pre-test* ay nagsisilbing *benchmark* na nagbibigay ng malinaw na direksyon sa pagsasagawa ng interbensyon. Hindi lamang nito ipinapakita ang antas ng kahandaan ng mag-aaral sa

pagsusulat, kundi pati na rin ang mga puwang sa kanilang kasanayan na maaaring punan sa pamamagitan ng sistematikong pagsasanay at edukasyong interbensyon. Sa pamamagitan ng patuloy na pag-aaral at pagsusuri sa kanilang progreso, inaasahang ang mga mag-aaral ay higit pang magpapahusay sa kanilang kakayahan sa pagsusulat ng talata, na isang mahalagang pundasyon ng kanilang akademikong pag-unlad.

Makikita sa **Talahanayan 2** na ang overall mean ay 2.52, nasa antas ng Approaching Proficiency, na nangangahulugang ang mag-aaral ay malapit sa pagiging proficient ngunit nangangailangan pa ng paghasa sa kanilang kakayahan sa pagsulat ng mga sulatin upang ganap na maabot ang antas ng Proficient.

Pagsusuri ng mga Aspeto

1. Anyo o Istruktura ng Sulatin: Ang resulta ay nagpapakita na ang karamihan sa mag-aaral ay nakakaintindi ng tamang format ng sulatin, ngunit mayroon pa rin kakulangan sa pagkakapare-pareho at organisasyon ng mga ideya. Ang mean scores sa aspeto na ito ay nagpapakita ng katamtamang kasanayan, subalit may potensyal na bumuti pa.

2. Wastong Kapitalisasyon ng mga Titik: Sa kabila ng malapit na mean scores sa proficiency level, makikita na may mga pagkakamali pa rin sa tamang paggamit ng kapitalisasyon, partikular sa pagsisimula ng pangungusap at tamang pagtukoy sa mga tamang pangngalan.

3. Wastong Paggamit ng Bantas: Ang paggamit ng bantas ay itinuturing na isa sa mga aspeto na mayroong kapansin-pansing pagkukulang. May mga mag-aaral na hindi ganap na naisasama ang tamang gamit ng kuwit, tuldok, at iba pang bantas sa kanilang pagsulat.

4. Maayos at Malinaw na Pagpapahayag ng Kaisipan o Ideya: Ito ang aspeto kung saan ang

karamihan ng mga mag-aaral ay nagpakita ng kahinaan. Mahalaga ang maayos na pagpapahayag ng kaisipan upang maging lohikal at organisado ang isang sulatin.

Talahanayan 2. *RESULTA NG PRE-TEST BAGO SUMAILALIM SA INTERBENSYON*

		MGA KASANAYANG TINATAYA SA PAGSULAT NG TALATA						
	RESULTA NG PRE-TEST							
	(BAGO SUMAILALIM SA INTERBENSYON)							
	PANGALAN NG MAG-AARAL	ANYO O ISTRUKTURA NG SULATIN	WASTONG KAPITALISASYON NG MGA TITIK	WASTONG PAGGAMIT NG BANTAS	MAAYOS AT MALINAW NA PAGPAPAHAYAG NG KAISIPAN O IDEYA	KABUOANG PUNTOS (20)	MEAN	(Advance, Proficient, Aproaching Proficiency, Developing or Basic)
1	PENANUEVA, DENIEL	3	2	2	2	9	2.25	DEVELOPING
2	APSAY, FLORIDA	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
3	GUINTO, JUNIEL RIMA	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
4	TAOPO, CYRILL	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
5	TECSON, MARRY	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
6	REJUSO, SEAN DAVIS	2	3	2	2	9	2.25	DEVELOPING
7	DAILISAN, KRISHA MAE	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
8	DE PAZ, ARIANA ASHLEY	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
9	BUNIEL, ALBERT JAMES	2	2	2	2	8	2.00	DEVELOPING
10	DE GUZMAN, DIONN SCYFEL	3	2	3	2	10	2.50	APPROACHING PROFICIENCY
11	FONTANOS, JOVEN JR.	3	2	2	2	9	2.25	DEVELOPING
12	GALOS, JOSEPH	2	2	2	2	8	2.00	DEVELOPING
13	URBANO, JAHANNA AIYLISE	3	3	2	2	10	2.50	APPROACHING PROFICIENCY
14	VERGARA, BABY JANE MONA	3	2	2	2	9	2.25	DEVELOPING
15	ALERA, EARTH JANCE	3	2	3	2	10	2.50	APPROACHING PROFICIENCY
16	BAJASAN, NIEL JOHN	3	2	2	2	9	2.25	DEVELOPING
17	EBIT, VINCE RANCIO	3	2	2	2	9	2.25	DEVELOPING
18	JOSE, RAYNIEL ANDREW	3	2	2	2	9	2.25	DEVELOPING
19	MEQUILA, AEON DRAKE	3	2	3	2	10	2.50	APPROACHING PROFICIENCY
20	VALENZUELA, VJ PARDO	3	2	2	2	9	2.25	DEVELOPING
21	ABAJERO, AC RIVAS	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
22	AMISOLA, LARA JHOY	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
23	APLACA, CAMILLE MAE	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
24	BAUTISTA, KRISTEN JOY	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
25	DURANGO, SHINE	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
26	ESTRADA, ARCEL	3	3	2	2	10	2.50	APPROACHING PROFICIENCY
27	GALAN, ELIZARDO	3	3	2	2	10	2.50	APPROACHING PROFICIENCY
28	IGNACIO, PRINCE BERLYN	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
29	HAGAPE, GALERHINE	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
30	MESINA, SHAM LOUISE	3	3	3	2	11	2.75	APPROACHING PROFICIENCY
	KABUOAN	2.90	2.60	2.57	2.00	10.07	2.52	APPROACHING PROFICIENCY

Sa kabuoang interpretasyon, batay sa *mean score* na 2.52, karamihan sa mga mag-aaral ay nasa antas na *Approaching Proficiency*, na nangangahulugan ng kakayahang lumapit sa pagiging mahusay ngunit nangangailangan pa ng pagsasanay.

Talahanayan 3. *RESULTA NG POST TEST PAGKATAPOS SUMAILALIM SA INTERBENSYON*

		RESULTA NG PRE-TEST						
		(PAGKATAPOS NA SUMAILALIM SA INTERBENSYON)						
		MGA KASANAYANG TINATAYA SA PAGSULAT NG TALATA						
	PANGALAN NG MAG-AARAL	ANYO O ISTRUKTURA NG SULATIN	WASTONG KAPITALISASYON NG MGA TITIK	WASTONG PAGGAMIT NG BANTAS	MAAYOS AT MALINAW NA PAGPAPAHAYAG NG KAISIPAN O IDEYA	KABUOANG PUNTOS (20)	MEAN	(Advance, Proficient, Aproaching Proficiency, Developing or Basic)
1	PENANUEVA, DENIEL	4	4	4	3	15	3.75	PROFICIENT
2	APSAY, FLORIDA	5	4	5	4	18	4.50	ADVANCE
3	GUINTO, JUNIEL RIMA	5	4	5	4	18	4.50	ADVANCE
4	TAOPO, CYRILL	5	4	4	4	17	4.25	PROFICIENT
5	TECSON, MARRY	5	4	4	3	16	4.00	PROFICIENT
6	REJUSO, SEAN DAVIS	4	4	4	3	15	3.75	PROFICIENT
7	DAILISAN, KRISHA MAE	4	4	4	3	15	3.75	PROFICIENT
8	DE PAZ, ARIANA ASHLEY	4	4	4	3	15	3.75	PROFICIENT
9	BUNIEL, ALBERT JAMES	4	4	4	3	15	3.75	PROFICIENT
10	DE GUZMAN, DIONN SCYFEL	4	4	4	3	15	3.75	PROFICIENT
11	FONTANOS, JOVEN JR.	4	4	4	3	15	3.75	PROFICIENT
12	GALOS, JOSEPH	4	4	4	3	15	3.75	PROFICIENT
13	URBANO, JAHANNA AIYLISE	5	4	4	4	17	4.25	PROFICIENT
14	VERGARA, BABY JANE MONA	5	4	5	3	17	4.25	PROFICIENT
15	ALERA, EARTH JANCE	4	4	4	3	15	3.75	PROFICIENT
16	BAJASAN, NIEL JOHN	4	4	4	3	15	3.75	PROFICIENT
17	EBIT, VINCE RANCIO	4	4	4	3	15	3.75	PROFICIENT
18	JOSE, RAYNIEL ANDREW	4	3	4	3	14	3.50	PROFICIENT
19	MEQUILA, AEON DRAKE	4	4	4	3	15	3.75	PROFICIENT
20	VALENZUELA, VJ PARDO	4	4	4	3	15	3.75	PROFICIENT
21	ABAJERO, AC RIVAS	4	4	5	3	16	4.00	PROFICIENT
22	AMISOLA, LARA JHOY	5	4	5	4	18	4.50	ADVANCE
23	APLACA, CAMILLE MAE	4	4	5	4	17	4.25	PROFICIENT
24	BAUTISTA, KRISTEN JOY	5	4	5	4	18	4.50	ADVANCE
25	DURANGO, SHINE	4	4	4	4	16	4.00	PROFICIENT
26	ESTRADA, ARCEL	4	4	4	4	16	4.00	PROFICIENT
27	GALAN, ELIZARDO	4	4	4	4	16	4.00	PROFICIENT
28	IGNACIO, PRINCE BERLYN	4	4	4	4	16	4.00	PROFICIENT
29	HAGAPE, GALERHINE	5	4	4	4	17	4.25	PROFICIENT
30	MESINA, SHAM LOUISE	5	4	4	4	17	4.25	PROFICIENT
	KABUOAN	4.33	3.97	4.23	3.43	15.97	3.99	PROFICIENT

Ang datos sa **Talahanayan 3** ay naglalaman ng resulta ng pagsusuri sa kasanayan sa pagsusulat ng talata ng mag-aaral pagkatapos ng interbensyon. Ang bawat mag-aaral ay muling tinaya ayon sa apat na aspeto ng pagsusulat: (a) Anyo o Istruktura ng Sulatin, (b) Wastong Kapitalisasyon ng mga Titik, (c) Wastong Paggamit ng Bantas at (d) Maayos at Malinaw na Pagpapahayag ng Kaisipan o Ideya

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Ang kabuuang marka at *mean* ng bawat mag-aaral ay itinakda, at ang antas ng kasanayan sa pagsulat ay ikinategorya bilang *Proficient* o *Advance*, depende sa kanilang resulta. Ang datos ay nagpapakita ng kabuoang *mean* na 3.99, na tumutugma sa antas na *Proficient*, habang ang *mean* para sa bawat aspeto ay ang sumusunod:

1. Anyo o Istruktura ng Sulatin: Ang mataas na mean na 4.33 ay nagpapakita na ang mag-aaral ay mahusay sa pagbibigay ng tamang organisasyon at lohikal na pagkakaayos ng kanilang sulatin. Ang aspeto na ito ay nagpapakita ng epekto ng interbensyon sa pagpapabuti ng kakayahan ng mag-aaral na sumunod sa tamang istruktura ng isang talata.

2. Wastong Kapitalisasyon ng mga Titik: Ang mean na 3.97 ay nagpapakita ng maayos na kakayahan sa paggamit ng wastong kapitalisasyon. Subalit, may ilang mag-aaral na nagpakita pa ng bahagyang pagkukulang. Ang resulta ay nagpapakita ng progreso sa aspeto ng tamang gramatika at sumasalamin sa epektibong pagtuturo sa wastong kapitalisasyon.

3. Wastong Paggamit ng Bantas: Ang mean na 4.23 ay nagpapakita na ang karamihan sa mga mag-aaral ay bihasa sa tamang paggamit ng bantas, bagamat may ilan na nangangailangan pa ng pagsasanay. Malaki ang naitulong ng interbensyon sa pagpapabuti ng teknikal na aspeto ng pagsusulat, tulad ng tamang paggamit ng tuldok, kuwit, at iba pang bantas.

4. Maayos at Malinaw na Pagpapahayag ng Kaisipan: Ang mean na 3.43 ay nagpapakita na ito ang aspeto na may pinakamababang marka sa pagsusuri. Ipinapakita nito na may ilang kahirapan ang mga mag-aaral sa lohikal at organisadong pagpapahayag ng kanilang ideya.

Ang aspeto na ito ay nangangailangan pa ng karagdagang pagsasanay upang masiguro ang malinaw at epektibong pagpapahayag ng ideya sa kanilang sulatin.

Sa kabilang banda ng kabuoang *mean* na 3.99 ay tumutugma sa antas ng *Proficient,* na nagpapahiwatig ng makabuluhang pag-unlad ng mga mag-aaral sa pagsusulat ng talata matapos ang interbensyon.

Ang interbensyon ay nagpakita ng positibong epekto sa pagpapabuti ng kasanayan sa pagsusulat ng mga mag-aaral. Gayunpaman, ang aspeto ng

maayos at malinaw na pagpapahayag ng kaisipan o ideya ay nangangailangan pa ng karagdagang atensyon upang mapabuti pa ang kalidad ng kanilang sulatin.

Mula naman sa resulta ng *pre-test* at *post-test sa* **Talahanayan 4**, makiakita ang makabuluhang pag-unlad sa kasanayan ng mga mag-aaral sa pagsusulat ng talata pagkatapos ng interbensyon.

Sa *pre-test*, ang kabuuang mean ay nasa 15.83, na nagpapakita ng antas ng kasanayan na nasa katamtamang lebel. Matapos ang interbensyon, ang *mean* ay tumaas sa 17.52, na tumutugma sa antas na *Proficient*.

Ang pinakamalaking pagtaas ay makikita sa aspeto ng Maayos at Malinaw na Pagpapahayag ng Kaisipan o Ideya, mula sa mean na 3.43 sa *pre-test* patungong 3.99 sa *post-test*, na nagpapahiwatig ng mas malinaw at organisadong pagpapahayag ng mga ideya ng mga mag-aaral.

Ang aspeto ng Anyo o Istruktura ng Sulatin ay nagpakita rin ng positibong pagtaas mula sa mean na 3.96 patungo sa 4.33, na nagpapakita ng mas maayos na pagkakaayos ng mga sulatin. Gayunpaman, napansin ang bahagyang pagbaba sa aspeto ng Wastong Paggamit ng Bantas, mula sa mean na 4.27 sa *pre-test* patungong 4.23 sa *post-test*. Bagamat ito ay bahagyang pagbaba, nananatili pa rin itong mataas na antas ng kasanayan

Talahanayan 4. *LAGOM NG RESULTA NG PRE-TEST AT POST-TEST SA INTERBENSYONG SULATARYO*

LAGOM NG RESULTA NG PRE-TEST AT POST TEST SA INTERBENSYONG SULATARYO

		KABUOANG PUNTOS SA PRE-TEST	MEAN	ANTAS NG KASANAYAN SA PAGSULAT (Advance, Proficient, Aproaching Proficiency, Developing or Basic)	KABUOANG PUNTOS SA POST-TEST	MEAN	ANTAS NG KASANAYAN SA PAGSULAT (Advance, Proficient, Aproaching Proficiency, Developing or Basic)
1	PENANUEVA, DENIEL	9	2.25	DEVELOPING	15	3.75	PROFICIENT
2	APSAY, FLORIDA	11	2.75	APPROACHING PROFICIENCY	18	4.5	ADVANCE
3	GUINTO, JUNIEL RIMA	11	2.75	APPROACHING PROFICIENCY	18	4.5	ADVANCE
4	TAOPO, CYRILL	11	2.75	APPROACHING PROFICIENCY	17	4.25	PROFICIENT
5	TECSON, MARRY	11	2.75	APPROACHING PROFICIENCY	16	4	PROFICIENT
6	REJUSO, SEAN DAVIS	9	2.25	DEVELOPING	15	3.75	PROFICIENT
7	DAILISAN, KRISHA MAE	11	2.75	APPROACHING PROFICIENCY	15	3.75	PROFICIENT
8	DE PAZ, ARIANA ASHLEY	11	2.75	APPROACHING PROFICIENCY	15	3.75	PROFICIENT
9	BUNIEL, ALBERT JAMES	8	2	DEVELOPING	15	3.75	PROFICIENT
10	DE GUZMAN, DIONN SCYFEL	10	2.5	APPROACHING PROFICIENCY	15	3.75	PROFICIENT
11	FONTANOS, JOVEN JR.	9	2.25	DEVELOPING	15	3.75	PROFICIENT
12	GALOS, JOSEPH	8	2	DEVELOPING	15	3.75	PROFICIENT
13	URBANO, JAHANNA AIYLISE	10	2.5	APPROACHING PROFICIENCY	17	4.25	PROFICIENT
i4	VERGARA, BABY JANE MONA	9	2.25	DEVELOPING	17	4.25	PROFICIENT
15	ALERA, EARTH JANCE	10	2.5	APPROACHING PROFICIENCY	15	3.75	PROFICIENT
16	BAJASAN, NIEL JOHN	9	2.25	DEVELOPING	15	3.75	PROFICIENT
17	EBIT, VINCE RANCIO	9	2.25	DEVELOPING	15	3.75	PROFICIENT
18	JOSE, RAYNIEL ANDREW	9	2.25	DEVELOPING	14	3.5	PROFICIENT
19	MEQUILA, AEON DRAKE	10	2.5	APPROACHING PROFICIENCY	15	3.75	PROFICIENT
20	VALENZUELA, VJ PARDO	9	2.25	DEVELOPING	15	3.75	PROFICIENT
21	ABAJERO, AC RIVAS	11	2.75	APPROACHING PROFICIENCY	16	4	PROFICIENT
22	AMISOLA, LARA JHOY	11	2.75	APPROACHING PROFICIENCY	18	4.5	ADVANCE
23	APLACA, CAMILLE MAE	11	2.75	APPROACHING PROFICIENCY	17	4.25	PROFICIENT
24	BAUTISTA, KRISTEN JOY	11	2.75	APPROACHING PROFICIENCY	18	4.5	ADVANCE
25	DURANGO, SHINE	11	2.75	APPROACHING PROFICIENCY	16	4	PROFICIENT
26	ESTRADA, ARCEL	10	2.5	APPROACHING PROFICIENCY	16	4	PROFICIENT
27	GALAN, ELIZARDO	10	2.5	APPROACHING PROFICIENCY	16	4	PROFICIENT
28	IGNACIO, PRINCE BERLYN	11	2.75	APPROACHING PROFICIENCY	16	4	PROFICIENT
29	HAGAPE, GALERHINE	11	2.75	APPROACHING PROFICIENCY	17	4.25	PROFICIENT
30	MESINA, SHAM LOUISE	11	2.75	APPROACHING PROFICIENCY	17	4.25	PROFICIENT
	KABUOAN	**10.07**	**2.52**	***APPROACHING PROFICIENCY***	**15.97**	**3.99**	**PROFICIENT**

Ang *t-Test* na isinagawa na makikita sa Talahanayan 5 ay nagpapakita naman na mayroong makabuluhang pagkakaiba sa *mean scores* ng mga mag-aaral mula *pre-test* patungo sa *post-test*. Ang pagtaas sa *mean* ay nagpapakita na ang interbensyon ay epektibo sa pagpapabuti ng

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kanilang kasanayan sa pagsusulat ng talata. Bukod dito, ang mababang *p-value* at mataas na *t-Stat* ay patunay na ang mga obserbasyon ay hindi lamang dahil sa pagkakataon, kundi dulot ng epektibong interbensyon.

t-Test: Paired Two Sample for Means		
	PRE-TEST	POST-TEST
Mean	10.07	15.83
Variance	1.03	1.94
Observations	30	30
PearsonCorrelation	0.64	
Hy thesized Mean Difference	0	
Df	29	
t Stat	-29.45	
P(T<=t)one-tail	0	
t Criticalone-tail	1.7	
P(T<=t)two-tail	0	
t Criticaltwo-tail	2.05	

Talahanayan 5. *Pagsusuri ng Pre-Test at Post-Test Scores Gamit ang Paired Samples t-Test*

Ang datos mula sa pananaliksik ay sumasalamin sa pagsusuri ng *pre-test* at *post-test scores* ng mag-aaral matapos ang interbensyon. Ang *mean score* para sa *pre-test* ay 10.07, na may *variance* na 1.03, habang ang *mean score* para sa *post-test* ay 15.83, na may *variance* na 1.94. Ang *Pearson Correlation* sa pagitan ng *pre-test* at *post-test scores* ay 0.64, na nagpapakita ng positibong kaugnayan sa pagitan ng dalawang *set* ng *scores*. Ang *computed t-Stat* ay -29.45, na mas mababa kaysa sa

parehong *t-Critical One-Tail (*1.70) at *t-Critical Two-Tail* (2.05). Ang *p-value* para sa parehong *one-tail at two-tail tests* ay 0.00, na mas mababa kaysa sa antas ng kahalagahan (α=0.05).

Ayon sa pag-aaral nina Akpan at Clark (2023), ang *independent sample t-test* ay isang mahalagang estadistikal na instrumento sa pagsusuri ng epekto ng mga interbensyon sa edukasyon. Natuklasan sa kanilang pananaliksik na ang *t-Test* ay nagbibigay ng masusing pagsusuri sa pagkakaiba ng *mean scores* ng dalawang grupo ng mag-aaral upang matukoy kung ang isang interbensyon ay may makabuluhang epekto sa kanilang pagkatuto.

Sa pananaliksik ni Rosales (2021), ginamit ang *paired samples t-Test* upang suriin ang epekto ng *technology-based intervention* sa kasanayan sa pagbasa ng mga mag-aaral. Ang resulta ng pag-aaral ay nagpakita ng makabuluhang pagtaas sa *mean scores* ng *post-test* kumpara sa *pre-test,* na nagpapatunay na epektibo ang interbensyon sa pagpapabuti ng kasanayan sa pagbasa. Ang ganitong resulta ay maaaring iangkop sa pagsusuri ng epekto ng SULATARYO sa kasanayan sa pagsusulat ng talata.

   A. Pagtaas ng *Mean Scores*: Ang pagtaas ng *mean scores* mula pre-test (10.07) patungong *post-test* (15.83) ay nagpapahiwatig nang malaking pag-unlad sa kasanayan ng mag-aaral pagkatapos ng interbensyon. Ang makabuluhang pagtaas ay patunay na epektibo ang interbensyon.

   B. Pagkakaiba ng *Variance:* Ang *variance* ng *post-test* (1.94) ay mas mataas kumpara sa *pre-test* (1.03), na nagpapakita ng mas malawak na distribusyon sa *performance* ng mga mag-aaral pagkatapos ng interbensyon. Posibleng may mga mag-aaral na mas malaki ang pag-unlad kaysa sa iba.

   C. *Statistical Significance:* Ang *computed t-Stat* na -29.45 ay nasa *critical region*, dahil ito ay mas mababa kaysa sa *t-Critical values*. Ang *p-value* na 0.00 ay nagpapatunay na ang nakuhang resulta ay hindi dahil lamang sa pagkakataon, kundi may tunay na epekto ang interbensyon.

   D. *Pearson Correlation:* Ang *Pearson Correlation* na 0.64 ay nagpapakita ng positibong kaugnayan. Ibig sabihin, ang mga mag-aaral

na mataas ang *pre-test scores* ay may posibilidad na magpakita rin ng mataas na *post-test scores*.

Batay sa resulta ng *t-Test*, napatunayan na ang SULATARYO ay may makabuluhang epekto sa kasanayan sa pagsusulat ng mga mag-aaral. Sa pag-aaral na ito, nasukat ang *pre-test* at *post-test scores* upang matukoy kung may makabuluhang pagbabago sa kanilang kasanayan matapos ang interbensyon. Ang positibong resulta ay sumusuporta sa mga teorya at pananaliksik na nagpapakita na ang sistematikong interbensyon sa pagsulat ay maaaring magdulot ng makabuluhang pag-unlad sa kasanayan ng mag-aaral.

Ang *Self-Directed Learning Theory* (SDL) ay isa sa mga teoryang sumusuporta sa layunin ng SULATARYO. Ayon kay *Knowles* (1975), ang *self-directed learning* ay isang proseso kung saan ang mag-aaral ay aktibong nagtatakda ng layunin, nagpaplano ng mga estratehiya sa pagkatuto, at sinusuri ang sariling pagganap upang higit na mapaunlad ang kanyang kasanayan.

Sa pananaliksik ni Mujiono (2024), natuklasan na ang *self-efficacy* at *self-regulated learning* ay may mahalagang papel sa *self-directed learning* sa pagsusulat. Ang mag-aaral na may mataas na antas ng *self-efficacy* ay mas aktibong nakikilahok sa kanilang sariling pagkatuto, na nagreresulta sa mas mataas na kalidad ng kanilang akademikong sulatin.

Sa konteksto ng SULATARYO, ang mag-aaral ay binibigyan ng malinaw na gabay sa pagpapalawak ng bokabularyo, kasanayan sa pagsusuri ng teksto, at paggamit ng tamang gramatika upang mapabuti ang kanilang kasanayan sa pagsusulat ng talata. Ayon sa pananaliksik nina *Adnan at Sayadi (2021),* natuklasan na ang *self-directed learning approach* ay may positibong epekto sa kasanayan sa pagsusulat ng akademikong teksto. Ang mag-aaral na may mas mataas na antas ng *self-directed learning* ay mas mahusay sa pagbuo ng lohikal at organisadong sulatin.

Ang papel naman ng bokabularyo sa pagsusulat, ayon sa pananaliksik nina Quines (2023), may direktang ugnayan ang antas ng bokabularyo ng mag-aaral sa kanilang kakayahan sa pagsusulat. Natuklasan sa kanyang pag-aaral na ang mga mag-aaral na may mas mataas na *lexical diversity* ay mas mahusay sa pagbuo ng lohikal at organisadong sulatin.

Bukod dito, ayon sa pananaliksik nina Zarfsaz at Yeganehpour (2021), natuklasan na ang *productive vocabulary size*, *receptive vocabulary*

size, at *depth of vocabulary knowledge* ay may direktang epekto sa kalidad ng akademikong sulatin ng mag-aaral. Ang mas malawak na bokabularyo ay nagbibigay sa mag-aaral ng mas maraming pagpipilian ng salita upang epektibong maipahayag ang kanilang ideya.

Sa pangkalahatan, batay sa mga naitalang datos, ang interbensyong SULATARYO ay nagdulot ng positibong epekto sa kasanayan ng mga mag-aaral sa pagsusulat. Bagamat may ilang aspeto tulad ng paggamit ng bantas na nangangailangan pa ng karagdagang pagsasanay, ang kabuoang resulta ay nagpapakita ng makabuluhang pag-unlad na maaaring itaguyod sa pamamagitan ng patuloy na pagsasanay at masinsinang pagpapalawig ng programa.

Buod ng Suliranin

Ang pananaliksik na ito ay naglalayong suriin ang epekto ng interbensyong SULATARYO sa pagpapabuti ng kasanayan ng mag-aaral sa pagsusulat ng talata sa Filipino, partikular sa Baitang 7 ng FVR National High School, Norzagaray, Bulacan. Sa harap ng masalimuot na hamon sa teknikal na aspeto ng pagsusulat—tulad ng tamang kapitalisasyon, paggamit ng bantas, maayos at malinaw na pagpapahayag ng kaisipan o ideya, gramatika, at nilalaman—lumitaw ang pangangailangan para sa isang sistematikong interbensyon upang mapunan ang mga kakulangan ng mag-aaral.

Ang ginamit na disenyo ng pananaliksik ay *Quasi-Experimental*, partikular na *one-group pretest-posttest design*. Ang pamamaraang ito ay pinili upang masuri ang epekto ng interbensyong SULATARYO sa pagpapabuti ng kasanayan sa pagsusulat ng mga kalahok.

Upang makuha ang panimulang datos, isinagawa ang *pre-test* bago ang implementasyon ng interbensyon. Sa bahaging ito, sinuri ang antas ng kasanayan sa pagsusulat ng mga kalahok gamit ang itinakdang rubrik na nakabatay sa mga pamantayan ng masusing pagsusuri anyo o istruktura ng sulatin, wastong kapitalisasyon ng mga titik, wastong paggamit ng bantas, at maayos at malinaw na pagpapahayag ng kaisipan o ideya. Ang mga datos na nakalap sa *pre-assessment* ay nagsilbing batayan sa pagtukoy ng pangangailangan ng mga mag-aaral at paghahanda ng interbensyon.

Matapos ang pagpapatupad ng SULATARYO, isang estratehiya na naglalayong linangin ang kakayahang magpahayag sa paraang malinaw, lohikal, at organisado, isinagawa ang *post-test*. Sa bahaging ito, muling sinukat ang kasanayan sa pagsusulat ng mga kalahok upang matukoy ang naging progreso. Ang paghahambing sa resulta ng *pre-test* at *post-post* ay nagbigay nang malinaw na indikasyon kung paano nakatulong ang interbensyon sa pagpapabuti ng kasanayan sa pagsusulat ng mag-aaral.

Upang masiguro ang bisa ng pagsusuri, ginamit ang istatistikang pagsusuri upang ihambing ang nakuhang datos. Ang pagsusuri ng *mean*, *standard deviation*, at *t-test* ay isinagawa upang masuri kung may makabuluhang pagbabago sa antas ng kasanayan bago at pagkatapos ng interbensyon. Bukod dito, isinama rin ang kwalitatibong pagsusuri sa ilang sagot ng mga kalahok upang mas malalimang maunawaan ang epekto ng SULATARYO sa kanilang kakayahan sa pagsusulat.

Ang pagsusuring isinagawa gamit ang *t-Test: Paired Two Sample for Means*, lumabas sa resulta ang pagtaas ng *mean scores* mula 10.07 sa *pre-test* patungong 15.83 sa *post-test,* na nagpapahiwatig ng makabuluhang pag-unlad sa kasanayan sa pagsusulat ng mag-aaral pagkatapos ng interbensyon. Ang ganitong pagbabago ay sinusuportahan ng *t-Stat* na -29.45, na mas mababa kaysa sa parehong *t-Critical One-Tail* (1.70) at *t-Critical Two-Tail* (2.05), na nangangahulugang *statistically significant* ang pagkakaiba sa dalawang pagsusulit. Dagdag pa rito, ang p-value na 0.00 ay mas mababa kaysa sa antas ng kahalagahan (α = 0.05), na nagpapakita na ang pagtaas sa *scores* ay hindi bunga ng pagkakataon kundi resulta ng epektibong interbensyon.

Bukod sa *mean scores*, sinuri rin ang *variance* ng *pre-test* (1.03) at *post-test* (1.94), na nagpapakita ng mas malawak na distribusyon ng *performance* ng mag-aaral pagkatapos ng interbensyon. Ipinapahiwatig nito na bagamat lahat ng mag-aaral ay nagpakita ng pag-unlad, may ilan sa kanila ang higit na nakinabang mula sa programa kumpara sa iba. Ang *Pearson Correlation* na 0.64 ay nagpapakita ng positibong kaugnayan sa pagitan ng *pre-test* at *post-test scores*, nangangahulugan na ang mag-aaral na may mas mataas na *pre-test score* ay patuloy na nagpakita ng pag-unlad sa *post-test*.

Sa pangkalahatan, ang SULATARYO ay napatunayang isang mabisang interbensyon sa pagpapabuti ng kasanayan sa pagsusulat, na tumutugma sa mga prinsipyo ng *Self-Directed Learning Theory (Knowles, 1975).* Ang *structured writing approach* ng interbensyon ay nagbigay-daan sa mas malinaw na organisasyon ng ideya, tamang gamit ng bantas, wastong kapitalisasyon, at mas malawak na bokabularyo sa pagsulat ng talata. Bagamat may ilang aspeto na maaari pang pagtuunan ng pansin tulad ng masusing pagsasanay sa teknikal na aspeto ng gramatika, ang kabuuang resulta ay nagpapatunay na epektibo ang interbensyon sa pagpapalakas ng kasanayan ng mga mag-aaral sa akademikong pagsulat.

Sa pamamagitan ng patuloy na pagsasanay at pagpapalawig ng programa, maaaring higit pang mapaunlad ang kahusayan ng mga mag-aaral sa lohikal na pagsulat ng talata, na mahalaga sa kanilang pang-akademikong pag-unlad

Kongklusyon

Ang datos na nakalap mula sa *pre-test* at *post-test* ay nagbigay-liwanag sa epekto ng interbensyong SULATARYO sa pagpapabuti ng kasanayan sa pagsusulat ng mga mag-aaral sa Filipino. Ang *pre-test* ay nagpapakita na karamihan sa mga mag-aaral ay nasa antas na *Developing* at *Approaching Proficiency* sa pagsusulat. Sa aspeto ng teknikal na kakayahan, nakita ang mga kahinaan sa wastong paggamit ng bantas, kapitalisasyon, at organisasyon ng ideya. Ang kawalan ng kaisahan sa talata at mababang kalidad ng pagpapahayag ay malaki rin ang naidulot sa limitadong kakayahan ng mga mag-aaral.

Matapos ang paggamit ng interbensyong SULATARYO, nagkaroon ng makabuluhang pag-unlad sa *post-test*, kung saan ang marka ng mag-aaral ay tumaas patungo sa mas mataas na antas ng kahusayan, tulad ng *Proficient* at *Advance*. Ang mga sumusunod na kongklusyon ay maaaring mabuo batay sa datos:

> 1. Pagtaas sa Antas ng Kasanayan sa Pagsusulat: Ang mga marka ng mag-aaral ay nagpakita ng pag-usbong mula sa mababang antas ng *Developing* patungo sa mas mataas na antas ng *Proficient* at *Advance*. Halimbawa, si Florida Apsay, na dati'y nasa antas na *Approaching Proficiency* ay umabot sa antas na *Advance* pagkatapos gamitin ang interbensyong SULATARYO.

Ang progreso ng mag-aaral ay indikasyon ng epektibong disenyong nakapaloob sa interbensyon.

2. Makabuluhang Pag-unlad sa Teknikal na Aspeto: Ang istruktura ng mga sulatin ng mag-aaral ay mas naging organisado, lohikal, at malinaw pagkatapos ng interbensyon. Nakita ang mas mataas na kalidad ng kapitalisasyon at paggamit ng tamang bantas sa pagsusulat ng talata, na isang mahalagang layunin ng interbensyon.

3. Pagpapabuti sa Nilalaman ng Sulatin: Bukod sa teknikal na aspeto, nakita rin ang malalim na pag-unlad sa nilalaman ng mga talata ng mag-aaral. Ang mas malinaw na pagpapahayag ng ideya ay indikasyon ng mas mataas na antas ng pagkakaintindihan ng mag-aaral sa kanilang pagsusulat.

4. Epektibong Gabay ng Guro: Sa tulong ng *feedback* mula sa guro bilang bahagi ng *Self-Monitoring*, naging mas malinaw ang mga kahinaan ng mag-aaral at natulungan silang mahasa ang kanilang kasanayan sa pagsusulat. Ang *personalized* na *feedback* ay nagbigay-daan upang magpokus ang mag-aaral sa kanilang mga kahinaan.

5. Pangkalahatang Tagumpay ng Interbensyon: Sa kabuuan, ang interbensyong SULATARYO ay napatunayang makabago at epektibo sa pagtaas ng kasanayan ng mag-aaral sa teknikal na aspeto ng pagsusulat. Ang istrukturang disenyong nakapaloob dito ay tumugon sa tiyak na pangangailangan ng mag-aaral, kabilang ang aktibong pagkatuto sa ilalim ng *Self-Directed Learning Theory (SDL)*.

Sa kabuuan, ang pananaliksik na ito ay nagpatunay sa kahalagahan ng SULATARYO bilang isang makabago at sistematikong interbensyon sa pagtuturo, na naglalayong mapaunlad ang kasanayan ng mga mag-aaral sa pagsusulat ng talata sa Filipino. Ang disenyo ng interbensyon ay maingat na binuo upang tumugon sa mga partikular na pangangailangan ng mag-aaral, kabilang ang teknikal na aspeto ng pagsusulat tulad ng tamang paggamit ng bantas, kapitalisasyon, gramatika, at organisasyon ng ideya, pati na rin ang pagpapalakas ng kakayahan sa lohikal na pagpapahayag.

Sa pamamagitan ng *Self-Directed Learning Theory (SDL),* ang interbensyon ay nagbigay-diin sa aktibong partisipasyon ng mag-aaral, kung saan sila ay naging mas responsable sa kanilang sariling proseso ng pagkatuto.

Ang iba't ibang hakbang na nakapaloob sa interbensyon—*Motivation, Self-Management, Self-Directive Learning*, at *Self-Monitoring*— nagkaroon ng oportunidad ang mga mag-aaral na mas mapalawak ang kanilang kakayahan sa pagsusulat. Ang kanilang pagtaas sa *proficiency level* ay hindi lamang resulta ng teknikal na pagsasanay kundi patunay din ng mas malalim na pag-unawa sa nilalaman at lohikal ng pagsusulat

Ang SULATARYO ay nagbigay-daan din sa mas malalim na pag-unawa ng mag-aaral sa kahalagahan ng pagsusulat bilang isang mahalagang kasanayan sa komunikasyon at akademiko. Ang interbensyon ay hindi lamang nagturo ng teknikal na aspeto, kundi pinalalim din ang interes ng mag-aaral sa pagsusulat sa pamamagitan ng mga gawain na naaayon sa kanilang lebel ng kakayahan at mga paksang nauugnay sa kanilang interes.

Ang personal na gabay ng guro, na isa sa mga pangunahing bahagi ng interbensyon, ay napatunayan na mahalaga sa pagsusuri sa progreso ng mag-aaral at pagtukoy sa kanilang mga kahinaan.

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