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Discoveries of ETCOR Educational  
Research Center (iJOINED ETCOR)**  
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## **International Journal of Open-access, Interdisciplinary & New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)**

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**iJOINED ETCOR** is the **first and pioneering academic journal of ETCOR**, now publishing **Volume V, Issue 1**. It represents the foundation of ETCOR's mission to build a strong global research culture rooted in collaboration, interdisciplinary scholarship, and educational innovation.

Formally known as the **International Journal of Open-access, Interdisciplinary & New Educational Discoveries of ETCOR (iJOINED ETCOR)**, the journal serves as a trusted international platform for **credible, high-quality, and globally visible research**. It publishes scholarly works integrating knowledge across disciplines, with strong emphasis on **education, innovation, community development, and applied research for societal impact**.

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1. Promote high-quality interdisciplinary research
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3. Encourage collaboration among researchers and professionals
4. Support research contributing to institutional and community development
5. Provide a global platform for impactful scholarship

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- Community and social development
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- Health and human development
- Environmental and sustainability studies
- Entrepreneurship and livelihood research
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All authors must disclose **all funding sources or financial support**, if any, related to the research.

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1. **Academic Significance, Contribution to Discipline or Community, Technical Novelty**  
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2. **English Usage (or Filipino, as may be applicable)**  
The manuscript must adhere to the rules of grammar and language usage, whether in English or Filipino.
  - Use **past tense** consistently since the study is already completed.



- Avoid first-person point of view (“I,” “we”); instead, maintain a **third-person scientific tone**.
  - Avoid contractions; spell out complete words to retain formality.
  - Provide **English translations** for words, terms, or items not understandable to international readers.
3. **Abstract**  
The abstract should follow the journal’s prescribed format and accurately reflect the study’s major components. Ensure that it correctly presents the **aim, methodology, key findings or results, and conclusion** in a concise and logical manner.
4. **Introduction / Background of the Study**  
The introduction must:
- Present a clear rationale or background from the **global to Philippine/local contexts**.
  - Show the **trends and issues** related to the study, supported with recent and relevant citations (2021–2026 preferred).
  - Identify and explain the **research gap/s**, highlighting why the present study is necessary and how it differs from prior works.
5. **Statement of the Problem, Research Objectives and Research Questions**  
The Statement of the Problem, Research Objectives and Research Questions must be clearly, explicitly, and logically stated.
- The **statement of the problem** is a detailed explanation of the issue, gap, or challenge that the study seeks to address. It frames the context and justifies why the study is necessary, usually written in declarative form as a narrative or paragraph. Its purpose is to highlight the significance, scope, and urgency of the study, providing a broad and contextual background of the issue at hand. For example, a study may state: *“Despite government programs, many senior citizens in rural areas experience delays in receiving social pensions, raising concerns about accessibility and efficiency.”*
  - The **research objectives** represent the specific aims or intentions of the study, focusing on what the researcher seeks to accomplish. These are written in infinitive form such as “To determine...” or “To examine...,” ensuring that the targets are clear, measurable, and achievable. Unlike the broad statement of the problem, objectives are narrower and centered on actionable outcomes. For instance, a general objective could be *“To assess the implementation of the Social Pension Program in Balbalan, Kalinga.”* This may be broken down into specific objectives, such as: (1) To determine the accessibility of the program, (2) To examine its impact on beneficiaries, and (3) To identify challenges faced in its implementation.
  - The **research questions** are the interrogative form of the objectives, expressed as direct questions the study seeks to answer. They are usually written in formats such as “What is...?” or “How does...?” and serve the purpose of guiding data collection and analysis by pointing to specific inquiries. Research questions are even more specific than objectives, as they operationalize the study’s goals into answerable items. Using the same example, the research questions could include: *RQ1: How*



*accessible is the Social Pension Program to senior citizens in Balbalan? RQ2: What impact does the program have on the beneficiaries' quality of life? RQ3: What challenges hinder the effective implementation of the program?*

## 6. Review of Related Literature and Studies

This section must include sufficient, relevant, and **up-to-date references** to support the rationale and conduct of the research.

- Avoid outdated sources (1–2 decades old) for dynamic or evolving concepts.
- Do not use sources with “no date (n.d.).”
- Ensure citations are aligned with the arguments and logically linked to the study.
- There must be a clear synthesis at the end of the RRLS that captures key insights, connects the reviewed works, and justifies the need for the present study.

## 7. Theoretical and/or Conceptual Framework

An appropriate theoretical and/or conceptual framework must be presented to anchor the study.

## 8. Research Methodology (Research Design, Population and Sampling, Instrument, Data Collection, Treatment of Data, Ethics in Research)

The methodology section should be well-structured, detailed, and properly organized. Each subsection should only contain content appropriate to it:

- **Research Design:** Describe what design was used, how it was applied, and why it was the most suited.
- **Population and Sampling and Other Source/s of Data:** Provide the exact number of participants/respondents, how and why they were selected. If you used other source/s of data (documents, policies, other contents), describe each document, how each was accessed, and why each is needed in the study.
- **Instrument/s:** State whether the instrument was adopted or researcher-made. Describe its validation process, including the qualifications of validators.
- **Data Collection:** Focus on *how, when, and where* the data was collected. Do not include ethics approval here.
- **Treatment of Data:** Clearly describe the methods of data analysis or statistical treatment. For qualitative analysis, avoid generic discussions (e.g., what thematic analysis is according to authors). Instead, show how the method was applied in your study.
- **Ethical Considerations:** Include ethical approval, informed consent, and permissions here, not in other subsections.

### Important Reminders:

- Avoid “chop-suey” writing (mixing unrelated topics).
- If the study used a **mixed-method approach**, discuss both parts separately (quantitative and qualitative)—design, participants, instruments, data collection, treatment of data, ethical considerations—and explain how the two sets of data were integrated.
- Use plural (“researchers”) consistently if the paper has co-authors.

## 9. Results and Discussion

- Present results clearly, logically, and aligned with the research questions.

V



- Support findings with **relevant and recent literature**.
- Integrate discussion immediately after each result to enhance coherence.

#### 10. Conclusions and Recommendations

- Conclusions must be logically drawn from the study's findings.
- Recommendations should be **specific, actionable, and relevant** to the results. Avoid generic statements.

#### 11. References (APA 7th Edition)

References must strictly adhere to APA 7th edition. Authors must review their entire manuscript carefully:

- Ensure proper formatting (e.g., italicizing journal names, use of “&” vs. “and,” correct application of *et al.*, punctuation, spacing, quotation marks).
- All in-text citations must appear in the References list and vice versa. **No mismatches allowed.**
- Avoid old references; prioritize recent ones.
- If a citation was included but missing in the References, update it properly (do not erase it without explanation). Similarly, remove unused entries from the References list.
- The paper will not be published if even one citation/reference entry is non-compliant.

#### APA 7<sup>th</sup> requires:

- All sources listed in the References Section must match 100% with the actual sources used in the entire manuscript, and all sources cited in the entire manuscript are reflected in the list of sources in the References section.
- Author/s should provide a link to every research article or literature/document, where we can find the journal or document, or best, where we can find the specific research article/document. Must provide the DOI for it, or URL if the journal is not yet DOI accredited, or link to the document.
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- Title of article in sentence case (only first word, proper nouns, and first word after a colon capitalized).
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- For secondary sources, only the work actually consulted (the secondary source) is included in the References list; the original source cited indirectly (e.g., “as cited in”) must not be listed unless it was directly read by the author.

## 12. Acronyms and Abbreviations

Always define acronyms upon first mention in the manuscript. Do not assume that readers will automatically know them.

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- Accept after minor revisions
- Accept after major revisions
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### Conflict of Interest

All authors must disclose any actual or potential conflicts of interest.

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### Editor's Note

## International Journal of Open-access, Interdisciplinary & New Educational Discoveries of ETCOR (iJOINED ETCOR) Volume V, Issue 1

It is with renewed commitment and scholarly enthusiasm that we present **Volume V, Issue 1** of the *International Journal of Open-access, Interdisciplinary & New Educational Discoveries of ETCOR (iJOINED ETCOR)*. As the pioneering academic journal of ETCOR Educational Research Center, iJOINED ETCOR continues to serve as a strong foundation for cultivating a global culture of research grounded in rigor, collaboration, and interdisciplinary innovation.

Now on its fifth volume, the journal reflects sustained growth, strengthened international engagement, and increasing scholarly impact. What began as ETCOR's flagship publication has evolved into a respected international platform for educators, researchers, policy advocates, and development practitioners who aim to generate knowledge that transcends disciplinary boundaries and contributes meaningfully to society.

iJOINED ETCOR remains firmly committed to high standards of academic integrity. Every manuscript published in this issue has undergone a rigorous double-blind peer review process, plagiarism screening, and careful editorial evaluation. Our adherence to ethical publication practices, CrossRef DOI registration, and international indexing ensures that the research we publish is credible, discoverable, and globally visible.

The journal's interdisciplinary character continues to define its identity. This issue highlights research in education, community development, public policy, human development, innovation, sustainability, and cross-sectoral studies. By welcoming diverse methodological approaches—quantitative, qualitative, and mixed methods—we affirm that complex societal challenges require integrative and collaborative scholarly responses.

Volume V, Issue 1 also underscores ETCOR's mission of "Embracing the Culture of Research." Research, when conducted responsibly and disseminated widely, becomes a transformative tool. It informs institutional reforms, enhances classroom practices, strengthens governance, empowers communities, and contributes to national and global development goals.

We likewise reaffirm our support for both established scholars and emerging researchers. iJOINED ETCOR provides a mentoring-oriented yet rigorous publication environment where academic excellence is nurtured, ethical standards are upheld, and scholarly contributions are recognized internationally.

This issue is the product of collective dedication—authors who entrusted us with their work, reviewers who offered critical and constructive insights, editors who ensured scholarly coherence, and the ETCOR Publications Team who upheld quality and precision in every stage of production.

IX



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As we move forward in our fifth volume, we remain committed to continuous improvement, global collaboration, and research that creates meaningful impact. We invite scholars, practitioners, and institutions worldwide to contribute to future issues and become part of a growing international research community.

On behalf of the Editorial Board, we proudly present **iJOINED ETCOR Volume V, Issue 1**—a testament to sustained excellence, interdisciplinary discovery, and the enduring power of research to shape a better world.

— **Dr. Adrian Lawrence P. Carvajal, CSEE, CPME, CLSSYB, Editor-in-Chief**

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## Table of Contents

About the Journal.....	I
Submission Guidelines.....	III
Review Process.....	VII
Publication Policies and Ethics.....	VII
Editor's Note.....	IX
Editorial Board, Journal Staff, and Peer Reviewers.....	X
Table of Contents.....	XII
Published Articles.....	1-169

Vergara, I. B. (2026). Research performance metrics: Institution and faculty perspectives for strategic capability enhancement. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 1-19. <https://doi.org/10.63498/etcor526>

Lagon, R. N., Atienza, G. L. L., Baranda, G. L., Navia, J. V., Fariñas, J. L., Avelino, L. E., Quenga, C. F., Lantoria, J. R. L., & Loro, N. E. (2026). Elementary teachers' knowledge, motivation, and attitude toward research: Implications for professional development. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 20-31. <https://doi.org/10.63498/etcor527>

Trinidad, J. M. (2026). Effectiveness of the gender and development program in the promotion of gender equality. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 32-37. <https://doi.org/10.63498/etcor528>

Diagro-Osdon, V., & Castro, J. S. (2026). Exploring the role of extracurricular activities on



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academic development among high school students. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 38-48. <https://doi.org/10.63498/etcor529>

Santiago, R. T. (2026). Effect of calcium nitrate as a nutrient solution for hydroponic lettuce production. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 49-56. <https://doi.org/10.63498/etcor530>

Sanchez, R. D. (2026). Preserving the honor of the Honoris Causa: Revisiting the guidelines on the conferment of honorary degrees. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 57-65. <https://doi.org/10.63498/etcor531>

Calilong, O S. (2026). Analisis sa mungkahing glosaryo ng mga terminolohiyang ginamit sa Transport Network Vehicle Service. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 66-105. <https://doi.org/10.63498/etcor532>

Maagma, J. R. G. (2026). Self-Efficacy, self-esteem and performance of Administrative Officer II in the Division of Aklan. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 106-117. <https://doi.org/10.63498/etcor533>

Jocson, T. L. J. S. (2026). Mapping the deterrence affordance of the plea-bargaining culture among selected drug cases in Biñan and Calamba. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 118-128. <https://doi.org/10.63498/etcor534>

Roque, R. L. I. (2026). Nicomachean Utilitarianism: A holistic ethical system integrating Aristotelian, Kantian, and 21st Century Utilitarianism. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 129-144. <https://doi.org/10.63498/etcor535>

Pantaleon, M. U., Ruiz, M. A. Q., & Garma, M. F. C. (2026). Assessing attitudes and perceived usefulness of Artificial Intelligence in Science learning. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational*



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Research Center (iJOINED ETCOR), 5(1), 145-158. <https://doi.org/10.63498/etcor536>

Elospa, R. C. (2026). Assessment on the capability of criminology educators handling Forensic Science subjects in the First District of Northern Samar. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 159-169. <https://doi.org/10.63498/etcor537>



## Research performance metrics: Institution and faculty perspectives for strategic capability enhancement

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### Abstract

**Aim:** This study aimed to analyze the research performance metrics of a private educational institution as a basis for proposing a Research Capability Enhancement Program to strengthen its research culture. Specifically, it examined the level of performance of the institution and faculty members across the research phases of production, dissemination, and utilization, and identified teacher-related and school-related problems that hinder optimal research performance.

**Methodology:** The study employed a quantitative descriptive research design involving 59 full-time faculty members from both basic education and higher education levels. Data were gathered using a researcher-made survey questionnaire that underwent expert validation. Descriptive statistical tools, including frequency, percentage, weighted mean, and ranking, were utilized to analyze the data.

**Results:** The findings revealed a generally high level of research performance for both the institution and faculty members, particularly in ethical research practices, computer and information technology skills, and the promotion of evidence-based practices. However, lower performance was observed in faculty knowledge of basic statistical and analytical tools, participation in research consortia for funding, and the generation of substantial research contributions or breakthroughs. Time management and limited financial support emerged as the most significant teacher-related and school-related problems affecting research performance.

**Conclusion:** The study concludes that while the institution demonstrates commendable research performance, particularly in ethical and technological aspects, gaps remain in research utilization, collaborative funding, and statistical competencies. Addressing these gaps through a targeted Research Capability Enhancement Program focused on statistical training, research collaboration, and institutional support mechanisms is essential to further strengthen the research culture and maximize faculty research engagement.

**Keywords:** *research performance metrics, research phases, faculty research, capability enhancement, research culture*

### INTRODUCTION

Research is a vital aspect of promoting academic excellence and institutional growth. It plays a significant role in advancing knowledge, informing practice, and contributing to societal development. Educational institutions globally recognize its value as essential for innovation and critical thinking. By promoting research, institutions enhance their academic reputation and encourage faculty and students to address real-world challenges and achieve educational targets. Mertler (2021) emphasizes that research, as a systematic and critical inquiry, is intended to generate new knowledge, improve practices, and inform policy within the field of education.

Globally, higher education institutions are under increasing pressure to enhance research productivity and impact. Metrics such as publications, citations, and research funding are key indicators of institutional success and are often tied to university rankings and accreditation. Based on a report published by the Second Congressional Commission on Education (EDCOM II), the Philippines has found itself at the bottom half in the list of Southeast Asian countries producing quality research papers. According to the committee's findings, the country failed to attain the ASEAN average threshold as it produced only 6,870 papers based on the number of Scopus articles released for the year 2022.



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In the Philippines, the emphasis on enhancing research productivity is mirrored in the initiatives of the Commission on Higher Education (CHED) and the evaluation criteria set by accreditation bodies. CHED allocates budgets for competitive research grants and underscores the societal impact of university research. Despite these efforts, Philippine universities are falling behind other Southeast Asian countries in terms of research output and citations, with the Second Congressional Commission on Education (EDCOM II) reporting that the country produced only 6,870 Scopus-indexed papers in 2022, placing it in the bottom half of the region. The study by Gopez et al. (2024) highlights several critical findings that the National Capital Region (NCR) excels in bulk research production which is reflected in metrics such as the number of authors and citations per paper. However, significant differences among these productive HEIs are limited to bulk research production, the number of authors, and corporate collaboration. Moreover, privately-owned HEIs outperform publicly-owned institutions, with distinctions only in bulk research production and the number of authors. The study also identifies correlations among bibliometric data, notably between bulk research production and the number of authors. This emphasizes the necessity for effective research management.

These insights underscore that as educational institutions strive to enhance their research capabilities, assessing performance across various research phases, particularly production, dissemination, and utilization, is essential. Understanding these dynamics can help address challenges such as heavy teaching loads and inadequate research facilities, which limit faculty engagement in research. By evaluating and enhancing institutional support, Philippine HEIs can better align with their research vision and mission, and ultimately improve their standing within the global academic community.

As educational institutions in the Philippines strive to enhance their research capabilities, it becomes essential to evaluate the performance of both the institution and its faculty members in the different phases of research. Schools may encounter challenges in cultivating a research culture, making it important to look into the academic community and determine the areas that need to be given emphasis to support the development of a healthy research environment. Heavy teaching loads, inadequate research facilities, lack of funds, and delays in procurement are some of the factors that limit faculty engagement in research activities. By focusing on the performance of researchers in each of the three phases, institutions can gauge the areas that must be addressed to achieve the research vision and mission of the institution.

A private educational institution in Batangas recognizes the importance of establishing a strong research culture. It has initiated efforts to familiarize faculty and students with research practices through training sessions and forums to promote engagement and collaboration. Despite these efforts, many faculty members and students have not fully embraced research activities. They face significant barriers, including limited research skills, time constraints, and a lack of mentorship. These barriers to research performance such as heavy teaching loads and inadequate research facilities, are compounded by faculty's graduate studies and the absence of technical writing skills, as highlighted by Sayao et al. (2023). These challenges impede faculty engagement in research and reveal a need for ongoing mentorship and additional incentives. Many research outputs are presented only in internal reviews or conferences, without publication in scientific journals. Thus, it is crucial to assess levels of research performance and identify barriers that hinder progress.

This study addresses a critical contextual gap by focusing specifically on the unique environment of private educational institution in Batangas, which has not been thoroughly explored in existing literature. It highlights a performance gap by evaluating faculty engagement in the phases of production, dissemination, and utilization. While prior studies have explored research culture and faculty involvement across the Philippines, few have specifically targeted private institutions in the Calabarzon region. This study differs from prior works by providing a targeted assessment of research performance across these phases.

Based on its findings, the study proposed a Research Capability Enhancement Program designed to address identified gaps and foster a culture of research excellence. This program aims to ensure that the entire research process, from production to dissemination and utilization, is effectively integrated into the private educational institution in Batangas. This can contribute to its academic development and its faculty members' professional growth. It can also add to the disciplinary lens by examining private institutions as well as emphasize practical relevance by addressing community needs.

### **Review of Related Literature and Studies**

This review of related literature encompasses both conceptual and research literature that address topics related to research performance in educational institutions. It examines the institution's performance level in research, as well as the faculty's effectiveness across the three phases of research, namely production, dissemination, and utilization. The review also highlights the challenges encountered in research activities and explores the significance of research



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capability enhancement programs to foster a strong research culture, promote collaboration, and improve overall research outcomes within the academic community.

#### Level of Performance of the Institution in Research

The performance of an institution in research plays a pivotal role in shaping its academic reputation and effectiveness. This performance is often reflected in key metrics such as collaboration levels, funding acquisition, and publication rates, which collectively indicate the institution's research impact. In this context, institutional research performance is crucial for creating a supportive academic environment that encourages research excellence.

Resnik (2024) asserts that institutional leaders must actively demonstrate their commitment to ethical research practices through clear actions and communication. This aligns with the indicator of the institution's level of performance that ensures researchers respect and adhere to moral and ethical standards. Furthermore, Zhakssylyk et al. (2023) argue that maintaining research integrity is a shared responsibility among researchers and institutions, emphasizing the need for collaborative efforts in upholding quality research practices, thereby enhancing institutional reputation and trust. This relates to the performance of an institution, which involves engaging in research collaboration and partnership with government and private agencies and other institutions. Additionally, Frantz (2022) emphasizes the necessity of cultivating a solid institutional research culture, which fosters an environment conducive to long-term productivity and innovation. This aligns with the need for the institution to encourage faculty to produce research outputs that incorporate new knowledge and organize initiatives and events to advance research culture.

Moreover, Muborak (2024) discusses the importance of improving institutional resources dedicated to research support, such as funding and mentorship programs. This enhancement can significantly affect research performance metrics by facilitating faculty engagement and productivity. It connects to the current research study, which includes determining performance in conducting training and mentorship programs to enhance research skills and competencies, as well as allocating funds for mentoring, coaching, and training in research.

In another study, Islam (2023) highlights the need to align research initiatives with societal challenges. This reinforces the aim to evaluate the impact of relevance in research on institutional performance. The connection between the studies is evident in the indicators that include conducting research studies to improve community engagement activities and assisting in addressing local and global development concerns through research.

Together, the studies underscore the multifaceted nature of institutional performance in research and its alignment with the established indicators, thereby creating a comprehensive framework for enhancing research capabilities. They illustrate that institutional performance is multi-dimensional, reliant on ethical practices, resource allocation, collaboration, and the capacity to address societal challenges. The studies collectively emphasize that fostering a supportive research environment, enhancing resources, and establishing a strong research culture are essential for improving institutional research outcomes.

#### Faculty Performance in the Research Phases

Research is a multifaceted process that encompasses three critical phases: production, dissemination, and utilization. Each phase plays a vital role in the overall effectiveness and impact of research efforts within an institution. First, the production phase involves the generation of new knowledge through inquiry and investigation and lays the foundation for quality research outputs. Next, the dissemination phase focuses on effectively communicating research findings to relevant stakeholders. This phase ensures that valuable insights reach broader audiences and contribute to informed decision-making. Lastly, the utilization phase emphasizes the application of research findings in real-world contexts and translates academic knowledge into actionable solutions that address societal needs and challenges. Together, these three phases create a comprehensive framework for evaluating research capabilities, guide institutions in enhancing their research strategies, and maximize their contributions to knowledge and society.

Faculty performance in research production significantly influences overall research capability. Zhao (2021) notes that digital technologies have transformed the methods of knowledge production. This transformation necessitates that faculty adapt to new research methodologies to enhance research outputs, which can be evaluated through performance metrics. Ensuring effective performance in the production phase is crucial, as it lays the foundation for generating high-quality research that meets both academic and societal needs.

Focusing on the indicators of level of faculty performance in research production, Lailiyah (2021) emphasizes critical thinking as a vital skill in higher education. Fostering critical thinking among faculty can lead to improved research quality, which serves as a Key Performance Indicator (KPI). Similarly, Field (2021) asserts that familiarity with statistical and analytical skills is crucial for conducting accurate data analyses. This proficiency directly informs the focus on evaluating faculty competencies as part of research performance metrics. By regularly assessing performance in



production, institutions can identify strengths and areas for improvement and guide strategic initiatives for enhancing research capabilities.

Effective dissemination of research findings is essential for maximizing the impact of research efforts. Bastida and Saysi (2023) identify language proficiency as a barrier to effective research communication. Addressing this issue is crucial, as improved communication can lead to better dissemination of research findings, thereby enhancing overall research impact. Ensuring effective performance in dissemination fosters a culture of transparency and accessibility. It also allows research outcomes to reach broader audiences. Considering dissemination, Bagita-Vangana et al. (2025) highlight the importance of sharing research results to build trust with participants. Such trust is essential for upholding ethical responsibilities and ensuring that research impacts are recognized. Moreover, Vlegels (2021) points out that networking opportunities enhance collaboration among researchers. This finding supports the aim to assess the role of collaboration in improving research outputs and metrics. Gauging performance in dissemination does not only enhance the visibility of research but also informs institutions about the effectiveness of their communication strategies thereby enabling continuous improvement in engaging stakeholders.

The utilization of research findings is critical for translating academic knowledge into real-world applications. Zhidebekyzy et al. (2023) argue for regular evaluations of research efficiency. This aligns with the objective of measuring both economic and knowledge outcomes to assess research effectiveness. Ensuring effective performance in the utilization phase is essential for maximizing the societal impact of research, as it translates findings into actionable solutions that address local and global development concerns. By focusing on the practical application of research, institutions can ensure that research initiatives are relevant and impactful. Furthermore, the systematic evaluation of performance in this phase provides insights into how well research influences policy and practice, guiding future research agenda.

The ideas highlight that faculty performance across the three research phases is crucial for the effectiveness and societal impact of research. The emphasis on critical thinking, digital skills, and effective communication collectively underscores the need for continuous professional development and strategic evaluations to enhance faculty capabilities and research contributions.

#### Problems Encountered in Research

Understanding the challenges faced by faculty members is essential for creating supportive research environments. These challenges can hinder research productivity and diminish the overall effectiveness of academic institutions in contributing to knowledge advancement. In this regard, despite faculty willingness to engage in research, various challenges hinder their efforts.

Santiago (2023) finds that excessive workloads limit faculty members' research capabilities. This limitation indicates the need for institutions to manage workloads effectively to promote research engagement. Additionally, Li et al. (2024) underscore how personal responsibilities can restrict scholarly engagement. This suggests that external factors must be considered when evaluating research performance. This can provide a more comprehensive analysis of faculty capabilities.

Moreover, Antes and Maggi (2021) emphasize the importance of conducting research responsibly. Incorporating this principle into the study enhances the focus on ethical standards, which are essential for accurate performance evaluation. Focusing on researchers' basic qualities, Clark (2022) highlights the role of curiosity in driving effective research. This intrinsic motivation is crucial for fostering an environment that encourages exploration and innovation among faculty. In addition, Zhang et al. (2024) note that employers increasingly demand digital skills. This trend necessitates that institutions provide training in digital competencies to enhance faculty performance in research. With emphasis on other limitations in competencies as possible challenge in research, Cargill and O'Connor (2021) stress the importance of clear communication in research dissemination. Ensuring that research findings are accessible and impactful is fundamental for achieving broader academic and societal engagement.

Tabatadze (2022) examines the influence of funding structures on universities' research productivity which reveals that current financing models often fail to effectively enhance scholarly capacity. This finding suggests a need for reform in funding mechanisms to better support academic institutions in their research efforts. Furthermore, Miraj et al. (2022) explore how academic advising, motivation, and effective time management influence students' attitudes towards research work. Their findings indicate that support mechanisms are crucial for enhancing faculty engagement, which is a key focus of the study.

Addressing these school-related problems is critical for enhancing research capability and overall academic performance. By focusing on these areas, the study can provide actionable insights that lead to improved research outcomes and performance metrics across institutions.



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### Research Capability Enhancement Program (RCEP)

The Research Capability Enhancement Program (RCEP) is designed to empower educators by providing them with the necessary skills and knowledge to engage in effective research practices. In an era where evidence-based teaching is paramount, RCEP aims to address the existing gaps in research proficiency among teachers, thereby enhancing their ability to produce, disseminate, and apply research findings in their classrooms. By fostering a culture of continuous professional development, the program can improve teaching and learning outcomes and equip educators to contribute meaningfully to their fields and the broader educational community through research.

Tamban and Maningas (2020) emphasize the need for structured programs that enhance the research capabilities of public school teachers. Their study identifies moderate levels of technical writing skills among educators and highlights the necessity for targeted training initiatives. They recommend intensive seminars and writeshops to develop these skills, ensuring that teachers can produce high-quality research outputs that meet academic standards. By implementing such programs, RCEP aligns with the findings of Tamban and Maningas, promoting a culture of research excellence that benefits both educators and students alike.

In addition to the findings from Tamban and Maningas (2020), the recommendations from Vasquez, Zales, and Atmosfera (2022) further emphasize the importance of enhancing research capabilities among teachers. They suggest that the administration of private schools should actively send their faculty to participate in research writing enhancement programs. Furthermore, a continuous assessment of the teachers' needs in research writing is highly recommended to support their professional growth and ensure that training initiatives are effectively aligned with their development goals.

Creating a research capability enhancement program is significant as it can empower faculty with the necessary skills to contribute effectively to their fields. It can also foster a culture of research excellence that will benefit not only educators but also students and the wider community by aligning educational practices with societal needs. By addressing gaps in skills and fostering continuous professional development, the program will not only improve research proficiency but also contribute to a culture of research excellence that positively impacts both educators and the educational community.

The ideas and concepts in this literature review focus on the research performance of educational institutions, specifically examining faculty effectiveness during the phases of production, dissemination, and utilization. They highlight the significance of ethical standards, resource allocation, and collaboration in enhancing research outcomes. The review also points out challenges that faculty encounter, such as heavy workloads and insufficient funding. Furthermore, it advocates for Research Capability Enhancement Programs to equip educators and foster a robust research culture. This analysis serves as a foundation for conducting evaluations of research performance metrics at a private educational institution in Batangas. It assists in assessing institutional and faculty performance, identifying challenges, and developing a Research Capability Enhancement Program to strengthen the research culture.

### Theoretical Framework

The theoretical framework for this study is built upon Social Cognitive Theory (SCT) and the Theory of Performance (ToP). The Social Cognitive Theory, proposed by Albert Bandura, emphasizes the reciprocal interaction between personal factors, environmental influences, and behavior. This framework guided the instrument development by ensuring that the survey items effectively assessed individual research skills, institutional support, and the factors influencing research performance. Key components of this theory include observational learning, self-efficacy, and the impact of environmental factors. In variable selection, this theory informed the choice of metrics related to self-efficacy and institutional support, which are critical for measuring faculty members' research performance. According to this theory, faculty members can improve their research performance by observing and modeling behaviors of peers or mentors, and their belief in their capabilities to perform research tasks is crucial. Furthermore, institutional support systems significantly impact faculty research engagement and performance.

Complementing SCT, in the Theory of Performance (ToP), performance is not simply a process or an outcome but a "system," defined as a collection of interdependent components that together create a unified whole. This theory guided the interpretation of results by framing performance as a dynamic system, enabling a nuanced understanding of how various components, such as individual capabilities and institutional factors, interact to affect overall research outcomes. More specifically, performance is viewed as a dynamic multicomponent system that incorporates firm-level capabilities, structures, and transactions, along with individual-level knowledge, skills, abilities, and other characteristics, roles, and relationships (Marshall et al., 2024). The dynamic aspect of performance reflects the continual changes within organizations. By integrating Social Cognitive Theory (SCT) and the Theory of Performance (ToP), this framework provides a lens for examining the multifaceted influences on research performance within the institution.



### Conceptual Framework

The conceptual framework for this study illustrates the relationships among key concepts, namely research performance metrics, institutional support, barriers to research engagement, and capability enhancement. The framework is organized with research performance metrics encompassing the phases of production, dissemination, and utilization of research. Capability enhancement includes training, experience, and self-efficacy in research, while institutional support refers to resources, mentorship, and encouragement provided by the institution. Barriers to research engagement are identified as teacher-related and school-related problems that hinder research performance. Institutional support affects capability enhancement, which in turn influences research performance. Barriers to research engagement negatively impact both skill development and research performance levels, illustrating the need for targeted interventions. This framework serves as a roadmap to conceptualize and structure the work by providing an outline that connects different ideas and concepts within the field of study.

### Statement of the Problem

Research plays a critical role in advancing academic excellence, institutional development, and evidence-based practice in educational institutions. Despite sustained efforts to promote research engagement, many private educational institutions continue to experience challenges in cultivating a strong and sustainable research culture. These challenges are often manifested in uneven research productivity, limited dissemination of research outputs, and inadequate utilization of research findings in institutional and community practices. Contributing factors include insufficient research skills, heavy teaching workloads, limited time for research, inadequate financial and institutional support, and restricted access to mentorship and research resources.

In a private educational institution in Batangas, initiatives such as research trainings, forums, and institutional encouragement have been implemented to enhance faculty research engagement. However, research performance across the phases of production, dissemination, and utilization remains inconsistent, and many research outputs do not progress beyond internal presentations or conference participation. These conditions suggest the presence of both teacher-related and school-related barriers that hinder the attainment of optimal research performance.

Given these concerns, there is a need to systematically analyze the research performance metrics of the institution and its faculty members, identify the specific challenges affecting research engagement, and determine areas requiring strategic intervention. Addressing these gaps is essential to strengthen the institution's research culture and to develop a Research Capability Enhancement Program that supports sustained faculty participation, improves research productivity, and enhances the practical application of research outputs.

### Research Objectives

#### General Objective

To analyze the research performance metrics of a private educational institution in Batangas as a basis for proposing a Research Capability Enhancement Program to strengthen its research culture

#### Specific Objectives

1. To assess the level of performance of the institution in the research area.
2. To evaluate the level of performance of faculty respondents in the following phases of research:
  - 2.1. Production;
  - 2.2. Dissemination; and
  - 2.3. Utilization.
3. To identify the problems that hinder faculty respondents from achieving maximum performance in research in terms of:
  - 3.1. Teacher-related problems; and
  - 3.2. School-related problems.
4. To propose a Research Capability Enhancement Program aimed at strengthening the research culture within the institution.

#### Research Questions

1. What is the level of performance of the institution in the research area?



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2. What is the level of performance of the faculty respondents in the following phases of research:
  - 2.1. Production;
  - 2.2. Dissemination; and
  - 2.3. Utilization?
3. What problems hinder the faculty respondents from manifesting the maximum level of performance in research in terms of:
  - 3.1. Teacher-related problems; and
  - 3.2. School-related problems?
4. Based on the findings of the study, what Research Capability Enhancement Program may be proposed and implemented to strengthen the research culture in the institution?

## **METHODS**

### **Research Design**

This study employed a quantitative descriptive design, which is a systematic approach used to collect and analyze numerical data to describe characteristics or performance in a specific context. This design was explicitly chosen to effectively assess the performance of the institution and its faculty members during the critical research phases of production, dissemination, and utilization. The quantitative approach was applied by systematically gathering data on various performance metrics. This method focused on identifying and measuring key indicators of research performance, which provided a clear picture of the institution's strengths and areas for improvement. This approach was deemed the most appropriate compared to qualitative alternatives, as it offers precise quantifiable outcomes that facilitate actionable insights. Unlike qualitative methods, the quantitative descriptive design ensures that findings can be systematically compared and utilized in the development of a Research Capability Enhancement Program.

### **Population and Sampling**

This study targeted faculty members from the Basic Education and College departments of a private educational institution in Batangas. A total of 59 full-time faculty members were selected as respondents through purposive sampling, a method that involves deliberately selecting individuals who possess specific characteristics relevant to the research. Respondents had to possess a minimum tenure of one year at the institution to ensure their familiarity with its research performance. This selection method aimed to obtain a representative sample capable of providing meaningful insights into the institution's research performance. No other data sources were utilized, as the study concentrated exclusively on faculty respondents.

### **Instruments**

Data were collected using a researcher-made survey questionnaire specifically designed to assess the performance metrics of faculty members across the research phases. The questionnaire was developed based on a thorough review of existing literature and aligned with the study's objectives. The validation process involved consultation with three subject matter experts, who provided both content and face validation for the instrument. These validators, possessing qualifications in educational research, assessment, and instructional design, reviewed the questionnaire for clarity, relevance, and comprehensiveness. To further ensure reliability, a pilot test was conducted with a small group of faculty members, resulting in reliability statistics in which the instrument obtained a Cronbach's alpha of .781, indicating 78 percent reliability and acceptability of the items. This validation process ensures that the questionnaire is both reliable and valid for assessing faculty performance in research.

### **Data Collection**

Data collection was conducted in a structured manner during the School Year 2024-2025, with the validated survey questionnaire distributed to full-time faculty members at a private educational institution in Batangas. The surveys were administered in person and online to accommodate varying schedules, thereby maximizing participation and response rates. Before distribution, the content and objectives of the study were clearly explained to the faculty members to ensure their understanding of the purpose of the survey and the importance of their contributions. Clear instructions were provided to respondents to enhance understanding and completion of the questionnaire. The data collection process spanned a duration of one semester, and was executed in a logical sequence to maintain the integrity of the data



collected. This systematic approach ensured that the faculty's insights could be effectively gathered to inform the study's objectives.

### Treatment of Data

The collected data were analyzed using descriptive statistics to summarize responses and identify key findings regarding research performance metrics. Specific statistical measures, including frequency, percentage, weighted mean, and ranking, were applied to assess the performance of the institution in the research area, faculty performance across the research phases of production, dissemination, and utilization, as well as the problems that hinder performance in research. This comprehensive approach ensured that all aspects of the research questions were effectively addressed.

### Ethical Considerations

Ethical considerations were rigorously adhered to throughout the study. Ethics approval was obtained from the institution's review board prior to data collection. Informed consent was secured from all faculty respondents, ensuring they understood the study's purpose and their right to withdraw at any time without consequence. Permissions were granted to administer the survey instrument and confidentiality was maintained by anonymizing responses. These measures ensured that ethical standards were upheld throughout the research process to safeguard the rights and welfare of all participants.

### RESULTS and DISCUSSION

This section provides the results and discussion on the research performance metrics of the institution and faculty members in the production, dissemination, and utilization phases. This also includes the analysis of the teacher-related and school-related problems encountered in the field of research.

#### 1. Level of Performance of the Institution in Research

Among the indicators of the level of performance of the institution in research, the item, 'ensures that researchers respect and adhere to moral and ethical standards' ranked first with a weighted mean of 3.47, verbally interpreted as Very High. This indicates that the institution may prioritize ethical research practices as a core value, thereby cultivating a culture of integrity among its members. Ongoing training and workshops on ethical standards could also reinforce the importance of adherence to these principles, ensuring that all researchers are well-informed. The presence of clear policies and procedures regarding ethics does not only enhance accountability but also builds trust within the research community. This indicates the commitment of the institution to observe ethical conduct in research activities and the dedication to maintaining integrity and accountability within the research community. According to Resnik (2024), institutional leaders should demonstrate their commitment to ethics through actions and communication. He emphasized the importance of ethical and legal standards across all levels of the organization. Institutions are encouraged to develop comprehensive policies that define expected behaviors and outline procedures for reporting and addressing misconduct and noncompliance. Keeping all members of the research community informed about these policies and any updates is essential for fostering a culture of integrity.

Table 1

*Level of Performance of the Institution in Research*

Indicators	WM	VI	Rank
1. implements a research program aligned with its vision and mission.	3.32	VH	5
2. makes use of research to aid the teaching and learning process	3.15	H	12
3. conducts research studies to improve community engagement activities	3.14	H	13.5
4. assists in addressing local and global development concerns through research	2.98	H	20
5. has an intellectual property rights policy for research.	3.36	VH	3
6. ensures that researchers respect and adhere to moral and ethical standards	3.47	VH	1
7. encourages faculty to produce research outputs that incorporate new knowledge from publications, journals, inventions, creative works, etc.	3.37	VH	2



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8. creates well-designed research agenda that outlines research aims and offers a framework for research efforts	3.32	VH	5
9. conducts training and mentorship program to enhance research skills and competencies	3.27	VH	7.5
10. utilizes research manual as guide in conducting programs and running operations and projects	3.12	H	15
11. disseminates research findings and results through publication of research journal	3.05	H	16.5
12. utilizes faculty and student research outputs for curricular improvement and reform	3.19	H	11
13. provides incentives and rewards to researchers	3.05	H	16.5
14. engages in research collaboration and partnership with government and private agencies and other institutions	3.02	H	18
15. has a research office with robust structure and qualified staff	3.27	VH	7.5
16. ensures that support resources for research are adequate and in place	3.14	H	13.5
17. carries out evaluation to enhance programs and activities connected to research	3.24	H	9
18. establishes research linkages and partnerships to facilitate collaboration and access to resources	3.22	H	10
19. allocates funds for mentoring, coaching, and training in research	3.00	H	19
20. organizes initiatives and events to advance research culture	3.32	VH	5
Composite Mean	3.20	H	

*Legend*      *VH – Very High*  
*H – High*

In the second rank was the indicator, 'encourages faculty to produce research outputs that incorporate new knowledge from publications, journals, inventions, creative works, etc.'. It obtained the weighted mean of 3.37, verbally interpreted as Very High. This indicates that the faculty recognizes the importance of actively engaging with recent advancements and diverse forms of knowledge in their research. It highlights the encouragement for them to draw from a wide array of resources to enrich their work. This is supported by the study of Frantz (2019) who emphasized that the creation of an institutional research culture is vital for promoting research excellence and sustainability.

With a weighted mean of 3.36 and verbal interpretation of Very High, the indicator 'has an intellectual property rights policy for research' ranked third. This underscores that the institution values ethical practices and reflects its dedication to protect research outputs and foster innovation. Institutions with well-established policies attract more research collaborations, funding opportunity, and technological advancement. By protecting the intellectual property of researchers, institution encourages more innovations and inventions that contribute to higher research performance and global competitiveness.

The item "carries out evaluation to enhance programs and activities related to research" scored 3.24, while "establishes research linkages and partnerships to facilitate collaboration and access to resources" received 3.22. Both are interpreted as High, emphasizing the importance of collaboration with agencies for further research advancement.

Utilizing the research manual as a guide in conducting programs and running operations and projects obtained the weighted mean of 3.12, verbally interpreted as High. This item ranked fifteenth among the indicators of performance. Following it in the sixteenth rank, the dissemination of research findings through publications scored 3.05 with the verbal interpretation of High. This suggests that expanding these efforts could increase the visibility and impact of the institution's research. Sharing the same rank, the provision of incentives and rewards to researchers also received the same score and verbal interpretation. This indicates that while some incentives exist, enhancing these programs could further motivate faculty and students.

Engaging in research collaboration with various agencies ranked eighteenth, receiving a mean of 3.02, interpreted as High. This highlights the need for stronger external partnerships to improve resource access and



research quality. Additionally, the allocation of funds for mentoring and training in research ranked nineteenth with a mean of 3.00, also interpreted as High. This indicates a pressing need for increased funding to ensure ongoing support for institutional capacity building in research. Muborak (2024) emphasizes the need to enhance institutional resources dedicated to research support, suggesting that effective strategies include increasing funding for initiatives and establishing comprehensive mentorship programs. Such support could mitigate pressures associated with Key Performance Indicators (KPIs) while fostering innovative, interdisciplinary collaboration.

Lastly, the item addressing assistance in local and global development concerns through research received the lowest weighted mean of 2.98, verbally interpreted as High. This reflects room for improvement in aligning research initiatives with broader societal issues. This has to be addressed considering the idea that Islam (2023) emphasized the power of research to stimulate innovation, disrupt old paradigms, and provide evidence-based insights that have resulted in revolutionary discoveries in a variety of sectors.

The overall performance of the institution in research yielded a composite mean of 3.20, interpreted as High. This suggests that the private educational institution in Batangas City generally meets expectations in its research activities. However, it also implies that there are still areas for improvement, as the performance is not at the maximum level. While the institution is performing well, striving for excellence and addressing any identified weaknesses could elevate its research performance further.

## 2. Level of Faculty Performance in the Research Phases

### 2.1. Level of Faculty Performance in Terms of Research Production

Ranking first, the highest weighted mean of 3.25 was for demonstrating basic computer and information technology skills needed in the research process, verbally interpreted as high. This indicates that faculty members possess a solid foundation in utilizing essential technological tools. Comprehensive training programs and professional development opportunities may have equipped them with essential digital competencies. Additionally, faculty members typically engage with a variety of technological tools in both teaching and research contexts, fostering familiarity and confidence. This skill is crucial for effective research dissemination. This highlights that proficiency in digital tools such as learning management systems and communication platforms significantly enhances teaching and research activities. This allows the faculty members to effectively research, manage projects, and solve complex problems. Emphasizing this, Zhao (2021) pointed out that people are surrounded by the internet and a series of digital technologies. The development of social structure and trends in using technology have already changed not only how we live but also how we acquire knowledge.

Table 2

*Level of Faculty Performance in Terms of Research Production*

Indicators	WM	VI	Rank
1. manifesting skill in using library and web resources for gathering relevant research information	3.03	H	9
2. applying appropriate techniques of observation and recording behavior	3.10	H	4.5
3. demonstrating basic computer and information technology skills needed in the research process	3.25	H	1
4. showing grammatical and lexical accuracy in writing research articles	3.14	H	2
5. demonstrating critical judgment in identifying and executing research activities	3.12	H	3
6. manifesting knowledge on basic statistical and analytical packages	2.98	H	10
7. applying the fundamentals in the design of questionnaire and other data gathering instruments	3.08	H	6.5
8. showing competencies in data collection	3.07	H	8
9. conducting analysis and interpretation of data or information	3.08	H	6.5
10. evaluating the objectivity and validity of research findings and conclusions	3.10	H	4.5
Composite Mean	3.10	H	

Legend: H –High

Following closely behind, "showing grammatical and lexical accuracy in writing research articles" ranked second, receiving a weighted mean of 3.14, also interpreted as High. This suggests that faculty are generally proficient in crafting well-structured research papers, an important aspect of communicating research findings clearly



and effectively. Accurate grammar and vocabulary is crucial for faculty members to be able to communicate research findings clearly and professionally. This contrasts with findings from Bastida's (2023) study, which identified language proficiency as a prominent factor contributing to research writing apprehension among students.

Demonstrating critical judgment in identifying and executing research activities ranked third with a weighted mean of 3.12, verbally interpreted as High. This highlights the faculty member's ability to critically assess and engage with research tasks. According to Lailiyah (2021), research revealed that critical thinking is a solely appraised learning outcome in higher education. This underscores the importance of fostering critical thinking skills among faculty, as it enhances their capacity to set structured goals and engage in reflective practices. Such practices enable faculty to identify pertinent research questions and execute effective research strategies. By clarifying research objectives and reflecting on past experiences, faculty members can improve their critical judgment, leading to more meaningful and impactful contributions to their fields.

In the tenth rank, manifesting knowledge of basic statistical and analytical packages received a weighted mean of 2.98 and a verbal interpretation of High. This indicates that there is room for improvement in faculty proficiency with statistical tools, which are essential for data analysis and interpretation. Field (2021) emphasizes that familiarity with statistical and analytical tools is essential for faculty to analyze data accurately, draw valid conclusions, and contribute findings to their disciplines. This underscores the importance of faculty being proficient in analytical tools to enhance research productivity. The lower ranking reflects that while faculty may recognize the importance of these skills, barriers such as limited training opportunities, time constraints, or lack of institutional support may hinder their ability to develop proficiency in these essential tools.

## 2.2. Level of Faculty Performance in Terms of Research Dissemination

The highest score was for presenting findings or results of the study to research respondents and participants, with a score of 2.85, categorized as High and ranking first. This indicates that faculty members are effective in directly communicating their research results to those involved, fostering transparency and engagement with stakeholders. This is facilitated in the institution through the conduct of the Faculty Research Forum and participation in research conferences organized by other institutions. According to Bagita-Vangana et al. (2025), many participants regard receiving research results as crucial for building trust with researchers. This process not only makes them feel valued for their contributions but also addresses their ethical expectations. Similarly, many researchers view the sharing of results as a moral obligation, particularly when participants may have limited access to scientific information.

Table 3

*Level of Faculty Performance in Terms of Research Dissemination*

Indicators	WM	VI	Rank
1. publishing paper as co-author or lead author in research journals	2.63	H	8.5
2. presenting research in local and international fora or symposia	2.73	H	4
3. communicating research effectively to the research community and wider society	2.63	H	8.5
4. engaging in research consortia for funding targets and exposure to expertise	2.61	H	10
5. creating opportunities for research collaboration and discussion with other institutions	2.69	H	7
6. serving as professional development role model for others through sharing innovations	2.71	H	5.5
7. utilizing diverse channels for dissemination of findings such as non-refereed publications, web pages, and other media and digital repositories	2.71	H	5.5
8. engaging in networking and linkages with other researchers and research communities	2.81	H	2
9. organizing research promotion and output presentation in school events and functions	2.80	H	3
10. presenting findings or results of the study to research respondents and participants	2.85	H	1



Composite Mean

2.72

H

Legend: H – High

Following closely in the second rank, engaging in networking and linkages with other researchers and research communities received a score of 2.81, verbally interpreted as high. This suggests that the faculty members of the private educational institution are already establishing relationships that can enhance collaboration and knowledge exchange within the research community. According to Vlegels (2021), networking events at conferences, online forums, or even introductions from editors provide valuable opportunities for less established scholars to connect with more central authors in their fields. These direct contacts can significantly lower future communication costs, forming a solid foundation for future collaborations. By fostering these connections, faculty members not only enhance their visibility within the research community but also create pathways for collaborative projects that can lead to innovative research outcomes. Thus, the high score reflects the faculty's proactive approach to building a collaborative research environment that benefits both individual scholars and the institution as a whole. This also indicates that faculty members believe that active participation in research networks facilitates knowledge exchange, fosters interdisciplinary collaborations, and enhances the visibility of one's research.

Organizing research promotion and output presentations in school events and functions ranked third. It obtained a weighted mean of 2.80, verbally interpreted as High. This indicates a commitment to showcase research efforts within the institution and promote a culture of research engagement.

Engaging in research consortia for funding targets and exposure to expertise received a weighted mean of 2.61, interpreted as High and ranking tenth. This score indicates a need for faculty to boost their involvement in collaborative funding initiatives. Such partnerships can provide valuable resources and insights for their research projects. This item ranks last possibly due to insufficient awareness of available consortia or limited prior experience. According to Zhidebekkyzy et al. (2023), there is considerable public research funding available to universities. This situation calls for frequent assessments of research efficiency. These assessments help distribute financial resources based on the success and effectiveness of research activities. Importantly, evaluating research efficiency should not just focus on economic and commercial results. It must also take into account scientific potential, the generation of new knowledge, and its dissemination. While faculty participation in research consortia is praiseworthy, enhancing this involvement is essential. It will facilitate greater collaboration, align efforts with broader goals, and strengthen the impact and sustainability of the research initiatives.

Lastly, engaging in research consortia for funding targets and exposure to expertise received a weighted mean of 2.61, verbally interpreted as High, and ranking tenth. This score indicates a need for faculty to enhance their participation in collaborative funding efforts, which can provide valuable resources and expertise for their research projects. According to Zhidebekkyzy et al. (2023), the substantial amounts of public research funding available to universities necessitate regular evaluations of research efficiency. Such evaluations allow for the allocation of financial resources based on the performance and effectiveness of research activities. Importantly, the assessment of research efficiency should not solely focus on economic and commercial outcomes; it must also encompass scientific potential, the creation of new knowledge, and the dissemination of that knowledge. While faculty engagement in research consortia is commendable, it should still be enhanced to maximize collaboration and align efforts with these broader objectives to further strengthen the impact and sustainability of their research initiatives.

### 2.3. Level of Faculty Performance in Terms of Research Utilization

The performance of faculty in the private educational institution in research utilization is assessed through various activities, showcasing their effectiveness in applying research findings to enhance practice and knowledge.

The highest score was for making a positive contribution to the development of knowledge and research through cooperation and collaboration, which received a weighted mean of 2.93, categorized as High and ranking first. This indicates that faculty members actively engage in collaborative efforts, which are crucial for advancing the research landscape and fostering innovation. This ranking may reflect the growing recognition of the value of teamwork in research, where diverse perspectives enhance problem-solving and drive impactful results. The group research that the faculty members conduct provides opportunities for them to interact and collaborate with fellow researchers. In relation to this, van Rijnsoever and Hessels (2021) underscored that factors strengthening a reputation for scientific excellence are the main drivers behind collaboration choices. This suggests that engaging in collaborative research initiatives allows



faculty to pool expertise, share resources, and address complex problems more effectively, thereby contributing significantly to the advancement of knowledge.

Table 4  
*Level of Faculty Performance in Terms of Research Utilization*

Indicators	WM	VI	Rank
1. promoting evidence-based practice by translating research findings into the work field	2.81	H	4.5
2. making positive contribution to the development of knowledge and research through cooperation and collaboration	2.93	H	1
3. providing substantial contributions or breakthroughs to the research field	2.75	H	10
4. creating research works of outstanding utility and relevance	2.76	H	8.5
5. recognizing broader implications and applications of research	2.76	H	8.5
6. sharing research outputs such as programs, plans, or frameworks for community or school use	2.80	H	6
7. demonstrating expertise in managing and leading research projects	2.78	H	7
8. showing commitment to professional development through acting as research partner/mentor	2.92	H	2
9. facilitating innovative change through application and implementation of research outputs and recommendations	2.81	H	4.5
10. contributing to the evaluation and assessment of current practices based on the results of research studies	2.83	H	3
Composite Mean	2.81	H	

Legend H –High

Following closely in the second rank, showing commitment to professional development through acting as research partners or mentors, got the weighted mean of 2.92. This suggests that faculty are not only involved in their own research but also play a vital role in supporting the growth and development of their peers, enhancing the overall research capacity within the institution. According to Rubbi Nunan et al. (2023), organizations should recognise and invest in formal mentoring programmes, which could assist in managing complexities that disrupt overall organizational functioning. Mentoring might further harness strengths and potential to fully engage and optimize their work environment as it nurtures a learning culture. This suggests that by serving as mentors, faculty members do not only contribute to the professional development of their colleagues and students but also reinforce their own understanding and mastery of research methodologies. Effective mentoring can lead to the expansion of professional networks, career development opportunities, increased confidence and competence at problem-solving, and higher levels of resilience, well-being, and self-confidence.

Ranking third, contributing to the evaluation and assessment of current practices based on the results of research studies received a weighted mean of 2.83, verbally interpreted as High. This indicates that faculty are effectively utilizing research findings to inform and improve existing practices.

Finally, ranking tenth, providing substantial contributions or breakthroughs to the research field received a lower score of 2.75, verbally interpreted as High. Hicks (2020) emphasizes that producing impactful research that addresses real-world problems is a key indicator of faculty performance. This suggests that faculty members who generate highly cited and practically applicable research enhance their institution's reputation and contribute solutions to societal challenges. The lower ranking indicates that while faculty are capable of contributing valuable insights, there may be opportunities to increase the impact and recognition of their research contributions. Factors such as limited funding, lack of collaboration, or insufficient resources may hinder their ability to produce groundbreaking research, ultimately affecting their perceived performance in this area.

### 3. Problems Encountered in Research

#### 3.1. Teacher-Related Problems



Among the teacher-related problems in research, time management skills ranked first with a weighted mean of 3.22, verbally interpreted as Agree. This indicates that managing time effectively is a significant challenge for faculty, suggesting that they may struggle to balance research activities with other professional and personal responsibilities. They need to allot time not only for research but also for each of the three functions expected of them, particularly instruction and extension service. This conforms with the findings of Santiago (2023) who stated that although the faculty and personnel are willing to conduct action research, sometimes the workload and other paper works do not permit it. Working hours devoted in teaching and other domestic chores require time to accomplish. Time management and tolerable demand of workload is actualized to perform another task and researching.

Table 5  
*Teacher-Related Problems*

	Indicators	WM	VI	Rank
1.	interest in conducting research	3.03	A	4
2.	background knowledge on the research process	2.97	A	7
3.	computer or information technology skills essential for research	2.93	A	9
4.	oral and written communication skills	2.83	A	10
5.	basic qualities of a researcher such as resourcefulness, objectivity, intellectual curiosity and honesty	2.95	A	8
6.	home and family demands	3.10	A	2
7.	appreciation for the value or significance of research	2.98	A	6
8.	time management skills	3.22	A	1
9.	sense of responsibility or commitment to work	3.05	A	3
10.	experience in conducting research	3.00	A	5
Composite Mean		3.01	A	

Legend: A – Agree

Following closely with a weighted mean of 3.10 and a verbal interpretation of Agree, home and family demands ranked second. This reflects the impact of personal obligations on faculty's ability to engage in research, emphasizing the need for support systems that can help overcome these challenges. Li et al. (2024) highlight that home and family responsibilities can significantly limit teachers' time and energy for engaging in other functions, creating barriers to participation in scholarly activities. The second ranking of this item as a teacher-related problem in research indicates that while faculty are committed to their scholarly work, the competing demands of family life can detract from their ability to focus on research. This underscores the necessity for institutions to implement supportive measures, such as flexible scheduling or childcare resources, to enable faculty to balance their professional and personal responsibilities effectively.

In the third rank, the sense of responsibility or commitment to work received a score of 3.05, verbally interpreted as Agree. This suggests that while faculty feel a strong commitment to their roles, external pressures may hinder their research efforts. This is closely connected with the idea of Antes and Maggi (2021), who indicate that researchers must conduct research responsibly for it to have an impact and to safeguard trust in science. Essential responsibilities of researchers include using rigorous, reproducible research methods, reporting findings in a trustworthy manner, and giving appropriate authorship credit to those who contributed.

Lastly, oral and written communication skills ranked tenth with a weighted mean of 2.83, verbally interpreted as Agree. This low ranking may be attributed to the perception that communication skills are less critical than technical expertise. Faculty may believe their existing research abilities are sufficient and may feel less motivated to improve their communication skills. While faculty possess some level of communication proficiency, there are opportunities for improvement, particularly in articulating research findings effectively. Effective communication skills are imperative for teachers involved in research. As Cargill and O'Connor (2021) pointed out, clear and effective communication is essential for researchers to ensure that their findings are accessible and impactful.



### 3.2. School-Related Problems

The analysis of school-related concerns encountered by faculty at the private educational institution in their research activities reveals significant challenges that impact their ability to engage in research effectively. Financial support obtained the highest score, with a weighted mean of 3.31, categorized as Strongly Agree and ranking first. This indicates that faculty perceive a pressing need for financial assistance to facilitate their research endeavors, suggesting that inadequate funding may hinder research efforts. Similarly, Tabatadze (2022) explores how existing funding systems in Georgia influence universities' research productivity, revealing that current financing models do not significantly enhance scholarly and research capacity. The prioritization of financial support as the foremost institutional problem reflects faculty's acknowledgment that without adequate funding, their ability to conduct meaningful research, pursue innovative projects, and contribute to the academic community is severely limited.

Table 6  
*School- Related Problems*

Indicators	WM	VI	Rank
1. number of subjects or classes handled	3.29	SA	2
2. financial support	3.31	SA	1
3. teaching-related tasks and other academic concerns	3.25	A	3
4. availability of print and technological resources for research	3.07	A	5.5
5. access to research adviser or consultant	2.95	A	10
6. provision for facilities for research	3.07	A	5.5
7. trainings or seminars on research	2.98	A	8.5
8. encouragement from the institution	3.00	A	7
9. networking or collaboration	2.98	A	8.5
10. rewards or incentives	3.15	A	4
Composite Mean	3.11	A	

Legend: SA – Strongly Agree  
A – Agree

Ranking second, the number of subjects or classes handled obtained a weighted mean of 3.29 verbally interpreted as Strongly Agree. This suggests that faculty are overwhelmed by their teaching loads and this can detract from the time and energy available for research activities. Teaching-related tasks and other academic concerns ranked third. It obtained a score of 3.25, verbally interpreted as Agree. It indicates that the demands of teaching and administrative responsibilities are significant barriers to active engagement in research.

Rewards or incentives received a weighted mean of 3.15 verbally interpreted as Agree. This suggests that while some recognition exists, enhancing these systems could further motivate faculty participation in research activities.

Ranking tenth, access to research advisers or consultants received a lower weighted mean of 2.95, verbally interpreted as Agree. Highlighting its relevance, Miraj, et al. (2022) underscore that advisor support influences attitudes towards research positively and significantly. Although aware of its significance, the result indicates that faculty may struggle to find adequate guidance and support in their research pursuits, which could limit the quality and effectiveness of their work.

#### 4. Research Capability Enhancement Program

The Research Capability Enhancement Program is strategically designed to enhance faculty research skills by addressing local and global development challenges, grounded in findings from an analysis of research performance metrics. Recognizing the critical role of research in societal advancement, the program aims to foster a strong research culture within the institution. Key areas of focus include local and global development concerns, where workshops and seminars will raise awareness and facilitate discussions. Mentoring and coaching initiatives will provide targeted support to emerging researchers, promoting professional development and skill enhancement. Additionally, research collaboration and partnerships will be emphasized through networking events that create opportunities for joint proposals and strengthen relationships with stakeholders. These targeted areas are informed by the results of the analysis on research performance metrics to ensure that efforts are focused and effective.



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To cultivate statistical and analytical skills, training sessions will introduce participants to data analysis tools, while workshops on library and web resources will enhance information retrieval and critical evaluation techniques. Establishing research consortia will further promote collaboration and increase funding opportunities. Effective research communication will also be a priority, with workshops aimed at improving clarity in presentations and academic writing skills. Support for publishing research papers will be integral in increasing submission rates and encouraging co-authorship among faculty.

The program encourages substantial contributions to research by stimulating creativity and prioritizing impactful topics. Focus groups will be utilized to gather community insights, ensuring that research aligns with local needs and fosters community involvement in the research process. Furthermore, training and seminars will promote an understanding of the practical implications of research, encouraging dialogue between researchers and practitioners. This structured program is designed to systematically enhance the research capabilities of faculty, aligning institutional objectives with community needs and global challenges, while fostering a culture of collaboration and innovation in research.

### Conclusions

The study concludes that the private educational institution showcases a commendable level of performance in the research area, particularly in ethical practices and technological competencies. However, there is significant room for improvement in collaborative funding and statistical knowledge. Faculty respondents demonstrate varying levels of performance across the research phases, displaying high effectiveness in production and dissemination but lower effectiveness in the utilization of research findings. This indicates a need for more effective strategies to integrate research outcomes into practice. Key problems hindering optimal research performance include teacher-related issues such as time management and financial constraints, along with school-related challenges that limit support for research initiatives. The identified performance gaps justify the implementation of a Research Capability Enhancement Program (RCEP) that focuses on training in statistical methods, fostering collaboration for funding, and providing resources to address time and financial barriers. This program is essential for strengthening the research culture within the institution.

### Recommendations

Based on the findings and conclusions, the following recommendations are offered:

1. The institution may enhance collaboration by strengthening partnerships with government, private agencies, and other schools to facilitate resource access and collaborative research projects, thereby enriching research output and community engagement efforts. This could involve joint research initiatives, collaborative workshops, internship programs, and mentorship connections with academe and industry leaders to promote practical applications of research findings.
2. The institution may enhance collaboration by strengthening partnerships with government, private agencies, and other schools to facilitate resource access and collaborative research projects, thereby enriching the research output and community engagement efforts.
3. Faculty members may enhance their competencies by participating in training programs, such as workshops, mentoring sessions, certification courses, and research clusters, that focus on the use of library and web resources, statistical analysis, data interpretation, and effective research dissemination strategies. This will support them in publishing their work, presenting at conferences, and translating research findings into practical applications for meaningful impact in their respective fields.
4. The school administration may provide resources to help faculty manage family responsibilities and improve their communication skills to enhance research engagement such as offering counseling services and conducting time management workshops.
5. The institution may improve access to research advisers/consultants and provide better facilities and training opportunities to enhance the research capabilities of faculty through allocating consultation hours, providing access to statistical software, and upgrading library resources.

### References:



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**PRC-CPD Accredited Provider:  
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Antes, A. L., & Maggi, L. B. Jr. (2021). How to conduct responsible research: A guide for graduate students. *Currents in Protocols*, 1(3), e87. <https://doi.org/10.1002/cpz1.87>

Bagita-Vangana, M., Unger, H. W., & Thriemer, K. (2025). Current global practice and implications for future research on disseminating health research results to study participants: A systematic review. *PLOS Medicine*, 22(8), e1004569. <https://doi.org/10.1371/journal.pmed.1004569>

Bastida, E. J. L., & Saysi, J. G. (2023). Factors Contributing to Research Writing Apprehension Among Senior High School Students in a Private Educational Institution in the Philippines. *American Journal of Educational Research*, 11(6), 421–429. <https://doi.org/10.12691/education-11-6-11>

Cargill, M., & O'Connor, P. (2021). *Writing scientific research articles: Strategy and steps* (3rd ed.). Wiley-Blackwell.

Clark, J. (2022). *Characteristics of a researcher*. The Savvy Scientist. <https://www.thesavvyscientist.com/characteristics-of-a-researcher/>

Field, A. (2021). *Discovering statistics using IBM SPSS Statistics* (5th ed.). SAGE Publications.

Frantz, J. M., George, A., Hunter-Hüsselmann, M., Kapenda, H., & Yassin, Z. (2022). Institutional policies, practices and initiatives impacting research productivity: The strengthening of collaboration, leadership and professionalism in research management in the Southern African Development Community (SADC) and European Union (EU) higher education institutions (StoRM). *Journal of Research Administration*, 53(2), 40–59. <https://eric.ed.gov/?id=EJ1362081>

Gopez, C. P., dela Cruz, A. L., Magahis, H. L. A., Resurreccion, A. D., & Demeterio, F. P. A. III. (2024). The research productivity profiles of the Philippines' most research productive higher education institutions: Analyses by regional clusters and ownership types. *SciEnggJ*, 17(1). <https://doi.org/10.54645/2024171ZLG-77>

Hicks, D. (2020). The four pillars of research impact: A framework for understanding the value of research. *Research Evaluation*, 29(1), 54–64.

Islam, M. (2023). The importance of research in the advancement of knowledge and society. *International Research Journal of Basic and Clinical Studies*, 8(4), 1-3. <https://doi.org/10.1430/irjbc.2023.49>

Lailiyah, M., & Wediyantoro, P. L. (2021). Critical thinking in second language learning: Students' attitudes and beliefs. *International Journal of Language Education*, 5(3), 180–192. <https://doi.org/10.26858/ijole.v5i3.18350>

Li, T., Zhiwei, H., Ling, H., & Mengyuan, M. (2024). The effects of demand-resource relationship on work-family conflict under Chinese culture: a cross-sectional study. *Frontiers in Psychology*, 15. <https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2024.1334538> DOI: 10.3389/fpsyg.2024.1334538

Manila Standard. (2024, June 27). PH among lowest performing ASEAN countries in 'research productivity' – EDCOM II. *Manila Standard*. <https://manilastandard.net/?p=314464654>

Marshall, J. D., Aguinis, H., & Beltran, J. R. (2024). Theories of performance: A review and integration. *Academy of Management Annals*, 18(2), 600–625. <https://doi.org/10.5465/annals.2022.0049>

Mertler, C. A. (2021). *Introduction to educational research* (2nd ed.). SAGE Publications.

Miraj, M., Chuntian, L., Rehman, R. ur, Osei-Bonsu, R., Mohd Said, R., Ali, R., & Shereen, S. (2022). Could the



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**P - ISSN 2984-7567; E - ISSN 2945-3577**



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**PRC-CPD Accredited Provider:  
PTR-2025-749**

academic advisor, intrinsic motivation, and time management influence students' attitudes towards research work on campus? *WORK: A Journal of Prevention, Assessment & Rehabilitation*, 73(4), 1365–1378. <https://doi.org/10.3233/WOR-205237>

- Muborak, Q. (2024). The impact of key performance indicators on faculty research in higher education. *International Journal for Multidisciplinary Research (IJFMR)*, 6(5), September–October 2024. <https://doi.org/10.36948/ijfmr.2024.v06i05.28222>
- Resnik, D. B. (2024). *The ethics of research with human subjects: Protecting people, advancing science, promoting trust* (2nd ed.). Springer. <https://doi.org/10.1007/978-3-031-82757-0>
- Rubbi Nunan, J. L., Ebrahim, A. B., & Stander, M. W. (2023). Mentoring in the workplace: Exploring the experiences of mentor–mentee relations. *SA Journal of Industrial Psychology/SA Tydskrif vir Bedryfsielkunde*, 49(0), a2067. <https://doi.org/10.4102/sajip.v49i0.2067>
- Santiago, S. R. V. (2023). Researchers' perspectives in conducting action research. *International Journal of Open-Access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 2(1), 405–413. [https://etcor.org/storage/iJOINED/Vol.%20II\(1\),%20405-413.pdf](https://etcor.org/storage/iJOINED/Vol.%20II(1),%20405-413.pdf)
- Sayao, L. M., Aves, B. J. M. B., Cerbo, A. L. C., Morales, M. E. C., Navarez, J. S., & Villasor, H. D. B. (2023). Barriers of faculty on research productivity. *Psychology Educator*, 15(4), 406–421. <https://doi.org/10.5281/zenodo.10230186>
- Tabatabaei, S. A. D. (2022). The study of research barriers from the viewpoint of students and faculty members of the faculty of medicine of Azad University of Najaf Abad. medRxiv. <https://doi.org/10.1101/2022.11.12.22282114>
- Tamban, V. E., & Maningas, O. B. (2020). Research capability of public school teachers: A basis for research capability enhancement program. *PEOPLE: International Journal of Social Sciences*, 6(01), 222–235. <https://doi.org/10.20319/pijss.2020.61.222235>
- van Rijnsoever, F. J., & Hessels, L. K. (2021). How academic researchers select collaborative research projects: A choice experiment. *The Journal of Technology Transfer*, 46(6), 1917–1948. <https://doi.org/10.1007/s10961-020-09833-2>
- Vasquez, R. S. ., Zales, J. P. ., & Atmosfera, R. P. . (2022). Needs analysis on the research capabilities of the Diocesan Secondary School teachers of Abra: basis for a capability enhancement program. *South Florida Journal of Development*, 3(4), 4384–4396. <https://doi.org/10.46932/sfjdv3n4-018>
- Vlegels, J., & Huisman, J. (2021). The emergence of the higher education research field (1976–2018): preferential attachment, smallworldness and fragmentation in its collaboration networks. *Higher Education*, 81(5), 1079–1095. <https://www.jstor.org/stable/48736527>
- Zhaksylyk, A., Zimba, O., Yessirkepov, M., & Kocyigit, B. F. (2023). Research integrity: Where we are and where we are heading. *Journal of Korean Medical Science*, 38(47), Article e405. <https://doi.org/10.3346/jkms.2023.38.e405>
- Zhang, G., Wang, L., Shang, F., & Wang, X. (2024). What are the digital skills sought by scientific employers in potential candidates? *Journal of Higher Education Policy and Management*. <https://doi.org/10.1080/1360080X.2024.2374392>
- Zhao, Y., Pinto Llorente, A. M., & Sánchez Gómez, M. C. (2021). Digital competence in higher education research: A systematic literature review. *Computers & Education*, 168, 104212. <https://doi.org/10.1016/j.compedu.2021.104212>



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(Print & Digital): 6312**

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PTR-2025-749**

Zhidebekkyzy, A., Minazheva, G., Temerbulatova, Z., & Kalmakova, D. (2023). Evaluation of research performance at universities: A comprehensive methodological approach. *International Journal of Emerging Technologies in Learning (IJET)*, 18(06), 110–129. <https://doi.org/10.3991/ijet.v18i06.36733>



## Elementary teachers' knowledge, motivation, and attitude toward research: Implications for professional development

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### Abstract

**Aim:** This study examined the relationship among elementary teachers' knowledge, motivation, and attitude toward research in the Mambusao West District, Division of Capiz. Specifically, it determined the levels of teachers' knowledge, motivation, and attitude toward research when grouped according to sex, highest educational attainment, and length of service, and analyzed the relationships among these variables.

**Methodology:** A descriptive-correlational research design was employed involving 108 elementary teachers from the Mambusao West District during the summer of School Year 2025. Data were collected using a researcher-made questionnaire administered both personally and through Google Forms. Descriptive and inferential statistical tools, including frequency, percentage, mean, t-test, analysis of variance (ANOVA), and Pearson's product-moment correlation, were utilized for data analysis.

**Results:** The findings revealed that elementary teachers demonstrated a very low level of research knowledge, an average level of motivation, and an average attitude toward research. A significant positive relationship was found between motivation and attitude toward research ( $r = 0.209$ ,  $p = 0.030$ ), indicating that higher motivation is associated with a more positive attitude. However, no significant relationships were observed between research knowledge and either motivation or attitude.

**Conclusion:** The study concludes that while elementary teachers exhibit moderate motivation and generally positive attitudes toward research, their level of research knowledge remains limited. Strengthening teachers' research competence through sustained training, mentoring, and institutional support is essential to enhance motivation and cultivate a stronger research-oriented culture in elementary schools.

**Keywords:** *research knowledge, teacher motivation, research attitude, elementary teachers, descriptive-correlational study*

### INTRODUCTION

In recent years, education has increasingly emphasized the importance of evidence-based practice and data-driven decision-making, positioning research as a core component of teacher professionalism (Darling-Hammond, Hyler, & Gardner, 2017). Research enables teachers to systematically improve instruction, enhance student learning outcomes, and adapt to evolving educational demands. However, despite these benefits, many elementary teachers continue to experience challenges in conducting and applying research in their practice, often due to low self-efficacy, limited motivation, and varying attitudes toward research (Zeichner & Liston, 2021).

Self-efficacy, defined by Bandura (1997) as the belief in one's ability to accomplish specific tasks, plays a crucial role in shaping teachers' engagement in research. Teachers with high research self-efficacy tend to participate more actively in inquiry-based initiatives and apply findings to classroom improvement, while those with low self-efficacy may avoid research due to fear of failure or perceived incompetence. Likewise, motivation serves as a key determinant of teachers' willingness to undertake research endeavors. According to Deci and Ryan's (2020) Self-Determination Theory, intrinsic motivation—driven by curiosity and professional growth—encourages sustained research involvement, whereas extrinsic factors such as workload and lack of support can diminish engagement. These theories directly relate to the study variables: knowledge influences self-efficacy, motivation drives research



engagement, and attitudes shape teachers' willingness to apply findings. Together, these constructs form the conceptual basis for examining research participation among elementary teachers.

Teachers' attitudes toward research also shape the culture of innovation within schools. Positive attitudes foster reflective practice, collaboration, and continuous improvement (Creswell & Creswell, 2023). Conversely, negative attitudes often stem from limited training, resource scarcity, and minimal institutional encouragement, leading to disengagement from research-related tasks (Nerona & Narido, 2025). In the Philippine educational context, research participation remains low among public school teachers, even though the Department of Education (DepEd) has established the Basic Education Research Agenda to guide teacher-led research (DepEd Order No. 39, s. 2016). A study by Dela Peña and Sanie (2022) found that only a small proportion of teachers' completed action research projects aligned with this agenda, indicating limited engagement in research activities at the basic education level.

A recent Philippine study (Nerona & Narido, 2025) examined teacher research engagement; however, its scope was limited, as it focused primarily on secondary education and did not analyze internal factors such as motivation and attitudes. No empirical study has examined how knowledge, motivation, and attitude interact among elementary teachers in the Mambusao West District, creating a gap this research seeks to address. This study contributes new insights by analyzing these variables within a localized context, offering evidence that can inform professional development programs and strengthen DepEd's Basic Education Research Fund (BERF) initiatives. Findings aim to support policy implementation and enhance teacher capacity-building efforts at the district level.

Recognizing these conditions, this study examines the relationship among elementary teachers' knowledge, motivation, and attitude toward research in the Mambusao West District, Division of Capiz. By investigating how these dimensions interact, the study aims to identify key factors influencing teachers' engagement in research and provide actionable recommendations for improving research culture in schools.

### **Review of Related Literature and Studies**

Globally, teachers' engagement in research is increasingly recognized as a cornerstone of educational innovation and effectiveness (Darling-Hammond, Hyler, & Gardner, 2017). Through research, teachers become active contributors to knowledge creation, enabling them to systematically analyze classroom challenges and implement evidence-based interventions that enhance teaching and learning (Carvajal, 2025). Research indicates that teacher participation in collaborative inquiry within professional learning communities promotes reflective practice and shared improvements in teaching practices. These community structures facilitate dialogue, shared reflection, and professional growth that can enhance instructional quality (Dautova, Ignateva, & Salygina, 2020). Despite these global trends, participation among basic education teachers in the Philippines remains limited, as prior research has predominantly examined teacher-led research in higher education settings, where faculty often have formal research training and institutional support, unlike basic education contexts where teachers face heavier teaching loads, limited resources, and minimal exposure to research methodologies. This contrast underscores a significant gap in understanding the experiences and challenges of elementary school teachers in conducting research.

Research knowledge serves as the foundation of teachers' ability to conduct systematic inquiry and professional reflection. Abella, Cadorna, Taban, and Ramirez (2024) reported that teachers with higher academic qualifications and formal exposure to research training demonstrate greater confidence, methodological competence, and productivity in conducting research. Consistent with this, Borko, Koellner, and Jacobs (2019) found that structured professional development and research-focused training significantly enhance teachers' capacity to implement inquiry-oriented instructional practices. Conversely, Nerona and Narido (2025) found that many Filipino teachers possess only a superficial understanding of research processes and methodologies, constraining their ability to produce meaningful classroom-based studies. This persistent gap between theoretical understanding and practical application highlights the need for continuous professional development in educational research, particularly at the elementary level.

Motivation also plays a critical role in determining teachers' willingness to engage in research. Tipon, Villanueva, Baluyot, Lloyd, Juan, Cruz, & Tus, (2021) observed that while teachers generally recognize the professional value of research, their motivation often remains moderate due to factors such as time constraints, lack of incentives, and overlapping administrative tasks. International studies echo these findings, noting that teacher educators face barriers such as heavy workloads, time pressures, lack of support, and limited funding, which restrict their engagement in research activities. (Oancea, Swennen, & Zogla, 2021). Insorio (2024) emphasized that both intrinsic and extrinsic motivators significantly influence teachers' participation in research, with institutional support emerging as a key factor in sustaining long-term engagement. When schools provide recognition, mentoring, and an enabling environment, teachers are more likely to view research as an integral aspect of their professional identity.



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Closely related to motivation are teachers' attitudes toward research, which shape their engagement and productivity. Laguador and Soverano (2022) found that while teachers generally hold favorable attitudes toward research, many experience anxiety and uncertainty related to technical aspects such as data analysis and publication. International evidence suggests that teachers with more positive attitudes toward research tend to exhibit higher research engagement, although challenges such as lack of time, resources, and institutional support often hinder their participation in research activities (Crespo & Sutherland, 2021). Alcazaren and Robiños (2022) noted that demographic variables—including gender, educational attainment, and years of service—exert minimal influence on attitude, suggesting that institutional culture, leadership support, and collegial collaboration are more decisive factors. Cultivating a supportive research environment within schools is therefore essential for fostering positive attitudes and sustained involvement in research activities.

In the Philippine context, DepEd has made significant efforts to institutionalize teacher-led research through programs such as the Basic Education Research Fund (BERF). However, participation among elementary school teachers remains relatively low, particularly in resource-constrained areas where access to training and funding is limited. Studies highlight the importance of mentoring, administrative support, and a research-oriented school culture in improving teachers' competence, motivation, and attitude toward research (Nerona & Narido, 2025). Strengthening these aspects is essential to realize DepEd's vision of a research-based culture that promotes continuous improvement in teaching and learning.

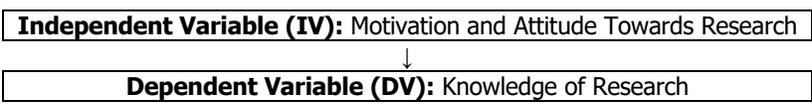
Overall, literature affirms that teachers' motivation, attitude, and knowledge toward research are interconnected factors that shape their engagement in research activities. Globally, studies emphasize the importance of fostering positive attitudes and strong motivation to enhance teachers' research competence, while Philippine research highlights ongoing challenges in developing these capacities among basic education teachers. Despite growing recognition of these factors, limited attention has been given to how motivation and attitude specifically influence teachers' research knowledge. This study addresses that gap by examining the relationships among motivation, attitude, and research knowledge of elementary teachers in the Mambusao West District, contributing valuable insights to the enhancement of research culture and capacity-building efforts in education.

**Theoretical Framework**

This study was anchored on Bandura's (1997) Self-Efficacy Theory, which posited that individuals' beliefs in their capabilities significantly influenced their behavior, motivation, and performance. Specifically, the component of mastery experiences within this theory supported the measurement of teachers' confidence in conducting research, as higher self-efficacy was associated with greater persistence and productivity (Zeichner & Liston, 2021). Complementing this, Deci and Ryan's (2020) Self-Determination Theory emphasized the role of intrinsic motivation and extrinsic motivation in driving teachers' engagement in research (Tipon, Villanueva, Baluyot, Lloyd, Juan, Cruz, & Tus, 2021). These components directly informed the operationalization of the motivation variable in this study. Furthermore, Ajzen's (1991) Theory of Planned Behavior highlighted attitude toward behavior and perceived behavioral control as determinants of behavioral intention, which justified the inclusion of teachers' attitudes as a key variable influencing research participation. Together, these theories provided a coherent framework for examining how knowledge, motivation, and attitude interact in shaping teachers' engagement in research activities.

**Conceptual Framework**

The conceptual framework illustrated the hypothesized relationship between teachers' motivation and attitude toward research and their level of research knowledge. Motivation and attitude toward research served as the independent variables (IVs), while research knowledge functioned as the dependent variable (DV). The framework assumed that higher levels of motivation and more positive attitudes toward research contributed to greater research knowledge among teachers. This relationship was examined using correlational analysis, which focused on identifying the strength and direction of associations among the variables without inferring causal relationships. The framework guided data analysis by providing the basis for testing these associations and interpreting their significance.





### Statement of the Problem

The increasing emphasis on research-based practice in education has underscored the vital role of teachers as both practitioners and producers of knowledge. Although numerous studies have examined the contribution of teacher research to instructional improvement and professional development, limited empirical attention has been given to the factors influencing teachers' engagement in research at the basic education level. In the Philippine context, existing literature has largely focused on research productivity in higher education institutions, resulting in a limited understanding of how elementary teachers' research knowledge, motivation, and attitude shape their participation in research activities. This gap constrains the development of targeted professional development programs and research capacity-building initiatives for elementary teachers. Addressing this concern, the present study examined the interrelationship among teachers' research knowledge, motivation, and attitude in the Mambusao West District, Division of Capiz, to provide empirical evidence that may inform school-based research support and policy interventions.

### Research Objectives

#### General Objective:

To examine the relationship among teachers' research knowledge, motivation, and attitude toward research in the Mambusao West District, Division of Capiz.

#### Specific Objectives:

- To determine the level of elementary teachers' research knowledge as a whole and when grouped according to sex, highest educational attainment, and length of service.
- To assess the level of teachers' motivation toward research as a whole and when grouped according to profile variables.
- To identify the level of teachers' attitude toward research as a whole and when grouped according to profile variables.
- To determine whether there are significant differences in teachers' research knowledge, motivation, and attitude when grouped according to profile variables.
- To establish whether significant relationships exist among teachers' research knowledge, motivation, and attitude..

### Research Questions

1. What is the level of elementary teachers' research knowledge, both in general and when grouped according to sex, highest educational attainment, and length of service?
2. What is the level of teachers' motivation toward research, both in general and when grouped according to their profile variables?
3. What is the level of teachers' attitude toward research, both in general and when grouped according to their profile variables?
4. Are there significant differences in teachers' research knowledge, motivation, and attitude toward research when grouped according to their profile variables?
5. Is there a significant relationship among teachers' research knowledge, motivation, and attitude toward research?

### Hypotheses

The following hypotheses were tested at the 0.05 level of significance:

- **H<sub>01</sub>**: There is no significant difference in the level of teachers' research knowledge, motivation, and attitude toward research when grouped according to sex, highest educational attainment, and length of service.
- **H<sub>a1</sub>**: There is a significant difference in the level of teachers' research knowledge, motivation, and attitude toward research when grouped according to sex, highest educational attainment, and length of service.
- **H<sub>02</sub>**: There is no significant relationship among teachers' research knowledge, motivation, and attitude toward research.
- **H<sub>a2</sub>**: There is a significant relationship among teachers' research knowledge, motivation, and attitude toward research.



## METHODS

### Research Design

This study employed a descriptive-correlational research design to determine the relationship among teachers' knowledge, motivation, and attitude toward research. This design was considered most appropriate because it allowed the researcher to measure the degree of association among these variables without manipulating any conditions. The non-experimental approach enabled the collection of quantitative data that reflected teachers' perceptions and self-assessments regarding research engagement. A researcher-made survey questionnaire was administered to gather responses from elementary school teachers, and statistical analyses were applied to identify patterns and relationships among the variables.

### Population and Sampling

The study was conducted among 108 elementary school teachers from the Mambusao West District, Division of Capiz, during the summer of School Year 2025. The respondents were selected through total population sampling, as all qualified teachers in the district were invited to participate. Inclusion criteria required that participants be full-time elementary teachers with at least one year of teaching experience. This sampling approach ensured comprehensive representation of teachers with diverse demographic and professional backgrounds. While the findings primarily reflect the context of the Mambusao West District, the inclusion of all eligible teachers enhances the internal validity of the study and provides insights that may be cautiously generalized to similar public elementary school settings within the region.

### Instruments

The primary data-gathering tool was a researcher-made questionnaire designed to measure teachers' knowledge, motivation, and attitude toward research. The instrument consisted of four parts: (1) demographic profile, including sex, educational attainment, academic rank, and length of service; (2) research knowledge scale, assessing teachers' familiarity with research concepts and processes; (3) motivation scale, evaluating intrinsic and extrinsic factors influencing engagement in research; and (4) attitude scale, gauging teachers' beliefs, perceptions, and dispositions toward research.

Each scale utilized a five-point Likert format ranging from 1 – Strongly Disagree to 5 – Strongly Agree. The questionnaire underwent content validation in 2025 by a panel of three experts in educational research, who reviewed the items for clarity, relevance, and alignment with the study variables. Reliability was confirmed through pilot testing, and Cronbach's alpha coefficients exceeded the acceptable threshold of 0.80 for all scales, indicating strong internal consistency.

### Data Collection

Prior to data collection, permission to conduct the study was obtained from the Office of the Schools Division Superintendent of Capiz and the district supervisor of Mambusao West. After securing approval, the researcher coordinated with school principals to facilitate survey administration. Data were collected over a two-month period (March to April 2025). The purpose of the study was clearly explained to all participants, and informed consent was obtained before distributing the questionnaires. Respondents were given sufficient time to complete the survey, either through printed copies or digital submission via Google Forms. To ensure consistency across formats, identical instructions and item arrangements were provided for both modes of administration. Completed questionnaires were retrieved personally by the researcher, resulting in a 100% response rate. All responses were checked for completeness and accuracy before data processing and analysis.

### Treatment of Data

Data collected were analyzed using both descriptive and inferential statistics. Descriptive statistics, including frequency counts, percentages, means, and standard deviations, were used to summarize respondents' demographic profiles and their levels of research knowledge, motivation, and attitude. To determine significant differences in these variables when grouped according to profile characteristics, independent samples t-tests and one-way analysis of variance (ANOVA) were applied. The Pearson Product-Moment Correlation Coefficient ( $r$ ) was employed to assess the strength and direction of associations among teachers' knowledge, motivation, and attitude toward research. All analyses were conducted using standard statistical software, with a significance level set at  $p < .05$ . Assumptions for parametric tests, such as normality and homogeneity of variances, were checked prior to analysis. Results were presented in tables and interpreted following established statistical guidelines.



### Ethical Considerations

This study adhered to established ethical standards for educational research and complied with the guidelines of the Department of Education and institutional protocols. Prior to implementation, approval was obtained from the appropriate school authorities. Participants were fully informed about the objectives, procedures, and voluntary nature of their participation, and written consent was secured. Confidentiality and anonymity were maintained by ensuring that no identifying information appeared in the data or report. Participation was voluntary, and respondents could withdraw at any stage without penalty. All data were used exclusively for research purposes and stored securely to protect participants' privacy.

### RESULTS and DISCUSSION

This section presents the results of the study and discusses the findings in relation to the respondents' levels of knowledge, motivation, and attitude toward research. It provides an overview of teachers' research engagement based on their demographic profiles and examines the relationships among the three variables under investigation.

#### Profile of the Respondents

##### Age

The majority of the respondents were aged 41 years old and above (62 or 57.41%). This was followed by those aged 31–40 years (29 or 26.85%). Respondents aged 30 years old and below comprised the smallest group (17 or 15.74%).

##### Highest Educational Attainment

Most respondents were college graduates (45 or 41.67%). This was followed by those who had earned units in a master's degree program (39 or 36.11%). Sixteen respondents (14.81%) were master's degree holders. A small number had taken units toward a doctorate degree (2 or 1.85%), while six respondents (5.56%) had completed a doctorate degree.

##### Length of Service.

The largest proportion of respondents had been in service for 21 years or more (49 or 45.37%). This was followed by those with 11–20 years of teaching experience (36 or 33.33%). Respondents with 10 years or less of service accounted for 23 or 21.30%.

##### Sex.

The majority of respondents were female (82 or 75.93%), while male respondents accounted for 26 or 24.07%.

Table 1. Profile of the respondents.

<b>Variables</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Age</b>		
<i>30yrs old or below</i>	17	15.74%
<i>31yrs - 40yrs</i>	29	26.85%
<i>41yrs old or above</i>	62	57.41%
<b>Total</b>	<b>108</b>	<b>100.00%</b>
<b>Educational Attainment</b>		
<i>College Graduate</i>	45	41.67%
<i>With Units in Masters Degree</i>	39	36.11%
<i>Masters Degree Holder</i>	16	14.81%
<i>With units in Doctorate Degree</i>	2	1.85%
<i>Doctorate Degree Holder</i>	6	5.56%
<b>Total</b>	<b>108</b>	<b>100.00%</b>
<b>Length of Service</b>		
<i>10 yrs or less</i>	23	21.30%
<i>11yrs - 20yrs</i>	36	33.33%



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<i>21yrs or more</i>	<i>49</i>	<i>45.37%</i>
<b>Total</b>	<b>108</b>	<b>100.00%</b>
<b>Sex</b>		
<i>Male</i>	<i>26</i>	<i>24.07%</i>
<i>Female</i>	<i>82</i>	<i>75.93%</i>
<b>Total</b>	<b>108</b>	<b>100.00%</b>

**Level of Elementary Teachers’ Knowledge Toward Research as a Whole**

The results indicated that the majority of elementary teachers demonstrated a very low level of knowledge toward research, with an overall mean score of 24.84 and a standard deviation (SD) of 4.10. This finding suggests a substantial gap in teachers’ understanding of fundamental research concepts and processes, which may limit their ability to engage in evidence-based practice and classroom-based inquiry. Limited exposure to formal research training and insufficient opportunities for sustained professional development may have contributed to this low level of knowledge. This result is consistent with the study of Abella, Cadorna, Taban, and Ramirez (2024), which reported that teachers with greater exposure to research training and higher educational attainment exhibited stronger research competence.

Table 2. Level of elementary teachers’ knowledge towards research as a whole

<b>Level</b>	<b>Frequency</b>	<b>Percentage</b>
<i>Very Low</i>	<i>63</i>	<i>58.33</i>
<i>Low</i>	<i>40</i>	<i>37.04</i>
<i>Average</i>	<i>5</i>	<i>4.63</i>
<b>Mean = 24.84 (Very Low) SD = 4.10</b>		

**Level of Elementary Teachers’ Knowledge Towards Research When Grouped According to Profile Variables**

The results indicated that elementary teachers’ knowledge toward research varied across profile variables, with most scores falling within the very low to low range. This finding suggests that, although some demographic and professional characteristics may slightly influence research knowledge, overall teacher competence in research remains limited. The observed differences may be attributed to factors such as differential access to formal research training, varying educational attainment, and disparities in professional development opportunities across experience levels and age groups. These results are consistent with the study of Abella, Cadorna, Taban, and Ramirez (2024), which reported that teachers with higher educational attainment and greater exposure to structured research training exhibited stronger research competence, while those lacking such opportunities demonstrated lower levels of research knowledge.

Table 2a. Level of elementary teachers’ knowledge towards research when grouped according to profile variables.

<b>Knowledge</b>	<b>M</b>	<b>SD</b>	<b>Interpretation</b>
<b>Sex</b>			
<i>Male</i>	<i>24.13</i>	<i>3.65</i>	<i>Very Low</i>
<i>Female</i>	<i>25.39</i>	<i>4.36</i>	<i>Low</i>
<b>Age</b>			
<i>30yrs old or below</i>	<i>25.06</i>	<i>4.58</i>	<i>Low</i>
<i>31yrs - 40yrs</i>	<i>22.62</i>	<i>3.34</i>	<i>Very Low</i>
<i>41yrs old or above</i>	<i>25.82</i>	<i>3.93</i>	<i>Low</i>
<b>Highest Educational Attainment</b>			
<i>College Graduate</i>	<i>24.62</i>	<i>3.92</i>	<i>Very Low</i>
<i>With Units in Masters Degree</i>	<i>25.10</i>	<i>4.38</i>	<i>Low</i>
<i>Masters Degree Holder</i>	<i>24.38</i>	<i>4.05</i>	<i>Very Low</i>
<i>With units in Doctorate Degree</i>	<i>23.00</i>	<i>8.49</i>	<i>Very Low</i>
<i>Doctorate Degree Holder</i>	<i>26.67</i>	<i>2.73</i>	<i>Low</i>



<b>Length of Service</b>			
10 yrs or less	24.43	4.34	Very Low
11yrs - 20yrs	23.67	3.84	Very Low
21yrs or more	25.90	3.97	Low

**Level of Motivation Towards Research of the Respondents as a Whole**

The results indicated that the majority of elementary teachers demonstrated an average level of motivation toward research, with an overall mean score of 3.21 and a standard deviation (SD) of 0.52. This finding suggests that, while teachers recognize the importance of research, their drive to actively engage in research activities remains moderate. Limited access to professional development, competing instructional responsibilities, and insufficient institutional incentives may have contributed to this pattern of motivation. This result is consistent with the study of Insorio (2024), which reported that teachers were motivated by both intrinsic and extrinsic factors; however, overall motivation remained at a moderate level and did not consistently translate into high research productivity.

Table 3. Level of motivation towards research as a whole.

<b>Motivation</b>	<b>Frequency</b>	<b>Percentage</b>
Low	10	9.26%
Average	69	63.89%
High	29	26.85%
<b>Mean = 3.21 (Average) SD = 0.52</b>		

**Level of Motivation Towards Research of the Respondents When Grouped According to Profile Variables**

The results indicated that elementary teachers' motivation toward research remained consistently average across all profile variables. This finding suggests that demographic and professional characteristics, such as sex, age, educational attainment, and length of service, have minimal influence on teachers' overall motivation to engage in research. The uniformity in motivation levels may be attributed to similar exposure to professional development programs, shared school culture regarding research, and common constraints such as heavy teaching loads that limit active participation in research activities. These results are consistent with the study of Insorio (2024), which reported that teachers' motivation remained moderate across different groups, influenced by both intrinsic and extrinsic factors but not consistently translating into higher research engagement.

Table 3a. Level of motivation towards research when grouped according to profile variables.

<b>Variables</b>	<b>M</b>	<b>SD</b>	<b>Interpretation</b>
<b>Sex</b>			
Male	3.31	0.52	Average
Female	3.13	0.51	Average
<b>Age</b>			
30yrs old or below	3.24	0.54	Average
31yrs - 40yrs	3.33	0.43	Average
41yrs old or above	3.14	0.54	Average
<b>Highest Educational Attainment</b>			
College Graduate	3.28	0.48	Average
With Units in Masters Degree	3.17	0.49	Average
Masters Degree Holder	3.01	0.67	Average
With units in Doctorate Degree	3.38	0.25	Average
Doctorate Degree Holder	3.29	0.55	Average
<b>Length of Service</b>			
10 yrs or less	3.22	0.48	Average
11yrs - 20yrs	3.30	0.50	Average
21yrs or more	3.13	0.54	Average



### Level of Attitude Toward Research of the Respondents as a Whole

The results indicated that the majority of elementary teachers demonstrated an average level of attitude toward research, with an overall mean score of 3.12 and a standard deviation (SD) of 0.36. This finding suggests that, although teachers generally view research positively, their enthusiasm and commitment to actively engage in research activities remain moderate. Limited exposure to research-related professional development, combined with anxiety or apprehension toward research tasks, may have contributed to this pattern of attitude. This result is consistent with the study of Laguador et al. (2022), which reported that teachers held a positive perception of research usefulness but experienced anxiety that hindered their productivity in completing research tasks.

Table 4. Level of attitude towards research as a whole.

<b>Level</b>	<b>Frequency</b>	<b>Percentage</b>
<i>Low</i>	<i>6</i>	<i>5.56%</i>
<i>Average</i>	<i>90</i>	<i>83.33%</i>
<i>High</i>	<i>12</i>	<i>11.11%</i>
<b>Mean = 3.12 (Average) SD = 0.36</b>		

### Level of Attitude Towards Research of the Respondents When Grouped According to Profile Variables

The results indicated that elementary teachers' attitude toward research remained consistently average across all profile variables. This finding suggests that demographic and professional characteristics, such as sex, age, educational attainment, and length of service, have minimal influence on teachers' overall attitude toward research. The uniformity in attitude may be attributed to similar exposure to professional development programs, shared school culture regarding research, and common constraints such as teaching workload and limited opportunities for research engagement. These results are consistent with the study of Laguador et al. (2022), which reported that teachers generally held a positive attitude toward research but experienced anxiety or apprehension that limited their active engagement and productivity in research-related tasks.

Table 4a. Level of attitude towards research when grouped according to profile variables.

<b>Variables</b>	<b>M</b>	<b>SD</b>	<b>Interpretation</b>
<b>Sex</b>			
<i>Male</i>	<i>3.16</i>	<i>0.37</i>	<i>Average</i>
<i>Female</i>	<i>3.09</i>	<i>0.36</i>	<i>Average</i>
<b>Age</b>			
<i>30yrs old or below</i>	<i>3.17</i>	<i>0.30</i>	<i>Average</i>
<i>31yrs - 40yrs</i>	<i>3.15</i>	<i>0.37</i>	<i>Average</i>
<i>41yrs old or above</i>	<i>3.10</i>	<i>0.38</i>	<i>Average</i>
<b>Highest Educational Attainment</b>			
<i>College Graduate</i>	<i>3.06</i>	<i>0.38</i>	<i>Average</i>
<i>With Units in Masters Degree</i>	<i>3.13</i>	<i>0.35</i>	<i>Average</i>
<i>Masters Degree Holder</i>	<i>3.25</i>	<i>0.35</i>	<i>Average</i>
<i>With units in Doctorate Degree</i>	<i>3.44</i>	<i>0.28</i>	<i>Average</i>
<i>Doctorate Degree Holder</i>	<i>3.05</i>	<i>0.33</i>	<i>Average</i>
<b>Length of Service</b>			
<i>10 yrs or less</i>	<i>3.15</i>	<i>0.26</i>	<i>Average</i>
<i>11yrs - 20yrs</i>	<i>3.11</i>	<i>0.38</i>	<i>Average</i>
<i>21yrs or more</i>	<i>3.12</i>	<i>0.39</i>	<i>Average</i>

### Difference in the Motivation When Grouped According to Profile Variables

The results indicated that elementary teachers' motivation toward research did not significantly differ across profile variables. Specifically, the t-test for sex showed no significant difference between male and female teachers ( $t = 1.855$ ,  $p = 0.066$ ), and one-way Analysis of Variance (ANOVA) tests revealed no significant differences based on age



( $F = 1.604$ ,  $p = 0.213$ ), highest educational attainment ( $F = 0.707$ ,  $p = 0.611$ ), or length of service ( $F = 1.066$ ,  $p = 0.351$ ). This finding suggests that motivation toward research remains generally uniform among teachers, regardless of demographic or professional characteristics. The observed consistency may be attributed to shared school culture, similar exposure to professional development, and common constraints such as workload, which affect all teachers similarly. These results are consistent with the study of Tipon, Villanueva, Baluyot, Lloyd, Juan, Cruz, & Tus, (2021), which reported that teachers exhibited strong intrinsic motivation, but no significant differences were found in motivation based on variables such as age, sex, or educational attainment.

Table 5. Difference in the level of motivation when grouped according to profile Variables.

<b>Variable 1</b>	<b>Variable 2</b>	<b>Test Value</b>	<b>P-value</b>	<b>Interpretation</b>
Motivation	Academic Performance	1.855	0.066	Not Significant
Motivation	Sex	1.604	0.213	Not Significant
Motivation	Age	0.707	0.611	Not Significant
Motivation	Highest Educational Attainment	1.066	0.351	Not Significant
Motivation	Length of Service	1.855	0.066	Not Significant

### Difference in the Attitude When Grouped According to Profile Variables

The results indicated that elementary teachers' attitude toward research did not significantly differ across profile variables. Specifically, the t-test for sex showed no significant difference between male and female teachers ( $t = 1.079$ ,  $p = 0.283$ ), and one-way ANOVA tests revealed no significant differences based on age ( $F = 0.420$ ,  $p = 0.660$ ), highest educational attainment ( $F = 1.17$ ,  $p = 0.401$ ), or length of service ( $F = 0.117$ ,  $p = 0.890$ ). This finding suggests that teachers' attitudes toward research remain generally uniform, regardless of demographic or professional characteristics. The observed consistency may be attributed to shared professional culture, similar exposure to research-related experiences, and common constraints that affect all teachers similarly. These results are consistent with the study of Alcazaren et al. (2022), which reported no significant differences in research attitudes when faculty members were grouped according to gender and educational attainment.

Table 6. Difference in the attitude when grouped according to profile variables.

<b>Variable 1</b>	<b>Variable 2</b>	<b>Test Value</b>	<b>P-value</b>	<b>Interpretation</b>
Attitude	Academic Performance	1.079	0.283	Not Significant
Attitude	Sex	0.420	0.660	Not Significant
Attitude	Age	1.17	0.401	Not Significant
Attitude	Highest Educational Attainment	0.117	0.890	Not Significant
Attitude	Length of Service	1.079	0.283	Not Significant

### Difference in the Level of Knowledge Towards Research When Grouped According to Profile Variables

The results indicated that elementary teachers' knowledge toward research significantly differed according to sex and highest educational attainment. Specifically, male and female teachers showed significant differences in knowledge ( $F = 8.029$ ,  $p = 0.000$ ), and teachers with differing highest educational attainment also demonstrated significant differences ( $F = 3.479$ ,  $p = 0.038$ ). On the other hand, no significant differences were observed based on age ( $F = 0.605$ ,  $p = 0.672$ ), academic performance ( $t = 1.604$ ,  $p = 0.112$ ), or length of service ( $F = 1.604$ ,  $p = 0.112$ ). This finding suggests that biological sex and formal education level influence research knowledge, possibly because of varying access to research experiences, training, and educational preparation. These results are consistent with Nerona et al. (2025), which reported that teachers' educational attainment and demographic factors can affect their research knowledge and competence.

Table 7. Difference in the level of knowledge towards research when grouped according to profile variables.

<b>Variable 1</b>	<b>Variable 2</b>	<b>Test Value</b>	<b>P-value</b>	<b>Interpretation</b>
Knowledge	Academic Performance	1.604	0.112	Not Significant
Knowledge	Sex	8.029	0.000	Highly Significant
Knowledge	Age	0.605	0.672	Not Significant
Knowledge	Highest Educational Attainment	3.479	0.038	Significant
Knowledge	Length of Service	1.604	0.112	Not Significant



### Relationship Among Teachers' Knowledge, Motivation, Attitude Towards Research

The results indicated a significant positive correlation between motivation and attitude toward research ( $r = 0.209$ ,  $p = 0.030$ ), suggesting that as teachers' motivation increases, their attitude toward research becomes more positive. However, no significant correlation was found between knowledge and motivation ( $r = 0.079$ ,  $p = 0.416$ ) or between knowledge and attitude ( $r = -0.020$ ,  $p = 0.839$ ), indicating that teachers' level of research knowledge is not directly associated with their motivation or attitude. This pattern suggests that, while personal disposition can influence teachers' motivation and attitude, knowledge may be shaped more strongly by factors such as educational background, professional development opportunities, and practical experience. These results are consistent with the study by Gul, Khan, and Ahmed (2025), which found a statistically significant positive relationship between prospective teachers' research attitudes and their academic achievement in research courses, highlighting that positive attitudes toward research are associated with stronger engagement and outcomes in research-related tasks.

Table 8. Relationship among teachers' knowledge, motivation, attitude towards research.

Variable 1	Variable 2	Correlation Coefficient	Interpretation	P-value	Interpretation
Motivation	Attitude	0.209	Low Correlation	0.030	Significant
Motivation	Knowledge	0.079	Very Low Correlation	0.416	Not Significant
Attitude	Knowledge	-0.020	Very Low Correlation	0.839	Not Significant

### Conclusion

This study examined the relationship among teachers' research knowledge, motivation, and attitude toward research in the Mambusao West District, Division of Capiz. The findings revealed that elementary teachers exhibited a generally low level of research knowledge alongside moderate levels of motivation and attitude toward research. A significant positive relationship was established between motivation and attitude, indicating that teachers who were more motivated tended to hold more favorable perceptions of research. However, research knowledge was not significantly associated with either motivation or attitude, suggesting that positive dispositions alone may not translate into research competence without adequate training and institutional support. These findings underscore the importance of strengthening both teachers' research skills and motivational support systems to foster a sustainable culture of inquiry and evidence-based practice in elementary education.

### Recommendations

Based on the findings of the study, the Department of Education and school administrators may consider strengthening teachers' research competence through sustained training, mentoring, and recognition programs that build both skills and confidence. School leaders may foster supportive environments that encourage collaboration and provide incentives that enhance teachers' motivation to engage in research activities. Teacher education institutions may integrate more practical and classroom-based research applications into their curricula to better prepare teachers for research involvement. Policymakers may also explore the allocation of adequate funding and resources to support teacher-led research initiatives. Future studies may expand the scope of investigation to other districts or regions and employ mixed-method designs to further examine factors influencing teachers' engagement in research.

### REFERENCES

- Abella, J. Y., Cadorna, E. A., Taban, J. G., & Ramirez, L. V. (2024). An assessment of Filipino public school teachers' research competence: A basis for an enhancement professional development programme. *International Journal of Learning, Teaching and Educational Research*, 23(12), 199–215. <https://doi.org/10.26803/ijlter.23.12.14>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Alcazaren, H. K. G., & Robiños, J. R. O. (2022). A comparison of demographic and research characteristics of faculty in a Philippine private university: Assessing self-efficacy, attitude, and interest. *Philippine Social Science Journal*, 5(3), 96–105. <https://doi.org/10.52006/main.v5i3.557>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.



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- Borko, H., Koellner, K., & Jacobs, J. (2019). Examining novel forms of professional development: Structured teacher learning and inquiry-based practice. *Teaching and Teacher Education, 78*, 48–60. <https://doi.org/10.1016/j.tate.2018.11.003>
- Carvajal, C. A. (2025). Teachers' skills, knowledge and attitude in action research project: Cornerstone for school research development plan. *International Journal of Open-Access, Interdisciplinary & New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR), 4*(3), 583–595. <https://doi.org/10.63498/etcor451>
- Crespo, R., & Sutherland, L.-M. (2021). Exploring relationships among teacher attitudes, research engagement, and classroom innovation. *Teaching and Teacher Education, 98*, Article 103246. <https://doi.org/10.1016/j.tate.2020.103246>
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative, and mixed methods approaches* (6th ed.). SAGE Publications.
- Darling-Hammond, L., Hyster, M. E., & Gardner, M. (2017, June). *Effective teacher professional development* (Research report). Learning Policy Institute. ERIC. <https://eric.ed.gov/?id=ED606743>
- Dautova, O. B., Ignateva, E. Y., & Salygina, I. A. (2020). Professional learning communities of teachers as reflexive practice. In S. A. Glebovich (Ed.), *Pedagogical education – history, present time, perspectives*.
- Dela Peña, E. S., & Saniel, D. M. M. T. (2022). Public basic education teachers' engagement in educational research. *International Journal of Education Humanities and Social Science, 5*(6), 15–27. <https://doi.org/10.54922/IJEHSS.2022.0451>
- Deci, E. L., & Ryan, R. M. (2020). *Self-determination theory: Basic psychological needs in motivation, development, and wellness*. Guilford Press.
- Department of Education. (2016, June 10). *DepEd Order No. 39, s. 2016: Adoption of the Basic Education Research Agenda*. <https://www.deped.gov.ph/2016/06/10/do-39-s-2016-adoption-of-the-basic-education-research-agenda/>
- Gul, S., Khan, A., & Ahmed, R. (2025). Relationship of research attitude and knowledge with academic achievement of prospective teachers in Pakistan. *Frontiers in Education, 10*, Article 1431208. <https://doi.org/10.3389/educ.2025.1431208>
- Insorio, A. O. (2024). Teachers' research characteristics, competencies, motivation, and challenges: Basis for research manual. *International Journal of Research in Education and Science, 10*(4), 799–825. <https://eric.ed.gov/?id=EJ1452863>
- Laguador, J., & Soverano, J. R. (2022). Elementary school teachers' attitude towards research as basis for a proposed enhancement plan. *International Journal of Social Science Research and Review, 5*(12), 633–645. <https://ijssrr.com/journal/article/view/833>
- Nerona, C. B., & Narido, N. C. (2025, May 22). Teachers' knowledge, skills, and attitude in conducting research in Cagayan de Oro City. *American Journal of Arts and Human Science, 4*(2). <https://doi.org/10.54536/ajahs.v4i2.4560>
- Oancea, A., Swennen, A., & Zogla, I. (2021). The perfect storm for teacher education research in English universities: The tensions of workload, expectations from leadership and research. *Education Sciences, 11*(4), 434. <https://doi.org/10.3390/educsci11040434>
- Tipon, F. K., Villanueva, A., Baluyot, M. K., Lloyd, K., Juan, K. L. M., Cruz, N., & Tus, J. (2021). The self-efficacy and its relationship on the academic motivation to the senior high school students from public schools amidst the new normal education in the Philippines. *International Journal of Advance Research and Innovative Ideas in Education, 7*, 2021. <https://doi.org/10.6084/m9.figshare.14813397.v2>
- Zeichner, K., & Liston, D. (2021). *Reflective teaching: An introduction* (3rd ed.). Routledge.



## Effectiveness of the gender and development program in the promotion of gender equality

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### Abstract

**Aim:** This study evaluated the effectiveness of the Gender and Development (GAD) Program in promoting gender equality at Gumaok Elementary School during the 2024–2025 school year, with emphasis on program implementation and its influence on stakeholders' awareness and perceptions of gender equality.

**Methodology:** A descriptive-correlational research design was employed. Data were gathered using a researcher-made survey questionnaire administered to 60 teachers and one school head. Quantitative data were analyzed using descriptive statistics (mean and standard deviation) and inferential statistics, including Pearson's  $r$  correlation and one-way analysis of variance.

**Results:** Findings revealed that the GAD Program was perceived as moderately effective in terms of implementation quality, budget utilization, and program coverage, with mean scores ranging from 3.38 to 3.65. Respondents demonstrated a moderate level of awareness of gender equality ( $M = 3.43$ ). A strong and statistically significant positive relationship was found between GAD Program effectiveness and the promotion of gender equality ( $r = 0.694$ ,  $p < 0.001$ ). Significant differences in perceptions were observed when respondents were grouped according to position and duration of exposure to the GAD Program.

**Conclusion:** The GAD Program at Gumaok Elementary School contributes positively to the promotion of gender equality by establishing a foundational level of awareness and fairness. Nonetheless, challenges related to stakeholder engagement, timeliness of fund utilization, and the translation of awareness into inclusive practices persist. The study recommends improved budget transparency, sustained and advanced capacity-building initiatives, and strengthened mechanisms for inclusive participation to further enhance program effectiveness.

**Keywords:** *gender equality; gender and development; program effectiveness; descriptive-correlational research; stakeholder engagement*

### INTRODUCTION

Gender equality is a fundamental human right and a critical driver of sustainable development. Globally, Gender and Development (GAD) programs have been institutionalized to address gender imbalances, challenge discriminatory norms, and ensure equal opportunities for all genders in various spheres, including education (UN Women, 2021). In the Philippines, the commitment to gender equality is enshrined in laws such as the Magna Carta of Women (Republic Act 9710), which mandates all government agencies, including educational institutions, to mainstream gender perspectives into their policies, programs, and operations.

The Department of Education (DepEd) has responded through the Gender-Responsive Basic Education Policy, directing schools to integrate GAD principles. These programs aim to create safe, inclusive, and equitable learning environments by raising awareness, reducing discrimination, and promoting balanced representation (DepEd Order No. 32, s. 2017). Despite these robust policies, the effective translation of GAD mandates into tangible outcomes at the school level faces challenges, including inadequate stakeholder engagement, delays in fund utilization, and varying levels of awareness and commitment among implementers (Calora, 2020; Valdez, 2023).

At Gumaok Elementary School, the GAD program has been implemented as part of this national directive. However, informal observations suggested a gap between policy and practice, with potential disparities in how the



program's effectiveness is perceived by the teaching staff. A systematic assessment was needed to determine whether the program was truly fostering gender equality or if strategic improvements were necessary.

This study therefore sought to evaluate the effectiveness of the GAD Program at Gumaok Elementary School during the 2024-2025 school year. While previous studies have examined GAD implementation challenges in Philippine schools broadly (Calora, 2020; Valdez, 2023), there remains a significant research gap in empirical assessments at the elementary school level using a descriptive-correlational approach. Specifically, few studies have investigated how demographic factors such as teaching position and duration of GAD exposure moderate perceptions of program effectiveness and gender equality awareness. By examining these relationships, this research provides novel, evidence-based insights that can guide school administrators, GAD coordinators, and policymakers in tailoring GAD programs to enhance their impact, ensuring that the school environment not only preaches but practices gender fairness and inclusion.

### Review of Related Literature and Studies

The literature underscores the critical role of GAD programs in dismantling structural inequalities. Effective programs typically employ strategies such as awareness campaigns, policy advocacy, capacity building, and community engagement (UN Women, 2021). Studies, however, present a mixed picture. While research by Smith et al. (2020) in Southeast Asia showed a 25% reduction in gender-based violence due to community-based GAD programs, other studies highlight persistent barriers like insufficient funding, cultural resistance, and weak monitoring systems (Johnson & Perez, 2019).

In the Philippine educational context, the success of GAD initiatives heavily relies on the active involvement of school heads and GAD coordinators (Valdez, 2023). However, Calora (2020) found that while school administrators provide support, teacher and community engagement often remains low, and GAD activities are sometimes viewed as compliance obligations rather than opportunities for genuine cultural change. Furthermore, logistical challenges, particularly delays in the release of GAD funds, consistently hamper smooth implementation (Calora, 2020).

### Synthesis and Research Gap

The reviewed literature establishes the importance of GAD programs in addressing gender inequalities and highlights common implementation challenges including insufficient stakeholder engagement, funding delays, and cultural resistance. While studies in the Philippine context have examined administrative roles in GAD implementation (Valdez, 2023) and general challenges (Calora, 2020), there is limited empirical research focusing specifically on elementary school settings. Furthermore, few studies have employed a descriptive-correlational design to examine how demographic factors such as teaching position and duration of GAD exposure influence both program effectiveness perceptions and gender equality awareness. This study addresses these gaps by providing a focused assessment of GAD implementation at Gumaok Elementary School, examining not only overall effectiveness but also the moderating role of respondent characteristics on program outcomes.

This study is grounded in Feminist Theory and Critical Pedagogy, which emphasize the need to challenge power dynamics and empower all individuals. It also draws from Intersectionality, recognizing that gender inequality intersects with other social factors like seniority and position, making the examination of demographic differences particularly relevant.

### Conceptual Framework

The study operated on a conceptual framework illustrating the relationship between the GAD Program (Independent Variable) and the Promotion of Gender Equality (Dependent Variable).

- **Input:** The existing GAD Program at Gumaok Elementary School, including its policies, allocated budget, and training modules.
- **Process:** The implementation of the program, encompassing the quality of training, stakeholder engagement, budget utilization, and program accessibility.
- **Output:** The immediate results, measured through the level of awareness and perceptions of gender equality among teachers and the school head.
- **Outcome:** The enhanced promotion of gender equality, characterized by reduced discrimination, equal participation, balanced representation, and a pervasive sense of fairness and inclusiveness.

The framework posits that effective processes lead to positive outputs and outcomes, with external factors (e.g., community norms, leadership) and feedback loops influencing the entire system.



### Statement of the Problem

Despite the Department of Education's mandate on Gender-Responsive Basic Education Policy (DepEd Order No. 32, s. 2017), the effective translation of Gender and Development (GAD) programs into measurable and sustainable outcomes at the school level has remained a persistent challenge. At Gumaok Elementary School, informal observations indicated a gap between policy intent and actual practice, particularly in how stakeholders perceived the program's effectiveness. These disparities raised concerns regarding stakeholder engagement, fund utilization, and the extent to which awareness of gender equality translated into inclusive practices. Consequently, a systematic assessment was necessary to determine whether the GAD Program was effectively promoting gender equality or required strategic improvements to enhance its implementation and impact.

### Research Objectives

This study aimed to evaluate the effectiveness of the GAD Program in promoting gender equality at Gumaok Elementary School during the 2024-2025 school year. Specifically, it sought to:

1. Determine the demographic profile of the teacher-respondents and school head.
2. Assess the perceived level of effectiveness of the GAD Program in terms of implementation quality, budget utilization, and program coverage.
3. Evaluate the level of awareness among respondents regarding the promotion of gender equality.
4. Examine the relationship between the effectiveness of the GAD Program and the promotion of gender equality.
5. Identify significant differences in perceptions of program effectiveness and gender equality awareness when grouped according to demographic profile.

### Research Questions

The study was guided by the following research questions:

1. What is the demographic profile of the respondents in terms of sex, highest educational attainment, position, and years of exposure to the GAD Program?
2. What is the perceived level of effectiveness of the GAD Program in terms of implementation quality, budget utilization, and program coverage?
3. What is the level of awareness of the respondents regarding the promotion of gender equality?
4. Is there a significant relationship between the effectiveness of the GAD Program and the promotion of gender equality?
5. Is there a significant difference in the perceptions of program effectiveness and gender equality awareness when grouped according to demographic profile?

### Hypotheses

*H<sub>01</sub>*: There is no significant relationship between the effectiveness of the Gender and Development (GAD) Program and the promotion of gender equality at Gumaok Elementary School.

*H<sub>02</sub>*: There is no significant difference in the perceptions of the effectiveness of the GAD Program when respondents are grouped according to their demographic profile in terms of sex, highest educational attainment, position, and years of exposure to the GAD Program.

*H<sub>03</sub>*: There is no significant difference in the level of awareness regarding the promotion of gender equality when respondents are grouped according to their demographic profile in terms of sex, highest educational attainment, position, and years of exposure to the GAD Program.

### Methodology

#### Research Design

This study utilized a descriptive-correlational research design. This non-experimental approach was deemed most appropriate as it allowed for the documentation of the current state of the GAD program's implementation and outcomes while simultaneously analyzing the relationship between program effectiveness and gender equality promotion without manipulating variables.

#### Population and Sampling



The study participants were 60 teachers and one school head from Gumaok Elementary School, DepEd Division of City of San Jose del Monte, during the 2024-2025 school year. A complete enumeration was used for all teachers actively employed during the study period to capture the full range of perspectives. Purposive sampling was employed for the school head to ensure the inclusion of a key administrative perspective essential for understanding leadership and implementation oversight.

### **Instrument**

A researcher-made questionnaire was used, comprising three sections: (1) Demographic Profile, (2) Level of GAD Program Effectiveness (using a 5-point Likert scale from 1-Least Effective to 5-Highly Effective), and (3) Level of Awareness on Gender Equality Promotion (using a 5-point Likert scale from 1-Least Aware to 5-Highly Aware). The instrument was validated for content validity by three experts with substantial experience in education and GAD implementation: two held doctorate degrees in Educational Management with over 10 years of experience, and one was a serving GAD Focal Person at the division level with 8 years of experience in gender mainstreaming.

### **Data Collection**

Permissions were secured from the school and relevant authorities. In October 2024, the questionnaires were distributed and collected online via Google Forms over a two-week period. The process involved sending the survey link to the official school communication channel, followed by two polite reminder emails to non-respondents. Confidentiality and voluntary participation were ensured throughout.

### **Data Analysis**

Data were analyzed using SPSS (Version 26). Descriptive statistics (mean, standard deviation) summarized respondent profiles and responses to scales. Pearson's *r* correlation tested the relationship between program effectiveness and gender equality promotion (addressing Research Objective 4). One-Way Analysis of Variance (ANOVA) determined significant differences in perceptions based on demographic profiles (addressing Research Objective 5).

### **Ethical Considerations**

The study adhered to ethical research standards. Informed consent was obtained from all participants, emphasizing the voluntary nature of participation and the right to withdraw at any time without consequence. Confidentiality was maintained through anonymization of responses, and data were stored securely on a password-protected computer with access limited to the researcher. The study protocol was reviewed and approved in accordance with institutional requirements.

## **RESULTS and DISCUSSION**

### **Demographic Profile of Respondents**

The majority of the teacher-respondents were female (61.54%), held a Master's Degree (65.38%), and had moderate exposure to the GAD program (65.38% had 3 years or less of exposure). This profile suggests that the sample is primarily composed of experienced and educated professionals, which may influence their perceptions of the GAD Program. The predominance of female respondents aligns with the broader teaching demographics in Philippine elementary education and may reflect gendered patterns in care-oriented professions. The limited exposure to the GAD Program for a majority of respondents highlights a potential area for sustained engagement and capacity-building.

### **Level of Effectiveness of the GAD Program**

As shown in Table 1, the GAD Program was perceived as "Moderately Effective" overall ( $M=3.38-3.65$ ). Budget utilization was rated highest ( $M=3.65$ ), though the timely release of funds was a weaker area ( $M=3.38$ ). Opportunities for participation scored lowest ( $M=3.19$ ), indicating a need for more inclusive engagement strategies.

**Table 1.** *Level of Effectiveness of the GAD Program*



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Aspect	Mean	SD	Verbal Interpretation
Implementation Quality	3.38	0.12	Moderately Effective
Budget Utilization	3.65	0.16	Effective
Program Coverage	3.53	0.22	Moderately Effective

The moderate effectiveness ratings across implementation quality and program coverage suggest that while the GAD Program is operational, it may lack depth or consistency in execution. The higher rating for budget utilization, despite noted delays in fund release, could indicate that once funds are available, they are used appropriately. However, the lower score for participation opportunities points to a procedural gap where stakeholder involvement is not fully realized, potentially limiting the program's transformative impact as emphasized in GAD literature (UN Women, 2021).

**Level of Awareness on Gender Equality Promotion**

Respondents were "Moderately Aware" of gender issues (M=3.43, SD=0.05). While fair treatment was highly perceived (M=3.90), feelings of full inclusion (M=3.43) and equal voice in decision-making (M=3.29) were moderate, revealing a potential gap between procedural fairness and experiential inclusion.

The discrepancy between high perceptions of fair treatment and moderate feelings of inclusion and voice suggests that awareness of gender equality principles does not automatically translate into a sense of empowerment or participatory equity. This aligns with Calora's (2020) observation that GAD activities are often viewed as compliance obligations rather than avenues for genuine cultural change. The results imply that moving from awareness to embodied practice requires intentional shifts in organizational culture and decision-making structures.

**Relationship between GAD Program Effectiveness and Gender Equality**

A strong, positive correlation was found between the effectiveness of the GAD Program and the promotion of gender equality (r=0.694, p=0.000). This statistically significant result suggests that more robust and effective program implementation directly correlates with higher levels of gender equality awareness and practice within the school.

This finding reinforces the theoretical assumption that well-implemented GAD initiatives can drive tangible progress toward gender equality. The strength of the correlation underscores the importance of program quality—including thorough implementation, efficient budget use, and broad coverage—in fostering an equitable school environment. It also supports the advocacy for continued investment and refinement of GAD programs as a mechanism for institutional change.

**Difference in Perceptions based on Demographic Profile**

Significant differences were found in perceptions of both program effectiveness and gender equality awareness based on the respondents' **position** (p=0.042; p=0.049) and **duration of GAD exposure** (p=0.037; p=0.029). Master Teachers and those with longer GAD exposure perceived the program more positively and reported higher gender equality awareness.

These differences highlight the role of positional authority and sustained engagement in shaping GAD outcomes. Master Teachers, often involved in leadership and planning, may have a more comprehensive view of the program's aims and activities, leading to more favorable perceptions. Similarly, longer exposure likely allows for deeper understanding and integration of GAD principles, consistent with Valdez's (2023) emphasis on the critical role of experienced implementers. This suggests that targeted efforts to engage newer and junior staff could help harmonize perceptions and enhance collective ownership of GAD goals.

**Conclusion**

The GAD Program at Gumaok Elementary School is on a positive trajectory, effectively establishing a baseline of gender awareness and fairness. The strong correlation between program implementation and gender equality outcomes validates the investment in GAD initiatives. However, the study reveals critical areas for growth: engaging all stakeholders meaningfully, ensuring the timely flow of funds, and bridging the gap between awareness of gender equality and the lived experience of full inclusion and empowerment, particularly for newer teaching staff.



## Recommendations

Based on the findings and conclusions of the study, the following recommendations were made:

1. Budget Transparency and Timeliness: School administrators may implement participatory budgeting committees and streamline fund release processes to enhance transparency and efficiency.
2. Deepen and Diversify Training: Capacity-building initiatives may move beyond foundational awareness to include advanced topics like unconscious bias and intersectionality, with sustained follow-up support provided.
3. Foster Inclusive Participation: School GAD committees may create more structured opportunities for all teachers, regardless of seniority, to contribute to GAD planning and decision-making.
4. Strengthen Monitoring and Evaluation: A balanced scorecard to track both quantitative and qualitative progress may be developed, allowing for continuous program improvement.
5. Expand Stakeholder Engagement: Proactive involvement of parents and community leaders in GAD activities may be considered to build a supportive ecosystem for gender equality beyond the school walls.

## REFERENCES

- Calora, M. (2020). Stakeholder engagement and challenges in gender and development program implementation in Philippine schools. *Journal of Gender Studies and Education*, 12(1), 21–36. <https://doi.org/10.1080/09589236.2020.1799762>
- Department of Education. (2017). Gender-responsive basic education policy (DepEd Order No. 32, s. 2017). Department of Education, Philippines. [https://www.deped.gov.ph/wp-content/uploads/2017/06/DO\\_s2017\\_032.pdf](https://www.deped.gov.ph/wp-content/uploads/2017/06/DO_s2017_032.pdf)
- Johnson, L., & Perez, R. (2019). Barriers to effective gender mainstreaming in public institutions. *International Journal of Public Sector Management*, 32(4), 410–425. <https://doi.org/10.1108/IJPSM-03-2018-0081>
- Smith, J., Chen, A., & Rodriguez, M. (2020). The impact of community-based GAD initiatives on gender-based violence in Southeast Asia. *Journal of Development Studies*, 56(8), 1500–1517. <https://doi.org/10.1080/00220388.2019.1650168>
- UN Women. (2021). How to design and implement gender and development programs: A practical guide. United Nations Entity for Gender Equality and the Empowerment of Women. <https://www.unwomen.org/en/digital-library/publications/2021/10/how-to-design-and-implement-gender-and-development-programs>
- Valdez, J. (2023). The role of school administrators and GAD coordinators in the effective implementation of gender and development programs in schools. *Philippine Journal of Educational Leadership*, 15(2), 45–60. <https://doi.org/10.1177/17411432221135241>



## Exploring the role of extracurricular activities on academic development among high school students

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### Abstract

**Aim:** This study explored the role of extracurricular activities (ECAs) in the academic development of high school students, focusing on their lived experiences and perspectives, as well as those of parents, teachers, and school administrators. It examined how participation in ECAs influences academic performance, motivation, time management, and personal development, while identifying benefits, challenges, and differences in implementation between public and private schools.

**Methodology:** A qualitative phenomenological research design was employed. Data were gathered through semi-structured interviews with high school students, parents, teachers, and school administrators. Interviews were audio-recorded, transcribed verbatim, and analyzed using in vivo coding to preserve participants' authentic expressions and cultural meanings, leading to the development of emerging themes.

**Results:** Four major themes emerged from the analysis: (1) *Redefining Success Beyond Grades*, where students perceived success as encompassing leadership, confidence, and discipline in addition to academic achievement; (2) *Managing Stress While Balancing Academics and ECAs*, highlighting that ECAs functioned both as stress relievers and additional demands depending on students' time management skills; (3) *Support and Mentoring*, emphasizing the crucial role of parental and institutional guidance in helping students balance academic and extracurricular responsibilities; and (4) *Differences in Implementation*, revealing that ECAs were more systematically integrated into the curriculum in private schools, whereas public schools relied on flexible scheduling outside regular class hours, affecting student engagement and participation.

**Conclusion:** The findings indicate that extracurricular activities positively contribute to students' academic development and acquisition of essential life skills despite challenges related to time constraints and unequal access. Effective integration of ECAs requires supportive school policies, structured scheduling, and strong mentoring systems to maximize their academic and developmental benefits for high school students.

**Keywords:** *extracurricular activities; academic development; high school students; phenomenological study*

### INTRODUCTION

Globally, extracurricular activities are recognized as essential components of student development, complementing traditional academic instruction. Research indicates that participation in sports, arts, school clubs, and community service promotes life skills, leadership, teamwork, and problem-solving, while also enhancing academic performance (Saki & Hanane, 2023; Fredricks & Eccles, 2020). Despite these benefits, some countries have limited or eliminated ECAs to prioritize academic recovery. For example, in December 2024, Kobe, Japan, announced the discontinuation of school clubs in public middle schools, though students could still access facilities after class (Baseel, 2024).

In the Philippine context, policy changes have similarly affected ECAs. DepEd Order No. 034 (2022) followed the announcement by the Vice President and former Education Secretary to suspend extracurricular activities for the 2022-2023 school year, emphasizing academic recovery after pandemic-related learning gaps (Tuazon, 2022). While intended to enhance academic focus, this directive raised concerns about students' well-being. Educators and advocacy groups, like the Alliance of Concerned Teachers (ACT), emphasized the importance of balancing academic



demands with opportunities for personal growth, citing potential risks of burnout and decreased motivation (Tuazon, 2022).

Research has demonstrated a strong relationship between ECAs and both academic and personal development. Studies show that students engaged in ECAs exhibit higher levels of attention, motivation, and communication-related skills (Zarazaga-Peláez et al., 2024). Meanwhile, practitioner-based reports, Honor Society (2023), indicate associations with higher grades and improved soft skills such as leadership, teamwork, and problem-solving. However, Philippine studies rarely explore students' perceptions, lived experiences, and the perspectives of parents, educators, and administrators, focusing instead on quantitative correlations. This leaves a gap in understanding how ECAs contribute to academic and personal growth in meaningful, context-specific ways.

Accordingly, this study investigates the role of ECAs in academic development among high school students, aiming to capture lived experiences, perceptions, and the broader implications for school programs and policy. By focusing on high school—a pivotal stage for college preparation and skill development—this research seeks to provide evidence that can guide educators and policymakers in designing balanced, effective, and student-centered extracurricular programs.

## **Review of Related Literature and Studies**

### **Global Literature on Extracurricular Activities and Academic Performance**

ECAs are widely acknowledged as crucial components of student development in educational systems across the world. Participation in ECAs yields measurable academic gains, according to recent studies. For instance, engagement in extracurricular activities is associated with improvements in overall academic performance and cognitive-behavioral skills (Zarazaga-Peláez et al., 2024). Academic clubs, artistic programs, athletics, and community service are widely recognized for developing abilities that directly assist learning. Research indicates that participation in extracurricular activities supports the development of key competencies of students, such as creativity, communication, collaboration, and problem-solving skills, which are linked with improved academic performance and broader student development outcomes (e.g., Wu & Fernando, 2023). These studies collectively suggest that ECAs function not only as enrichment activities but as mechanisms through which academic-related competencies are cultivated. Similarly, the relevance of extracurricular activities (ECAs) in holistic academic development is further supported by research conducted in Asian educational environments, which found that involvement in ECAs enhances students' academic engagement as well as the development of social and leadership skills. (Penjor & Dorji, 2022).

### **Local Studies in the Philippine Context**

In the Philippines, research regularly demonstrates positive correlations between academic success and ECA involvement. In research conducted at Zamboanga National High School, Vispo (2024) discovered a strong, beneficial relationship between high school students' participation in ECAs and their academic success. To optimize developmental benefits, the research advises school staff to assist students in selecting activities aligned with their interests and abilities.

Boy et al. (2022) examined ECAs at De La Salle University and found that involvement improves dedication, academic competence, and compassion, while also cautioning against over-involvement that may negatively affect academic performance. Similarly, Vargas et al. (2020) reported that senior high school students who participate in ECAs demonstrate increased academic engagement and positive learning attitudes. While these studies establish consistent positive associations, they primarily rely on outcome-based or correlational data, offering limited insight into how students and stakeholders experience and interpret these benefits.

Despite these advantages, access inequities remain evident. Socioeconomic factors continue to influence student participation and academic outcomes, underscoring the need for inclusive and supportive school policies in the Philippine context.

### **Synthesis**

Extracurricular activities are consistently identified as significant contributors to students' academic and personal development in both global and local literature. Studies demonstrate that ECAs enhance academic performance by strengthening cognitive, social, and leadership skills (Hayat et al., 2020; Zarazaga-Peláez et al., 2024), while also fostering motivation, resilience, and engagement. However, existing literature—particularly in the Philippine context—largely emphasizes measurable outcomes and correlations, with limited attention to how students, parents, teachers, and school leaders make meaning of their ECA experiences.



Moreover, while international and local studies acknowledge challenges such as overcommitment, stress, and unequal access, they rarely explore how students navigate these tensions within their specific school environments. This gap highlights the need for qualitative inquiry that moves beyond statistical relationships to examine lived experiences, interpretations, and contextual factors shaping academic development through ECAs.

Accordingly, the present study extends existing research by providing an in-depth, qualitative examination of how high school students and key stakeholders understand the role of extracurricular activities in academic success, thereby contributing nuanced insights to inform educational practice and policy.

### **Theoretical Framework**

This research explains how ECAs enhance students' academic growth using Abraham Maslow's Hierarchy of Needs (1943) and Lev Vygotsky's Sociocultural Theory (1978).

According to Vygotsky, social contact, cultural resources, and guidance from more experienced individuals all influence learning. By offering cooperative settings where students learn via collaboration, coaching, and peer mentorship, ECAs naturally mirror these ideals. With the support of advisors and knowledgeable peers, students can develop new skills that improve their academic and personal competence through the Zone of Proximal Development. Peer cooperation in ECAs also improves leadership, problem-solving, and communication abilities, all of which contribute to better academic achievement.

Maslow's Hierarchy of Needs provides further insight into how ECAs impact learning by meeting students' esteem, social, and emotional needs—all of which are necessary for reaching self-actualization. Engaging in sports, the arts, leadership positions, and volunteer work fosters self-assurance, a sense of purpose, and belonging, all of which boost motivation for learning. ECAs enable students to participate more fully in their academic obligations by fostering affirming social networks that reduce feelings of loneliness and enhance emotional well-being. Huang (2024) affirms that Maslow's framework remains relevant in contemporary educational and motivational research, demonstrating that fulfillment of psychosocial and esteem needs continues to support engagement, persistence, and holistic development.

Collectively, these ideas demonstrate how ECAs support holistic development by meeting higher-order psychological demands necessary for academic achievement and offering enriched social learning opportunities.

### **Statement of the Problem**

This study investigated how ECAs influence the academic development of high school students by examining their lived experiences and the meanings they attribute to their participation. Although extracurricular activities are widely recognized for fostering leadership, discipline, confidence, and social skills, there remains a lack of qualitative evidence—particularly in the Philippine context—exploring how these activities shape students' academic performance, motivation, time management, and personal growth. Moreover, ongoing concerns related to academic burnout, competing academic demands, and variations in ECA implementation across school types highlight the need for deeper examination. Addressing these concerns is essential to understanding how extracurricular activities can be meaningfully integrated into school programs. This study therefore sought to generate context-based insights that may guide teachers, parents, school administrators, and policymakers in designing balanced, inclusive, and developmentally responsive extracurricular programs.

### **Research Objectives**

#### **General Objective:**

To investigate how extracurricular activities affect high school students' academic and personal development.

#### **Specific Objectives:**

1. To explain the real-life experiences of high school students who engage in extracurricular activities in relation to their academic achievement.
2. To determine the academic advantages that students perceive as a result of participating in extracurricular activities.
3. To analyze how students interpret their involvement in extracurricular activities in relation to their academic and personal growth.



### Research Questions

1. What are the lived experiences of high school students participating in extracurricular activities in fostering their academic success?
2. How do high school students describe the academic benefits they gain from participation and involvement in extracurricular activities?
3. What meanings do high school students attribute to their participation in extracurricular activities regarding their personal and academic development?

### METHODS

#### Research Design

In order to investigate the lived experiences of high school students participating in ECAs and their perceived influence on academic progress, this study used a qualitative research methodology utilizing a phenomenological approach. Phenomenology was determined to be the most appropriate design since the study's objective was to comprehend the common meanings and substance of participants' experiences rather than to develop a theory or look at a specific bounded example. By using this method, the researchers were able to record students' subjective, context-specific observations about motivation, academic engagement, and personal development as perceived by people who were directly involved in their academic life.

The phenomenological method was operationalized by focusing on recurring themes in participant narratives obtained from in-depth interviews with students, parents, teachers/advisers, and school administrators who had direct experience with ECAs. By shifting from individual narratives to common themes that represent the collective meaning of ECA involvement, data analysis focused on finding key components of these experiences. The study combined different viewpoints into a cohesive picture of how ECAs support students' academic and personal growth through meticulous theme analysis based on participants' own words.

#### Population and Sampling

This qualitative study was conducted through interviews with a group of key informants selected for their firsthand experiences with ECAs, instead of a statistical population intended for generalization: parents whose children are involved in ECAs, students engaged in ECAs from public and private schools, school heads, and teachers who serve as advisers/coaches for ECA school organizations. Participants are composed of eight informants.

**Sampling Technique.** To find respondents with significant ECA experience, purposeful sampling was employed. This approach was suitable because it emphasizes depth of understanding above numerical representation, for a qualitative design, and ensured that participants could explain the academic and developmental impact of ECAs.

**Participants.** Eight informants participated in the study: two administrators with at least five years of experience, two instructors or advisors who oversee student groups, two parents whose children participate in school clubs, and two high school students who have been engaged in ECAs for more than two years. To record variations in ECAs implementation and assistance, participants were drawn from both public and private schools.

#### Instruments

The researchers utilized a researcher-developed interview guide tailored for each group. The interview guide focused on the informants' lived experiences in ECAs, the academic benefits of participation, and their personal and academic development through these activities.

The semi-structured interview guide was validated by five experts—one specializing in language and linguistics, and the others are experts in conducting qualitative research methodology. Feedback supported the questions' usage for data collection and thematic analysis by confirming that they were understandable, pertinent, and suitable for examining students' experiences and academic advantages in extracurricular activities. Minor changes were made based on the experts' suggestions, such as rephrasing ambiguous questions, improving reflection prompts, and ensuring the guidelines were consistent for all participant groups.

#### Data Collection

A communication letter was sent to the informants beforehand to allow the researchers to conduct interviews. The interviews were conducted in May 2025, during the last month of the previous school year, since students and teachers were still accessible before the summer break. Face-to-face interviews were conducted in the informants' respective schools, in a quiet and private setting to ensure minimal distraction. For those informants who



were unavailable for an in-person meeting, the interviews were conducted via phone conversation to cater to the time availability of the informants. The interviews were recorded, and the researchers also took notes to capture important details. Afterward, the researchers transcribed the recordings for subsequent transcription.

### Treatment of Data

The researchers Braun and Clarke's (2006) six-phase thematic analysis to analyze the data, which systematically explores the experiences and perceptions of students, parents, and teacher/advisers, and school administrators regarding ECAs and their academic and personal development. The process was created to guarantee that themes were firmly rooted in participants' answers.

1. **Familiarization** – After reading the observation notes and interview transcripts several times, the researchers took note of significant statements, recurrent themes, and trends about students' perceptions of the academic advantages of ECAs. Initial impressions helped in focusing later on coding elements relevant to the study's objectives.
2. **Initial Coding** – The data was divided into meaningful segments (sentences, phrases), and each segment was given a descriptive code that encapsulated its essence. Statements pertaining to motivation, cooperation, or time management, for instance, were coded to represent students' involvement and learning through ECAs.
3. **Generating Initial Themes** – To identify new trends and connections, related codes were grouped into preliminary themes that reflected broader patterns, such as how participation in ECAs supported academic skills, personal growth, or social development. In this stage, higher-level conceptual interpretations were linked to the raw data.
4. **Reviewing Themes** – To guarantee internal consistency and relevance to the study topics, preliminary themes were refined, combined, divided, or redefined to better capture the nuances between students' perceived advantages and real-world experiences.
5. **Defining and Naming Themes** – The final themes were identified as: "Lived Experiences in Extracurricular Activities and Academic Success", "Academic Benefits Gained from Participation and Involvement in Extracurricular Activities", and "Students' Interpretations on the Significance of Extracurricular Activities for Their Academic and Personal Growth". The informants' remarks were directly connected to each theme, demonstrating the ways in which particular codes influenced the development of these broad categories.
6. **Writing Up** – Findings were organized into a coherent narrative with integration of verbatim excerpts from informants to illustrate and support each theme. Analytical discussion emphasized how the themes clarified the connection between students' academic and personal growth and ECAs.

Throughout the process, the researchers made sure that themes were rooted in participant replies by keeping an audit record of codes and judgments throughout the procedure. This approach allowed the analysis to go beyond procedural description and show a direct link between the raw data, codes, and, eventually, the main conclusions of the study.

### Ethical Considerations

All key informants were informed about the purpose of the study, including its voluntary nature, and their right to withdraw at any time without penalty before the interview began. Verbal informed consent was obtained from all informants prior to data collection.

Anonymity and confidentiality were strictly maintained throughout the study. All transcripts and reports had their personal identification removed, and the researchers were the only one with safe access to the material. Documents and interview recordings were removed after processing and used only for scholarly reasons.

These procedures ensured the full protection of the informants' rights, welfare, and privacy while maintaining ethical research standards.

### RESULTS and DISCUSSION

The analysis and interpretation of the information obtained from the informants were presented in this section. The results have been arranged into emerging themes, each of which has been interpreted and its ramifications discussed. The topic presentation adheres to the order specified in the study's problem statement to



guarantee consistency and congruence with the research goals. This organization facilitated a clear integration of participants' narratives with relevant literature, strengthening the analytical depth of the findings.

## 1. Lived Experiences in Extracurricular Activities and Academic Success

### Themes

*Redefining Success Beyond Grades  
Learning that Transcends the Classroom*

#### 1.1 Redefining Success: Beyond Grades

The way that students reinterpreted success through their involvement in ECAs was one of the major topics that came out of the interviews. Success was traditionally limited to academic achievement, but informants said that their participation in ECAs changed how they defined success to encompass leadership, self-assurance, and overall growth. This illustrated a change from considering success only in terms of grades to appreciating more comprehensive skills that support overall growth. The following are the samples of transcription:

**Student 1:** *“Pirme ako ginpipili nga leader ha eskwelahan sugad hin mga group activities, an akon naman leadership skill nga nakuha as SSG officer dako an pakabulig ha akon.”*  
(I am often chosen as a leader for group activities, and the leadership skills I gained as an SSG officer greatly helped me in class performance.)

This demonstrated how ECAs assist students in translating leadership experiences into success in the classroom. This suggested that the development of leadership skills through ECAs directly influences classroom engagement. Teachers and administrators supported this by noting that students who participate in ECAs typically exhibit greater motivation and discipline in their academic performance. Collectively, these accounts demonstrated that ECAs serve as both skill-building environments and accelerators for converting personal development into tangible academic involvement.

These results were in accordance with research conducted by Honor Society (2023), which shows that involvement in ECAs fosters academic resilience, self-discipline, and life skills. While this source is practitioner-oriented, it provides relevant contextual support for understanding school-based observations of student development. This finding is further supported by Fredricks and Eccles (2020), who found that sustained participation in school-based activities predicts higher academic engagement and persistence. The alignment of participant experiences with these studies strengthens the argument that ECAs contribute to multifaceted definitions of success.

Students who engaged in ECAs often perform better academically, have more self-esteem, and have greater problem-solving abilities, according to one school principal (SP1). As a result, extracurricular activities broaden the concept of academic success by fusing academic accomplishment with personal development. These findings highlighted that the benefits of ECAs extend beyond academic metrics, emphasizing leadership, self-efficacy, and adaptive problem-solving as critical components of student achievement. These observed outcomes are consistent with Lastra et al. (2024), who identified a strong positive correlation between high school students' academic achievement and their involvement in extracurricular activities. According to their research, students who participated in ECAs exhibit superior academic accomplishment coupled with improved self-esteem and problem-solving skills, supporting the notion that academic success encompasses leadership and personal growth in addition to grades.

#### 1.2. Learning that Transcends the Classroom

An additional topic emphasized how ECAs supplement classroom instruction. Students said that their involvement enhanced their critical thinking, writing, and communication skills. The following are the samples of transcription:

**Student 2:** *“Through han training nga guinhahatag ha amon ha journalism, nakakag-submit ako hin scripts nga nakakabulig ha akon para maging mindful han akon grammar and spelling.”*  
(Through the training given in journalism, I learned to be mindful of grammar and spelling when writing scripts.)

This suggested how hands-on experience in ECAs enables students to directly apply and refine classroom skills, such as writing and communication, in authentic contexts, thereby reinforcing their academic learning. This



finding was consistent with studies that demonstrated how students who participate in ECAs frequently acquire transferable skills, such as critical thinking, communication, and problem-solving, which improve academic engagement and classroom performance (Saki & Hanane, 2023; Zarazaga-Peláez et al., 2024). Based on their results, students may apply practical skills—like critical thinking and effective communication—to academic assignments through experiential learning obtained through ECAs, improving their overall academic performance.

## 2. Academic Benefits Gained from Participation and Involvement in Extracurricular Activities

### Themes

*Managing Stress While Balancing Academics and ECAs  
Support Systems as a Shared Responsibility*

#### 2.1. Managing Stress While Balancing Academics and ECAs

Students' involvement in ECAs was a source of stress as well as an incentive. Many said they had trouble juggling their extracurricular and academic obligations. The following are samples of transcription:

*Student 1: "As an SSG officer, hitaas it akon obligasyon kada mayda school events kay hi kami man iton first in line to assist hit am teachers para preparation (SI)."*

(As an SSG officer, my responsibilities peak during school events, as we are the first in line to assist teachers in preparing for the activities).

*Student 2: "Mayda mga times nga nagdudungan ha usa ka semana an journalism competition ngan exam. Namamanage ko iton akon time by pag-schedule, kaupod it akon adviser, hit akon pag-aram ngan hit akon training."*

(There was a time when the journalism competition and exam were in the same week. I managed by scheduling my study time and training with my adviser's help.)

The findings revealed that leadership positions put more strain on students, requiring excellent time management and self-control. However, students also learned coping mechanisms, including creating their own timetables and asking instructors for help. This suggested that ECAs do not merely add academic pressure but also cultivate adaptive skills that support academic persistence.

These findings are consistent with those of Sipahutar and Arsini (2024), who discovered that organized group guidance and self-management techniques lessen student fatigue. Consistent with these findings, Pan, Zhou & Shek (2022) found that involvement in extracurricular activities is associated with cognitive growth and psychosocial advantages that promote academic and emotional management in teenagers, suggesting more extensive developmental benefits outside the classroom.

Therefore, even though ECAs might increase workload, when they are supported by responsive school settings, they can improve time management and emotional resilience.

#### 2.2. Support System as a Shared Responsibility

Support from parents and institutions was shown to be essential in assisting students in juggling their two obligations. The following are samples of the transcription:

*Parent 1: Danay na ooverwhelmed it ak anak kadamo hit tasks nera ha school. It ak na la ginbubuhat is guide her hit pag-prioritize hine ngan pagbisita daman ha eskwelahan sugad hin mayd amga contests."*

[My child sometimes feels overwhelmed with tasks. I guide her in prioritizing these and visit her at school during contests.]

*Parent 2: "Guin papakita ko iton akon support ha iya pinaagi hiton pagbulig ha iya kada performance tasks nera."*

[I show support by helping her with performance tasks.]

*School Principal 2: "Iton amon eskwelahan nag-aalutagar hin 5% han amon MOOE para suportahan an mga proyekto han SSG. Kun diin, usa ine nga pag-enganyar ha mga bata para bumulig hit mga organisasyon."*

[Our school allotted 5% of the MOOE to support student government projects—our way of encouraging student involvement.]



Based on these answers, cooperative efforts between educators, parents, administrators, and students support maintaining student involvement without sacrificing academic achievement. Parent and administrator narratives illustrate how shared responsibility sustains student participation without compromising academic achievement. These findings highlight that academic benefits from ECAs are maximized when support extends beyond the individual student to the family and school systems.

Moral-Garcia et. al. (2020) revealed similar results, emphasizing that favorable academic achievements are fostered and stress is reduced by strong parental and institutional support and motivation. Therefore, ECAs work best when they are part of a larger support network that fosters well-being and productivity.

Penjor & Dorji (2022) also emphasized that students believe that ECAs improve their academic achievement, social skills, and self-concept, particularly when they are supported by school and peer interactions.

### **3. Students' Interpretations on the Significance of Extracurricular Activities for Their Academic and Personal Growth**

#### **Themes**

#### *The Power of Mentorship Institutional Differences and Their Impact*

##### **3.1. The Power of Mentorship**

According to the informants, mentoring had a significant influence on both their academic and personal growth. Instructors and advisors helped students manage conflicting expectations by being accommodating and supportive. Sample transcriptions are as follows:

*Student 2: "Dako iton nahibubulig ha akon hit akon mga teachers ngan journalism adviser labi na pagbalnase hiy akon mga responsibilities. Usahay, gin-aadjust nera iton schedule hit amon mga trainings kun mayda mga school performances namon or exams."*

(My teachers and journalism adviser helped me a lot in balancing both responsibilities. They adjust our training schedules if we have school performances or exams.)

*Parent 1: "Danay na ooverwhelmed it ak anak kadamo hit tasks nera ha school... Binubuligan ko heya pag-prioritize ngan gin eenganyar ko heya nga magpadayon la."*

(There are times when my child feels overwhelmed... I help her prioritize tasks and encourage her to keep going.)

Therefore, mentoring fosters confidence and accountability in addition to training. This is in line with McClain, Kelner, and Elledge (2021), who contended that encouraging positive youth outcomes in ECAs requires mentorship and supervision. According to the informants' testimonies, mentoring improved emotional fortitude and academic dedication. Thus, students' engagement in ECAs transforms experiential learning into transferable academic skills, reinforcing classroom instruction. In the same study on peer mentoring programs in higher education conducted by González-Ortiz-de-Zárate et. al (2025), mentees outperformed non-mentees in terms of academic performance and dropout rates across several years, demonstrating the beneficial effects of organized mentoring on student achievement.

##### **3.2. Institutional Differences and Their Impact**

The implementation of ECAs in public and private schools varies, impacted students' experiences, according to this final theme. Private school parents reported that ECAs are incorporated into the curriculum and that club meetings are held during specific times. Sample transcriptions are as follows:

*Parent 2: "Nag-aallot man hin time iton era eskwelahan para hiton club meetings sugad la hiton normal subjects, salit dire ine nakaka apekto hiton era academics."*

(Their school allots time for club meetings like a normal subject, so it doesn't affect academics.)

This highlights how structured institutional support can mitigate conflicts between academic and extracurricular demands, allowing students to maximize learning outcomes. On the other hand, ECAs were frequently



held outside of regular school hours in public schools, necessitating the utilization of lunch breaks or after-school time.

*Teacher 2: "Nagshoshorten kami hin practice time para big events para masigurado nga iton mga estudyante makakaatendir la gehapon hit era mga klase."*

(We shorten practice time for big events to ensure that students still attend classes.)

Time management, stress levels, and student involvement were all impacted by these structural variations. This finding suggested that institutional arrangements significantly influence whether ECAs function as academic supports or additional demands on students' time and energy. In private school contexts, structured scheduling appears to reduce conflict between academic and extracurricular responsibilities, while in public schools, students and teachers often rely on compensatory strategies to balance both demands.

Schools that explicitly included ECAs into their curricula typically promote higher levels of engagement and learning results, as noted by the Honor Society (2023) and the National Association of Secondary Principals. Although these sources provide policy-level rather than empirical evidence, they help contextualize the participants' accounts by illustrating how institutional recognition and administrative support can shape students' academic experiences. This emphasizes the necessity of laws that acknowledge ECAs as essential to education rather than as a side effect.

## Conclusions

The findings of this study demonstrated that extracurricular activities played a significant role in shaping high school students' academic and personal development. Participation in extracurricular activities enabled students to develop essential life skills such as leadership, resilience, confidence, and time management, which in turn supported their academic performance. The study also showed that students' ability to balance academic responsibilities and extracurricular involvement was strongly influenced by the presence of supportive mentoring and institutional structures. Variations in the implementation of extracurricular activities between public and private schools further affected students' engagement, stress levels, and learning experiences. Overall, the study affirmed that when extracurricular activities are meaningfully integrated into school programs and supported by families and institutions, they contribute to the development of well-rounded learners capable of academic success and personal growth.

By providing in-depth insights into how high school students, parents, teachers, and administrators view the importance of extracurricular activities in academic and personal development, this study advances qualitative education research. Its conclusions, which emphasize the necessity of organized ECA implementation, encouraging mentorship, and cooperation between schools and families to improve student results, are pertinent to Philippine policy and educational practice. Furthermore, by demonstrating how context-specific elements, such as institutional variations and cultural customs, influence the advantages and difficulties of extracurricular involvement, this study contributes to the global conversation on ECAs and provides lessons that can be applied to other educational environments across the globe.

## Recommendations

Based on the findings of the study, schools may consider integrating extracurricular activities more strategically within the academic curriculum to help students balance academic demands and extracurricular participation. School administrators and teachers may strengthen mentoring and guidance programs to support students' leadership development, motivation, and time management skills. Parents and schools may enhance collaboration to provide consistent academic and emotional support for students engaged in extracurricular activities. Educational policymakers, including the Department of Education, may review existing policies to allow flexible and developmentally responsive implementation of extracurricular programs that support holistic learning. Future researchers may explore the quantitative effects of extracurricular participation and involve larger and more diverse samples to further validate and extend the findings of this study.

## REFERENCES



- Baseel, C. (2024). Major Japanese city is abolishing extracurricular activities at all of its middle schools. *Japan Today*. <https://www.japantoday.com/category/national/view/major-japanese-city-abolishes-extracurricular-activities>
- Boy, I. F., Bondoc, M. A., Bonifacio, C. A., Bonoan, M. D., Bonoan, R. C., Macindo, J. R., & Torres, G. C. (2022). Extracurricular activity involvement on the compassion, academic competence, and commitment of collegiate level students: a structural equation model. *Asia-Pacific Social Science Review*, 22(1). <https://doi.org/10.59588/2350-8329.1442>
- Department of Education. (2022). DepEd order no. 034, s. 2022: Suspension of extracurricular activities for SY 2022-2023. [https://www.deped.gov.ph/wp-content/uploads/2022/08/DO\\_s2022\\_034](https://www.deped.gov.ph/wp-content/uploads/2022/08/DO_s2022_034)
- Fredricks, J., & Eccles, J. (2020). Extracurricular involvement and adolescent adjustment: impact of duration, number of activities, and breadth of participation. *Applied Developmental Science*, 10(3), 132-146. [https://doi.org/10.1207/s1532480xads1003\\_3](https://doi.org/10.1207/s1532480xads1003_3)
- González-Ortiz-de-Zárate, A., Alonso-García, M. A., Gómez-Flechoso, M. Á., & Aliagas, I. (2025). Peer mentoring, university dropout and academic performance before, during, and after the pandemic in Spain. *Evaluation and Program Planning*, 113, Article 102676. <https://doi.org/10.1016/j.evalprogplan.2025.102676>
- Hayat, A. A., Shateri, K., Amini, M., & Shokrpour, N. (2020). Relationships between academic self-efficacy, learning-related emotions, and metacognitive learning strategies with academic performance in medical students. *National Library of Medicine*, 20(1), 76. <https://doi.org/10.1186/s12909-020-01995-9>
- Honor Society. (2023). The impact of extracurricular activities on academic success. <https://www.honorsociety.org/blog/impact-of-extracurricular-activities>
- Huang, W. (2024). An exploration of needs within Maslow's hierarchy of motivation. *Advances in Social Behavior Research*, 14, 41-44. <https://doi.org/10.54254/2753-7102/2024.19284>
- Lastra, D. A., Amallarinto, A. J., Deiparine, B. N. A., Montero, D. J., Calugay, L., & Rulona, J. (2024). The relationship between extracurricular activities and academic performance among high school students. *Social Science Exploration (Psychology, Education and Multidisciplinary Perspectives)*, 21(5), 522-527. <https://doi.org/10.5281/zenodo.12594232>
- McClain, C. M., Kelner, W. C., & Elledge, L. C. (2021). Youth mentoring relationships and college social and academic functioning: The role of mentoring relationship quality, duration, and type. *American Journal of Community Psychology*, 68(3-4), 340-357. <https://doi.org/10.1002/ajcp.12539>
- Moral-Garcia, J. E., Urchaga-Litago, J. V., Ramos-Morcillo, A. J., & Maneiro, R. (2020). Relationship of parental support on healthy habits, school motivations and academic performance in adolescents. *International Journal of Environmental Research and Public Health*, 17(3), 882. <https://doi.org/10.3390/ijerph17030882>
- Pan, Y., Zhou, D., & Shek, D. T. L. (2022). Participation in after-school extracurricular activities and cognitive ability among early adolescents in China: moderating effects of gender and family economic status. *Frontiers in Pediatrics*, 10, 839473. <https://doi.org/10.3389/fped.2022.839473>
- Penjor, U., & Dorji, T. (2022). Impact of extra-curricular activities on students' academic performance at secondary schools in Samdrup Jongkhar. *Asian Journal of Education and Social Studies*, 32(3), 8-9. <https://doi.org/10.9734/AJESS/2022/v32i330769>
- Saki, O., & Hanane, D. (2023). The effects of extracurricular activities on developing students' life skills. *International Journal of Language and Literary Studies*, 5(3), 213-227. <https://doi.org/10.36892/ijlls.v5i3.1413>



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- Sipahutar, S. K., & Arsini, Y. (2024). Effectiveness of group guidance using self-management techniques to reduce academic burnout in students. *Journal of Multicultural Studies in Guidance and Counseling*, 8(2). <https://doi.org/10.17509/jomsign.v8i2.74667>
- Tuazon, A. C. (2022). Extracurricular for mental health. *Inquirer.net*. <https://opinion.inquirer.net/156775/extracurricular-for-mental-health>
- Vargas, M., Calesterio, R., Gutierrez, R., Morales, D., Zapanta, J. A., & Amar, J. (2020). Effects of extracurricular on academic performance of senior high school students of Bestlink College of the Philippines: towards a guide. *Ascendens Asia Singapore-Bestlink College of the Philippines Journal of Multidisciplinary Research*, 2(1). <https://ojs.aaresearchindex.com/index.php/aasgbcjpmra/article/view/2464>
- Vispo, G. B., & Macalinao, Z. A. (2024). Extent of students involvement in extracurricular activities and academic performance among Grade 8 students. *International Journal of Multidisciplinary: Applied Business and Education Research*, 5(6). <https://doi.org/10.11594/ijmaber.05.06.18>
- Wu, Y., & Fernando, Y. (2023). Development of student innovation skills through extracurricular activities. *Journal of E-Business and Management Science*, 1(2). <https://doi.org/10.61098/jems.v1i2.106>
- Zarazaga-Peláez, J., Barrachina, V., Gutiérrez-Logroño, A., Villanueva-Guerrero, O., Roso-Moliner, A., & Mainer-Pardos, E., (2024). Impact of extracurricular physical activity on achievement of the sustainable development goals and academic performance: Mediating cognitive, psychological, and social factors. *Sustainability*, 16(16), 7238. <https://doi.org/10.3390/su16167238>



## Effect of calcium nitrate as a nutrient solution for hydroponic lettuce production

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### Abstract

**Aim:** This study evaluated the effects of varying calcium nitrate concentrations on the growth and yield performance of hydroponically grown lettuce. Specifically, it aimed to determine the optimal calcium nitrate concentration that enhances vegetative growth characteristics and maximizes yield and economic return.

**Methodology:** The experiment was conducted using a nutrient film technique (NFT) hydroponic system at the Nursery House in San Manuel, Isabela, Philippines. A Completely Randomized Design (CRD) was employed with five treatments and three replications. The treatments consisted of a commercial nutrient solution (100% SNAP) and four calcium nitrate concentrations (1.0, 1.5, 2.0, and 2.5 g/L) combined with nutrient solution. Growth, yield, and economic parameters were measured and analyzed.

**Results:** Results showed that the application of 2.0 g/L calcium nitrate combined with nutrient solution produced growth and yield performance comparable to the commercial SNAP solution. This treatment resulted in higher plant fresh weight, longer root length, wider leaves, a greater number of leaves, and the highest return on investment among all treatments.

**Conclusion:** The application of 2.0 g/L calcium nitrate combined with nutrient solution can serve as an effective and economically viable alternative to commercial nutrient solutions for hydroponically grown lettuce.

**Keywords:** Calcium nitrate, hydroponics, nutrient film technique, nutrient solution

### INTRODUCTION

The rapid expansion of urban areas, coupled with sustained global population growth, has intensified the demand for accessible, nutritious, and high-quality food. Simultaneously, the continuous reduction of arable land due to urbanization, industrialization, and infrastructure development poses serious challenges to conventional agricultural systems. These constraints are further aggravated by soil degradation, climate variability, water scarcity, and environmental pollution, all of which threaten long-term agricultural productivity and global food security (Ciriello et al., 2021). As a result, the pursuit of innovative, resource-efficient, and sustainable agricultural technologies has become a global priority.

Within this context, hydroponic farming has emerged as a viable alternative to soil-based agriculture. Hydroponics is a soilless cultivation system that supplies plants with nutrient-enriched solutions, allowing precise nutrient control while minimizing land and water use. This technology has demonstrated considerable potential in enhancing yield stability, improving crop quality, and supporting year-round production, particularly for leafy vegetables such as lettuce (*Lactuca sativa* L.) (Jokinen et al., 2022). Globally, hydroponic lettuce production has gained prominence due to its short growth cycle, high market demand, and suitability for urban and peri-urban environments.

In the Philippine setting, hydroponics has been increasingly promoted as a sustainable solution to food production challenges associated with limited land availability, climate-related risks, and rising input costs. Urban and semi-urban communities, including those in Northern Luzon, have gradually adopted small- and medium-scale hydroponic systems to supplement household food supply and support livelihood initiatives. However, despite its growing adoption, hydroponic production in the Philippines remains constrained by the high cost of commercial nutrient solutions and limited locally generated research on nutrient optimization under tropical conditions. These challenges underscore the need for cost-effective, locally adaptable nutrient management strategies to improve the productivity and economic viability of hydroponic systems.



Nutrient management is a critical determinant of success in hydroponic cultivation. Maintaining an optimal balance of essential macronutrients, including nitrogen, phosphorus, potassium, and calcium, as well as micronutrients such as iron and manganese, is essential for ensuring plant health and maximizing growth and yield. Previous studies have highlighted that inappropriate nutrient concentrations can lead to nutrient imbalances, reduced biomass accumulation, and physiological disorders, particularly in leafy vegetables (Sidhu et al., 2020). Among these nutrients, calcium plays a vital role in cell wall formation, membrane stability, enzyme activation, and overall plant structural integrity.

Calcium deficiency is a common problem in hydroponic lettuce production, often manifesting as tip burn, reduced leaf expansion, and increased susceptibility to physiological stress and pathogens (Moyo et al., 2024). Calcium nitrate  $[\text{Ca}(\text{NO}_3)_2]$  is widely utilized in hydroponic systems as a dual source of calcium and nitrogen. While several studies have examined the general role of calcium in hydroponic crops, existing literature largely focuses on standard commercial nutrient formulations or generalized nutrient recommendations. Limited empirical evidence is available on the optimization of calcium nitrate concentrations as a partial or alternative nutrient source, particularly under Philippine climatic conditions and small-scale hydroponic setups.

This gap indicates the need for systematic evaluation of calcium nitrate application rates in hydroponic lettuce production, specifically in comparison with commercially available nutrient solutions. There remains insufficient locally grounded research that identifies optimal calcium nitrate concentrations capable of sustaining plant growth, maximizing yield, and improving economic returns without compromising crop quality. Addressing this gap is essential for developing cost-efficient and context-specific nutrient management practices for Filipino hydroponic growers.

Anchored on the conceptual framework of nutrient concentration influencing plant physiological response, growth performance, yield, and economic viability, the present study investigated the effects of varying calcium nitrate concentrations on hydroponically grown lettuce. The framework assumes that appropriate calcium nitrate levels directly affect nutrient uptake efficiency, vegetative growth characteristics, and biomass accumulation, which in turn influence yield performance and return on investment. This framework guided the selection of treatments, growth parameters, and economic indicators assessed in the study.

Specifically, this study evaluated the effects of different calcium nitrate concentrations combined with a nutrient solution on lettuce growth and yield under a nutrient film technique (NFT) system in Isabela, Philippines. By comparing these treatments with a commercial nutrient solution, the study aimed to identify an optimal calcium nitrate concentration that enhances plant performance while reducing production costs. The findings are expected to contribute to the advancement of hydroponic nutrient management practices by providing empirical evidence on calcium nitrate optimization under local conditions.

Beyond its technical contribution, this study supports the United Nations Sustainable Development Goals (SDGs), particularly Goal 1 (No Poverty), Goal 2 (Zero Hunger), and Goal 3 (Good Health and Well-being), by promoting sustainable food production, improving access to nutritious crops, and enhancing livelihood opportunities through efficient urban agriculture. The results may serve as a scientific basis for developing affordable, region-specific hydroponic nutrient solutions, thereby strengthening the sustainability and profitability of hydroponic lettuce production in the Philippines.

### **Statement of the Problem**

Hydroponic lettuce production has gained increasing attention as a sustainable solution to food security challenges associated with urbanization, land scarcity, and climate variability. While commercial nutrient solutions are widely used to support hydroponic crop growth, their cost and accessibility pose limitations for small-scale and local growers. Calcium nitrate is commonly applied as a source of calcium and nitrogen in hydroponic systems; however, empirical evidence on its optimal concentration for hydroponically grown lettuce, particularly under varying electrical conductivity conditions, remains limited.

Existing studies have largely focused on generalized nutrient formulations or the use of complete commercial solutions, with insufficient emphasis on isolating calcium nitrate concentrations and evaluating their effects on plant growth, yield performance, and economic viability. Moreover, the interaction between calcium nitrate concentration and electrical conductivity, and its influence on both biological and economic outcomes, has not been adequately examined under local production conditions.

This gap in knowledge necessitates a systematic investigation to determine the appropriate calcium nitrate concentration that can support optimal lettuce growth while ensuring cost efficiency. Addressing this problem is essential for developing practical, sustainable, and economically viable nutrient management strategies for hydroponic lettuce production, particularly for small-scale and resource-limited growers.



## Research Objectives

### General Objective:

To evaluate the effects of varying concentrations of calcium nitrate and resulting electrical conductivity on the growth and yield performance of hydroponically grown lettuce.

### Specific Objectives:

1. To determine the influence of varying concentrations of calcium nitrate on the growth and yield of hydroponically grown lettuce.
2. To assess the effect of electrical conductivity on the growth and yield performance of lettuce.
3. To identify the calcium nitrate concentration that yields the highest return on investment in hydroponic lettuce production.

### Research Questions

1. What is the effect of varying concentrations of calcium nitrate on the growth and yield performance of hydroponically grown lettuce?
2. How does electrical conductivity influence the growth and yield of lettuce in a hydroponic system?
3. Which calcium nitrate concentration produces the highest return on investment in hydroponic lettuce production?

## METHODS

### Research Design

The study employed a quantitative experimental research design using a Completely Randomized Design (CRD). This design was selected because it allowed the comparison of multiple calcium nitrate concentrations under controlled hydroponic conditions while minimizing experimental bias. The CRD was appropriate for the study since the experimental units were considered homogeneous and environmental conditions were uniformly maintained throughout the experimental period.

### Population and Sampling

The population of the study consisted of hydroponically grown lettuce plants cultivated under a nutrient film technique (NFT) system. A total of 375 lettuce plants were used in the experiment, with 25 plants per treatment replicated three times across five treatments. All plants were selected using total enumeration, as all viable seedlings produced during the propagation stage were included in the experiment to ensure uniformity and adequate representation.

### Instrumentation

Data were gathered using researcher-utilized measuring instruments, including a ruler for plant height and leaf measurements, a digital weighing scale for fresh weight determination, a caliper for precision measurements, and an electrical conductivity/total dissolved solids/pH meter for monitoring nutrient solution properties. All instruments were calibrated prior to data collection to ensure measurement accuracy and consistency. These instruments were deemed appropriate for the quantitative variables measured in the study.

### Data Collection Procedure

The experiment was conducted at the Nursery House in Barangay District 1, San Manuel, Isabela, Philippines. Lettuce seeds were sown in sterilized coco peat placed in Styrofoam cups and were transplanted into PVC downspouts ten days after sowing. Nutrient solutions with varying calcium nitrate concentrations were applied according to the designated treatments.

Data collection was conducted at specific growth stages. Plant height was measured at 25 days after transplanting (DAT). Leaf length, leaf width, root length, number of leaves, and fresh weights were measured at harvest, which occurred 32 days after transplanting. Economic data were collected after harvest to compute production costs, gross income, net income, and return on investment.

### Experimental Treatments



The treatments were as follows:

- T1 – 100% commercial SNAP solution (control)
- T2 – 1.0 g/L calcium nitrate + solution
- T3 – 1.5 g/L calcium nitrate + solution
- T4 – 2.0 g/L calcium nitrate + solution
- T5 – 2.5 g/L calcium nitrate + solution

### Data Analysis

Data were subjected to statistical analysis to determine significant differences among treatments. Analysis of variance (ANOVA) was used to evaluate the effects of calcium nitrate concentrations on growth and yield parameters. When significant differences were observed, mean comparisons were conducted using the Least Significant Difference (LSD) test at the 1% level of significance. Return on investment (ROI) was computed using the formula:  

$$\text{ROI (\%)} = (\text{Net Income} / \text{Total Cost of Production}) \times 100$$

### Ethical Considerations

The study adhered to ethical research practices applicable to plant-based experimental studies. All procedures were conducted in a manner that ensured environmental safety and responsible use of resources. No endangered plant species were involved, and waste materials were disposed of following proper agricultural and environmental guidelines. The study was conducted solely for academic and research purposes.

## RESULTS AND DISCUSSION

### A. Electrical Conductivity (EC) of the Treatments

Table 1. Electrical Conductivity (EC) at Different Levels of Calcium Nitrate + Solution

TREATMENT	Electrical Conductivity
T <sub>1</sub> – 100% SNAP (Control)	816.00e
T <sub>2</sub> – 1 gram/L Calcium Nitrate + Solution	929.67d
T <sub>3</sub> – 1.5 gram/L Calcium Nitrate + Solution	1188.33c
T <sub>4</sub> – 2.0 gram/L Calcium Nitrate + Solution	1359.00b
T <sub>5</sub> – 2.50 gram/L Calcium Nitrate + Solution	1631.00a
F-RESULT	**
CV (%)	5.10
LSD	121.45

Note: Means within a column represented by common letters are not significant at 1% level using HSD.

\*\* – highly significant

Electrical conductivity (EC) differed significantly among treatments (Table 1). The lowest EC value was recorded in the control treatment using the commercial SNAP nutrient solution (816.00 mS/cm), while the highest EC was observed in Treatment 5 (2.50 g/L calcium nitrate + solution) with a mean of 1631.00 mS/cm. A progressive increase in EC was noted as calcium nitrate concentration increased, indicating a direct relationship between nutrient concentration and solution salinity.

Results further showed that higher EC levels were associated with reduced lettuce fresh weight, particularly in Treatment 5. This finding suggests that excessive EC may have induced osmotic stress, limiting water and nutrient uptake and consequently suppressing plant growth. In contrast, Treatments 1 (SNAP) and 4 (2.0 g/L calcium nitrate + solution), which maintained moderate EC levels, produced superior growth and yield outcomes. These results support earlier findings that lower to moderate EC levels enhance lettuce growth, particularly under high-temperature conditions (Fu et al., 2012; Oyebamiji et al., 2025).

The observed response also aligns with reports that lettuce cultivars vary in salinity tolerance, and excessive salt concentration can negatively affect growth and biomass accumulation (Shannon & Grieve, 2006). Thus, maintaining EC within an optimal range is essential for hydroponic lettuce production, especially under tropical environmental conditions.



## B. Growth Performance of Lettuce as Affected by Different Levels of Calcium Nitrate

Table 2. Growth Performance of Lettuce as Affected by Different Levels of Calcium Nitrate + Solution

TREATMENT	Leaf Length (cm)	Leaf Width (cm)	Root Length (cm)
T <sub>1</sub> – 100% SNAP (Control)	15.10a	9.48a	21.10a
T <sub>2</sub> – 1 gram/L Calcium Nitrate + Solution	11.67c	7.13c	16.10b
T <sub>3</sub> – 1.5 gram/L Calcium Nitrate + Solution	13.10b	8.23b	17.97b
T <sub>4</sub> – 2.0 gram/L Calcium Nitrate + Solution	15.00a	9.32a	20.87a
T <sub>5</sub> – 2.50 gram/L Calcium Nitrate + Solution	10.13d	6.73c	13.10c
F-RESULT	**	**	**
CV (%)	4.62	3.59	5.80
LSD	1.09	0.53	1.88

Note: Means within a column represented by common letters are not significant at 1% level using HSD.

\*\* – highly significant

### Leaf Length (cm)

Highly significant differences in leaf length were observed at 32 days after transplanting (DAT) (Table 2). The longest leaves were recorded in Treatments 1 (SNAP) and 4 (2.0 g/L calcium nitrate + solution), with mean values of 15.10 cm and 15.00 cm, respectively. Conversely, Treatment 5 (2.50 g/L calcium nitrate + solution) produced the shortest leaves.

These results indicate that moderate calcium nitrate concentration supported optimal leaf expansion, whereas excessive levels may have caused nutrient imbalance or osmotic stress. Elevated nitrate and calcium concentrations can interfere with the uptake of other essential nutrients such as potassium and magnesium, which are critical for chlorophyll synthesis and cell expansion (Bhatla & Kathpalia, 2023). This imbalance likely contributed to reduced leaf growth at higher calcium nitrate levels.

### Leaf Width (cm)

Leaf width was also significantly affected by calcium nitrate concentration (Table 2). The widest leaves were observed in Treatments 1 and 4, while the narrowest leaves occurred in Treatments 2 (1.0 g/L) and 5 (2.50 g/L). These findings suggest that both insufficient and excessive calcium nitrate levels adversely affect leaf development.

At lower concentrations, nutrient deficiency may have limited cell division and expansion, resulting in narrower leaves. At higher concentrations, nutrient toxicity or ionic imbalance may have suppressed photosynthetic efficiency and cell elongation, leading to reduced leaf width. Similar trends have been reported in hydroponic lettuce, where optimal nitrate levels promoted leaf expansion, while deviations led to growth suppression (Jung et al., 2025).

### Root Length (cm)

Root length differed significantly among treatments (Table 2). Treatment 4 produced the longest roots (20.87 cm), which was statistically comparable to the SNAP control. This result indicates that a 2.0 g/L calcium nitrate concentration provided favorable conditions for root elongation, possibly by enhancing calcium availability for cell wall development and root meristem activity. Shorter root lengths observed at higher concentrations may be attributed to salt stress in the root zone, which can restrict root growth and nutrient absorption.

## C. Yield Performance of Lettuce as Affected by Different Levels of Calcium Nitrate

Table 3. Yield Performance of Lettuce as Affected by Different Levels of Calcium Nitrate + Solution

TREATMENT	Number of Leaves at Harvest	Fresh Weight w/ Roots	Fresh Weight w/o Roots	Total Fresh Weight
T <sub>1</sub> – 100% SNAP (Control)	16.33a	141.67a	124.67a	137.17a
T <sub>2</sub> – 1 gram/L Calcium Nitrate + Solution	13.67b	102.67c	90.53c	91.33c



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T <sub>3</sub> – 1.5 gram/L Calcium Nitrate + Solution	13.67b	122.00b	109.00b	113.00b
T <sub>4</sub> – 2.0 gram/L Calcium Nitrate + Solution	16.33a	140.00a	122.67a	131.67a
T <sub>5</sub> – 2.50 gram/L Calcium Nitrate + Solution	11.67c	91.67d	81.33d	89.67c
F-RESULT	**	**	**	**
CV (%)	5.10	6.00	2.84	3.50
LSD	1.32	9.21	5.44	7.10

Note: Means within a column represented by common letters are not significant at 1% level using HSD  
\*\* – highly significant

### Number of Leaves at Harvest

Significant differences were observed in the number of leaves at harvest (Table 3). Treatments 1 and 4 produced the highest leaf counts (16.33 leaves per plant), while Treatment 5 recorded the lowest. These findings indicate that moderate calcium nitrate concentration supported active cell division and leaf initiation.

Nitrogen supplied through calcium nitrate plays a crucial role in vegetative growth, particularly during the final growth stages when nutrient demand is high (Wang et al., 2025). However, excessive nitrogen may lead to nutrient imbalance and reduced productivity, as observed in the highest concentration treatment.

### Fresh Weight of Plants With and Without Roots (g)

Fresh weight with roots and without roots differed significantly across treatments (Table 3). Treatments 1 and 4 produced the heaviest plants, while Treatment 5 resulted in the lowest fresh weights. The superior performance of Treatment 4 suggests that the 2.0 g/L calcium nitrate concentration provided an optimal balance of calcium and nitrogen, promoting efficient nutrient uptake and biomass accumulation.

Excessive EC in Treatment 5 likely reduced water absorption and induced salt stress, leading to reduced fresh weight. These findings are consistent with reports that excessive nitrogen and salinity negatively affect lettuce yield in hydroponic systems (Savvas et al., 2006; Tsouvaltzis et al., 2020).

### Total Fresh Weight at Harvest

Total fresh weight at harvest followed a similar trend, with Treatment 4 producing yields comparable to the SNAP control. Although calcium plays a critical role in maintaining cell structure and regulating metabolic processes (Zhou et al., 2020), environmental factors such as high ambient temperatures (41.50–44.70°C) during the experimental period may have constrained overall growth. Lettuce is highly sensitive to heat stress, which can reduce water uptake and biomass accumulation regardless of nutrient formulation (Gruda, 2005; Eriksen et al., 2016).

## D. Cost and Return Analysis of Hydroponically Grown Lettuce

Table 4. Cost and Return Analysis of Hydroponically Grown Lettuce at Different Levels of Calcium Nitrate + Solution

TREATMENT	Total Cost of Production (Php.)	Gross Income (Php.)	Net Income (Php.)	Return on Investment (%)
T <sub>1</sub> – 100% SNAP (Control)	16.00	18.70	2.70	14.44
T <sub>2</sub> – 1 gram/L Calcium Nitrate + Solution	13.00	13.58	0.58	4.27
T <sub>3</sub> – 1.5 gram/L Calcium Nitrate + Solution	13.50	16.35	2.85	17.43
T <sub>4</sub> – 2.0 gram/L Calcium Nitrate + Solution	14.00	18.40	4.40	23.91
T <sub>5</sub> – 2.50 gram/L Calcium Nitrate + Solution	14.50	12.20	(-2.30)	(-18.85)

Cost of Lettuce @ P150.00/kg

Cost of SNAP A and B P350

The cost and return analysis revealed clear differences in economic performance among treatments (Table 4). Treatment 4 achieved the highest return on investment (ROI) at 23.91%, indicating superior economic efficiency compared with the SNAP control. In contrast, Treatment 5 resulted in a negative ROI, suggesting that the increased cost and reduced yield outweighed potential benefits at higher calcium nitrate concentrations.



These findings indicate that while calcium nitrate can serve as a cost-effective nutrient source, its economic viability is highly dependent on proper concentration management. Optimal nutrient levels not only enhance yield but also improve profitability in hydroponic lettuce production.

### Conclusion

The study demonstrated that varying calcium nitrate concentrations significantly influenced the electrical conductivity, growth performance, yield, and economic returns of hydroponically grown lettuce. Among the treatments evaluated, the application of 2.0 g/L calcium nitrate combined with nutrient solution consistently produced growth and yield parameters comparable to those obtained using the commercial SNAP nutrient solution. This treatment resulted in favorable leaf development, root elongation, fresh weight accumulation, and the highest return on investment.

Excessive calcium nitrate concentration increased electrical conductivity and negatively affected plant growth and yield, while lower concentrations resulted in nutrient insufficiency. Overall, the findings indicate that a balanced calcium nitrate concentration is essential for optimizing hydroponic lettuce production under tropical conditions.

### Recommendations

Based on the findings of this study, the application of 2.0 g/L calcium nitrate combined with nutrient solution may be considered a viable alternative to commercial nutrient solutions for hydroponic lettuce production, particularly for small-scale and cost-sensitive growers. This concentration demonstrated favorable growth performance, yield outcomes, and economic returns.

Further studies may be undertaken to evaluate the consistency of these results across different lettuce varieties, multiple cropping cycles, and varying environmental conditions. Additional research on nutrient interactions, temperature management, and long-term system sustainability could further strengthen nutrient optimization strategies for hydroponic lettuce production in tropical regions.

### REFERENCES

- Bhatla, S. C., & Kathpalia, R. (2023). Essential and functional mineral elements. In *Plant physiology, development and metabolism* (pp. 25-49). Singapore: Springer Nature Singapore. [https://doi.org/10.1007/978-981-99-5736-1\\_2](https://doi.org/10.1007/978-981-99-5736-1_2)
- Ciriello, M., Formisano, L., Pannico, A., & El-Nakhel, C. (2021). Nutrient solution deprivation as a tool to improve hydroponics sustainability: Yield, physiological, and qualitative response of lettuce. *Agronomy*, *11*(8), 1469. <https://doi.org/10.3390/agronomy11081469>
- Eriksen, R. L., Knepper, C., Cahn, M. D., & Mou, B. (2016). Screening of lettuce germplasm for agronomic traits under low water conditions. *HortScience*, *51*(6), 669–679.
- Fu, Y., Li, H., & Wu, G. (2012). Effects of different electrical conductivity levels on growth and quality of lettuce in a hydroponic system. *Journal of Agricultural Science*, *4*(2), 112–118.
- Gruda, N. (2005). Impact of environmental factors on product quality of greenhouse vegetables for fresh consumption. *Critical Reviews in Plant Sciences*, *24*(3), 227–247.
- Jokinen, K., Salovaara, A., Wasonga, D., & Edelman, M. (2022). Root-applied glycinebetaine decreases nitrate accumulation and improves quality in hydroponically grown lettuce. *Food Chemistry*, *387*, 132920.
- Jung, D. H., Choi, S., & Lee, J. (2025). Changes in the growth, photosynthesis, and nitrogen allocation characteristics of hydroponically grown lettuce under different nitrate levels in a nutrient solution. *Horticulture, Environment, and Biotechnology*, *66*(1), 163-172.
- Moyo, K., Khetsha, Z., & Masowa, M. (2024). Eco-organic system and silicon-based biostimulant as a strategy for vegetable production under multistress conditions in South Africa: A review. ResearchGate.
- Oyebamiji, Y. O., Shamsudin, N. A. A., Ikmal, A. M., Yusop, M. R., & Ahmad Malike, F. (2025). Effect of High Temperature on Growth and Yield of Lettuce. *International Journal of Horticultural Science and Technology*, *12*(2), 409-420.



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- Savvas, D., Passam, H. C., Olympios, C., Nasi, E., Moustaka, E., Mantzos, N., & Barouchas, P. (2006). Effects of ammonium nitrogen on lettuce grown on pumice in a closed hydroponic system. *HortScience*, 41(7), 1667–1673.
- Shannon, M. C., & Grieve, C. M. (2006). Tolerance of vegetable crops to salinity. *Scientia Horticulturae*, 78(1-4), 5-38.
- Sidhu, R., Cavallaro, N., Pola, C., & Danyluk, M. (2020). Planar interdigitated aptasensor for flow-through detection of *Listeria* spp. in hydroponic lettuce growth media. *Sensors*, 20(20), 5773.
- Tsouvaltzis, P., Kasampalis, D. S., & Aktsoglou, D. (2020). Effect of reduced nitrogen and supplemented amino acids nutrient solution on the nutritional quality of baby green and red lettuce grown in a floating system. *Agronomy*, 10, 922.
- Wang, C., Cui, H., Jin, M., Wang, J., Li, C., Luo, Y., ... & Wang, Z. (2025). Effect of Combined Urea and Calcium Nitrate Application on Wheat Tiller Development, Nitrogen Use Efficiency, and Grain Yield. *Plants*, 14(2), 277. <https://doi.org/10.1016/j.scienta.2020.109740>
- Zhou, J., Zhang, M., Ji, M., Wang, Z., & Hou, H. (2020). Evaluation of heavy metals stability and phosphate mobility in the remediation of sediment by calcium nitrate. *Environmental Toxicology and Chemistry*, 39(3), 598–607



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### Abstract

**Aim.** This study examined the ethical, academic, and policy foundations of the conferment of honorary degrees (*Honoris Causa*), with particular attention to the proliferation of unregulated and fee-based conferments by non-recognized organizations. Anchored on higher education ethics and Philippine regulatory frameworks—especially policies of the Commission on Higher Education (CHED)—the study sought to educate academic stakeholders and caution institutions and individuals against practices that undermine the dignity, credibility, and integrity of honorary academic distinctions.

**Methodology.** The study employed a qualitative policy–ethical analysis design. Data were gathered through semi-structured interviews with twelve purposively selected participants composed of higher education administrators, graduate school faculty members, research ethics experts, and accreditation practitioners. Documentary analysis of CHED memorandum orders, public advisories, institutional guidelines, and international academic standards supplemented the interviews. Data were analyzed using thematic coding, policy alignment mapping, and ethical synthesis.

**Results.** Findings revealed strong consensus that honorary degrees are morally and academically legitimate only when conferred as gratuitous recognitions of extraordinary merit, service, or contribution to society by CHED-recognized higher education institutions with prior regulatory approval. Participants uniformly rejected conferments involving payment, transactional arrangements, or misrepresentation as ethically defective and academically invalid. Recent CHED public advisories on unauthorized awarding of honorary doctorates were cited as critical regulatory clarifications reinforcing these conclusions. Circumstances such as commercialization, lack of institutional authority, and misleading public use of titles were found to gravely damage public trust in higher education.

**Conclusion.** Honorary degrees retain dignity and legitimacy only when aligned with CHED Memorandum Order (CMO) No. 09, Series of 2021, academic ethics, and the foundational principle of honor without compensation. Safeguarding the *Honoris Causa* requires institutional discipline, regulatory vigilance, and sustained education of academic communities and the public.

**Keywords:** honorary degree, *Honoris Causa*, academic ethics, CHED policy, higher education integrity

### INTRODUCTION

Honorary degrees, traditionally designated as *Honoris Causa*, have long been regarded as among the highest symbolic recognitions conferred by academic institutions upon individuals who have rendered extraordinary and exemplary contributions to society, the nation, or a specific field of human endeavor (Mudzakkir et al., 2021). Rooted in medieval European university traditions, the *Honoris Causa* emerged as a mechanism through which universities publicly affirm values they uphold—intellectual excellence, moral leadership, public service, and transformative social impact—without requiring formal academic enrollment or completion of curricular requirements. Globally, reputable universities reserve this distinction for individuals whose lives and works embody the ideals of scholarship, integrity, and service, and whose achievements extend beyond personal success toward the common good (Leraczyk, 2022).



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In contemporary higher education systems, honorary degrees function not merely as ceremonial accolades but as moral and institutional statements. The conferment reflects an institution's identity, values, and credibility, signaling to the academic community and the public the standards of excellence it seeks to promote. Internationally recognized universities therefore observe strict internal policies, rigorous vetting processes, and collegial approval mechanisms to ensure that honorary degrees are conferred only upon individuals whose contributions withstand ethical, professional, and public scrutiny. Central to this tradition is the understanding that honorary degrees are gratuitous recognitions—bestowed without financial consideration, academic credit, or equivalence to earned degrees (Resane, 2024; Heffernan & Jöns, 2007).

Within the Philippine higher education context, the conferment of honorary degrees is explicitly governed by the Commission on Higher Education (CHED), the constitutionally mandated agency tasked with regulating and safeguarding the quality and integrity of higher education institutions. CHED Memorandum Order (CMO) No. 09, Series of 2021, entitled *Revised Policies and Guidelines on the Conferment of Honorary Doctorate Degrees by Higher Education Institutions in the Philippines*, clearly stipulates that only CHED-recognized higher education institutions (HEIs) meeting specific criteria may confer honorary doctorate degrees, and only after securing prior approval from the CHED Commission *en banc*. The policy further clarifies that honorary degrees are purely honorific distinctions and must not be treated as academic credentials earned through coursework, research, residency, or payment.

Despite the clarity of these regulatory safeguards, recent years have witnessed the emergence of organizations and entities—some unrecognized by CHED and others operating outside legitimate higher education authority—that confer honorary degrees in exchange for fees, donations, sponsorships, or mandatory participation costs. These conferments are often accompanied by academic regalia, ceremonial trappings, and public announcements that closely resemble legitimate university practices, thereby blurring the distinction between honor and transaction, recognition and commodification.

This concern was formally addressed by CHED in a public advisory dated 18 October 2024, wherein the Commission urged the public to exercise caution and to verify the recognition status of institutions before accepting honorary degrees. The advisory specifically warned against the unauthorized awarding of honorary doctorate degrees by entities not recognized as higher education institutions and emphasized that such conferments are not recognized by CHED. The advisory reiterated that only CHED-recognized HEIs are authorized to award honorary doctorates and that degrees issued by non-recognized entities have no academic or regulatory standing.

The CHED advisory further underscored the intent of CMO No. 09, Series of 2021, which establishes safeguards to protect the credibility and appropriate use of *honoris causa* degrees. These safeguards include minimum qualifications for nominees, restrictions on eligible nominees and nominators, limits on the number of honorary degrees that may be conferred annually, mandatory prior approval procedures, and explicit rules on the proper use of honorary titles, including the notation "(Hon.)" when affixed to a recipient's name. The issuance of such a public warning highlights the growing urgency of addressing unethical and misleading honorary degree practices that threaten public trust in higher education.

Scholarly literature on diploma mills, fraudulent credentials, and credential inflation has long documented how unregulated credentialing practices erode academic standards and mislead the public (Eaton & Carmichael, 2023; Freeman et al., 2020). However, comparatively limited scholarly attention has been devoted to honorary degrees as a distinct ethical and policy issue, particularly within the Philippine regulatory environment. The *Honoris Causa* occupies a unique and vulnerable space in higher education: it is neither an earned academic degree nor a purely symbolic award devoid of institutional authority. This liminal status renders it especially susceptible to misuse, misinterpretation, and exploitation.

The urgency of examining this issue is heightened by contemporary academic and professional realities. Graduate educators, accreditation practitioners, and research leaders increasingly encounter individuals who publicly use honorary titles as formal academic credentials in academic publishing, institutional leadership, consultancy, and professional representation. Such practices raise serious ethical concerns regarding academic honesty, institutional accountability, and respect for regulatory authority. For educators and research organizations committed to ethical scholarship and policy compliance, silence on this issue risks tacitly legitimizing practices that contradict both regulation and principle.



This study responds to this gap by revisiting the ethical, academic, and regulatory foundations of the *Honoris Causa*. Anchored on higher education ethics, CHED policies—including recent public advisories—and expert perspectives from academia and research governance, the study sought to clarify the essential conditions that preserve, or erode, the honor, dignity, and legitimacy of honorary degrees. Beyond critique, the study is intentionally educative and cautionary, aiming to reinforce respect for policies that safeguard the integrity of Philippine higher education.

### Statement of the Problem

The increasing incidence of fee-based, unauthorized, and unregulated conferment of honorary degrees has generated widespread confusion, misrepresentation, and ethical concern within Philippine higher education. Despite the existence of clear policies under Commission on Higher Education (CHED) Memorandum Order No. 09, Series of 2021, recent CHED public advisories reveal persistent non-compliance by certain organizations and limited public awareness regarding legitimate degree-conferring authority. These practices have contributed to the commodification of academic honor and the misuse of honorary titles in academic, professional, and public settings.

The absence of a sustained ethical and policy-based examination of honorary degree conferment has further enabled the normalization of practices that blur the distinction between earned academic credentials and purely honorific recognition. As a result, the symbolic and moral value of the *Honoris Causa* is increasingly undermined, posing risks to academic integrity, institutional credibility, and public trust in higher education.

This study therefore addressed the need to systematically examine the conferment of honorary degrees through an ethical, academic, and regulatory lens in order to determine the conditions under which such distinctions remain legitimate, morally defensible, and aligned with national higher education standards and CHED regulatory intent.

### Research Objectives

#### General Objective

To examine the ethical, academic, and policy foundations of the conferment of honorary degrees (*Honoris Causa*) in the Philippine higher education context.

#### Specific Objectives

1. To evaluate the ethical nature of honorary degrees with respect to their purpose and object as academic distinctions.
2. To examine the intentions underlying the conferment of honorary degrees by academic and non-academic entities.
3. To assess how circumstances and consequences—such as payment, institutional authority, and public representation—affect the legitimacy of honorary degree conferments.
4. To analyze CHED policies and public advisories governing the conferment and use of honorary degrees.
5. To propose measures to preserve the dignity, credibility, and honor of the *Honoris Causa* in contemporary higher education practice.

### Research Questions

1. What is the ethical and academic purpose of an honorary degree as an academic distinction?
2. What intentions underpin legitimate versus illegitimate conferments of honorary degrees?
3. How do circumstances such as payment, degree-conferring authority, and public representation affect the legitimacy of honorary degrees?
4. How do CHED policies and public advisories support or challenge current practices in honorary degree conferment?
5. How may the honor, dignity, and integrity of the *Honoris Causa* be preserved in contemporary higher education practice?

### METHODOLOGY

#### Research Design



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This study employed a qualitative policy–ethical analysis design, appropriate for examining normative, regulatory, and ethical issues embedded in higher education governance and academic practice. The design enabled an in-depth exploration of meanings, values, intentions, and institutional responsibilities associated with the conferment of honorary degrees (*Honoris Causa*), particularly within the Philippine higher education context governed by the Commission on Higher Education (CHED).

Unlike quantitative approaches that focus on prevalence or statistical relationships, qualitative policy–ethical analysis emphasizes how policies are interpreted, implemented, and ethically evaluated by academic stakeholders (Mitchell, 2023). This approach is particularly suited to inquiries involving academic integrity, regulatory compliance, and ethical discernment, where contextual understanding, moral reasoning, and expert judgment are central to analysis.

The design integrated policy analysis and ethical inquiry to examine both (a) the formal regulatory frameworks governing honorary degree conferment—specifically CHED Memorandum Order No. 09, Series of 2021, and related public advisories—and (b) the moral reasoning that underpins legitimate and illegitimate conferment practices. By situating participant perspectives within national policies and international academic standards, the study achieved a holistic examination of the object, intention, and circumstances surrounding honorary degrees.

### Participants and Sampling

The study involved twelve purposively selected participants chosen based on their professional expertise and direct involvement in higher education governance, research ethics, and quality assurance. Purposive sampling was employed to ensure that participants possessed the specialized knowledge and experience necessary to provide informed, reflective, and policy-relevant insights on honorary degree conferment.

The participants consisted of:

- Four higher education administrators, with experience in institutional leadership, academic governance, and policy formulation;
- Four graduate school faculty members, actively engaged in teaching, research supervision, academic publishing, and credential evaluation;
- Two research ethics experts, with formal roles in ethics review boards, research integrity committees, or ethics education; and
- Two accreditation practitioners, involved in institutional assessment, regulatory compliance, and quality assurance processes.

Selection criteria included length of professional experience, familiarity with CHED regulations, involvement in academic or research leadership, and demonstrated engagement with issues of academic integrity and credential legitimacy. This composition ensured a multidisciplinary and triangulated perspective on the ethical, academic, and regulatory dimensions of honorary degree conferment.

### Research Instruments

Data were gathered using a researcher-developed semi-structured interview guide explicitly aligned with the study's research objectives and questions. The instrument consisted of open-ended questions designed to elicit participants' perspectives on:

- the ethical and academic purpose of honorary degrees;
- intentions underlying legitimate and illegitimate conferment practices;
- the role of payment, institutional authority, and public representation in determining legitimacy; and
- the interpretation and effectiveness of CHED policies and public advisories governing honorary degrees.

The interview guide underwent content validation by two experts: a senior higher education administrator with extensive experience in academic policy implementation and a research ethics specialist with expertise in qualitative



research design. Validation focused on clarity, relevance, alignment with research objectives, and ethical sensitivity. Revisions were incorporated based on expert feedback prior to data collection.

### **Data Collection**

Data collection was conducted through in-depth, semi-structured interviews and systematic document analysis. Interviews were carried out either face-to-face or through secure online platforms, depending on participant availability and logistical considerations. Each interview lasted approximately 45 to 60 minutes and was audio-recorded with participant consent to ensure accuracy of data capture.

In addition to interview data, documentary sources were reviewed to contextualize and triangulate participant responses. These documents included CHED Memorandum Order No. 09, Series of 2021; CHED public advisories on unauthorized awarding of honorary doctorate degrees; institutional guidelines on honorary degree conferment; accreditation manuals; and selected international best practices from reputable higher education institutions. Document analysis enabled the study to examine formal policy provisions alongside institutional practices and expert interpretations.

### **Data Analysis**

Interview data were transcribed verbatim and analyzed using thematic analysis. The analysis followed a systematic process of familiarization with the data, initial coding, theme development, and thematic refinement. Codes were generated inductively from participant responses and organized into broader thematic categories reflecting ethical principles, institutional intentions, policy compliance, and the consequences of honorary degree practices.

A cross-case synthesis was conducted to identify convergent and divergent perspectives across participant groups. This was complemented by policy alignment analysis, wherein emergent themes were examined in relation to CHED regulations and international academic standards to determine consistency, gaps, and areas of ethical tension. Particular attention was given to aligning findings with the ethical dimensions of object, intention, and circumstance that underpin legitimate conferment.

Analytical rigor was enhanced through iterative review of codes and themes to ensure coherence between findings, research questions, and study objectives. The integration of interview and documentary data strengthened the credibility, depth, and trustworthiness of the analysis.

### **Ethical Considerations**

Ethical standards in qualitative research were strictly observed throughout the study. Participation was entirely voluntary, and informed consent was obtained prior to data collection. Participants were informed of the study's purpose, procedures, and their right to withdraw at any point without penalty.

Confidentiality was ensured by anonymizing participant identities and securely storing all data. Interview recordings and transcripts were accessed only by the researcher and were used solely for scholarly purposes. Care was taken to present findings in a manner that avoided institutional or personal identification, particularly when discussing ethically sensitive or potentially controversial practices.

By adhering to these ethical safeguards, the study upheld the principles of respect, integrity, and responsibility essential to research involving academic professionals and policy-related inquiry..

## **RESULTS AND DISCUSSION**

This section presents an integrated analysis of the findings in relation to the research questions and objectives. Consistent with qualitative rigor, salient participant excerpts are presented to foreground lived ethical judgments, followed by systematic interpretation, policy integration, and scholarly contextualization. The discussion is organized



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according to the core moral dimensions governing honorary degree conferment: object, intention, circumstances, and consequences, with explicit reference to CHED regulatory standards and higher education ethics.

### **Ethical and Academic Purpose of the Honorary Degree: Honor Without Compensation**

Participants consistently articulated that the fundamental purpose of an honorary degree lies in symbolic recognition, not in academic credentialing, professional advancement, or financial exchange. Honorary degrees were repeatedly described as affirmations of values, service, or exemplary contribution, distinct from earned academic qualifications.

#### *Significant Participant Texts*

"An honorary degree is not a shortcut to a title. It is a recognition, not a credential. The moment money is involved, it stops being honorary."

*(Graduate Faculty Member 2)*

"If someone pays—whether they call it a donation or a processing fee—that is already a transaction. You cannot buy honor from a university."

*(Higher Education Administrator 1)*

"Honoris Causa literally means 'for the sake of honor.' Once funding becomes the motive, the meaning is reversed."

*(Research Ethics Expert 1)*

These narratives demonstrate a shared ethical consensus that the object of an honorary degree is gratuitous recognition. Within moral philosophy and higher education ethics, an act is considered ethically valid when its object aligns with its intrinsic purpose (Mason, 2001). In this case, the intrinsic purpose of the Honoris Causa is honor freely given, not a benefit exchanged. Honorary degrees serve as institutional moral statements, reflecting a university's identity and values rather than conferring academic competence. These distinctions lose legitimacy when subjected to market logic, as commodification undermines their symbolic capital.

When payment—regardless of semantic framing as "donation," "processing," or "support"—is introduced, the act's object shifts from recognition to transaction (Campos et al., 2025). This ethical disorder parallels the defining features of diploma mills, which separate academic symbols from merit and rigor (Ospanova et al., 2021). The findings therefore affirm that *ethical failure in honorary degree conferment begins at the level of the object itself, even before intentions or consequences are examined.*

For educators, administrators, and the general public, this finding establishes a clear evaluative criterion: any honorary degree requiring payment is inherently illegitimate. This clarity empowers stakeholders to resist deceptive practices and protects the moral language of academic recognition.

### **Intentions Behind Conferment: Recognition Versus Commercialization**

Participants sharply distinguished between legitimate intentions, which center on honoring excellence and inspiring communities, and illegitimate intentions, which focus on revenue generation, institutional branding, or borrowed prestige.

#### *Significant Participant Texts*

"In legitimate universities, honorary degrees are rare and carefully decided. In questionable groups, they are frequent and strategic."

*(Accreditation Practitioner 1)*

"Some organizations give honorary degrees not to honor people, but to borrow credibility from them."

*(Graduate Faculty Member 4)*

"The intention matters. If the goal is income, publicity, or authority, then the conferment is already ethically compromised."

*(Higher Education Administrator 3)*



The findings demonstrate that frequency, selectivity, and deliberative processes serve as ethical indicators of institutional intention. Legitimate conferments were described as exceptional events grounded in collective discernment, while illegitimate practices were characterized by routine distribution and strategic targeting.

Ethical governance literature affirms that institutional actions must be assessed not only by formality or appearance but by underlying intention (Bowman & West, 2021). The misuse of credentials often arises from deliberate organizational strategies to accumulate symbolic authority rather than from misunderstanding or negligence.

Within the Philippine context, such intentions directly contradict CHED's regulatory purpose, which seeks to prevent the misrepresentation of honorary degrees as academic credentials. Even when ceremonies adopt academic regalia and language, unethical intentions render the conferment morally invalid.

For institutional leaders and research organizations, this finding underscores the necessity of ethical self-audit. Conferment practices must be evaluated by asking whether they primarily serve public honor or private institutional gain.

### **Circumstances and Consequences: Public Representation, Equity, and Academic Trust**

Participants emphasized that the misuse of honorary titles—particularly the public adoption of “Doctor” in academic and professional contexts—creates confusion, inequity, and long-term erosion of trust.

#### *Significant Participant Texts*

“When honorary degree holders introduce themselves as ‘Doctor’ in academic settings, the public assumes they earned it.”

*(Research Ethics Expert 2)*

“We see honorary titles used in journal articles, conference programs, even dissertation panels. That creates confusion and unfair advantage.”

*(Graduate Faculty Member 1)*

“The real damage is long-term. People stop trusting academic titles altogether.”

*(Accreditation Practitioner 2)*

Although honorary degrees are symbolic, their misuse produces material consequences within academic systems. Academic titles function as social signals of expertise, rigor, and disciplinary training (Little & Green, 2022). When these signals are distorted, the credibility of legitimate scholars is diluted.

This phenomenon is credential inflation, wherein excessive or improper use of titles diminishes their value and reliability (Sanchez, 2020). CHED advisories explicitly warn against representing honorary degrees as earned credentials because such misrepresentation misleads stakeholders and violates academic ethics.

The findings confirm that harm extends beyond individual misconduct, affecting students, peer reviewers, employers, and institutions that rely on accurate credential signaling.

Institutions are ethically obliged to regulate not only the conferment but also the public representation of honorary distinctions. Ethical self-representation must be reinforced as a professional norm.

### **CHED Policies, Awareness, and Enforcement**

Participants recognized that CHED policies are substantively adequate but insufficiently disseminated and inconsistently enforced.

#### *Significant Participant Texts*

“CHED is clear, but many people do not read the policies—or choose not to.”

*(Higher Education Administrator 2)*

“The problem is not the absence of rules; it is the absence of awareness and enforcement.”

*(Accreditation Practitioner 1)*



This observation aligns with OECD (2019) findings that regulatory effectiveness depends on policy visibility, stakeholder education, and enforcement capacity. Without sustained public education, unethical practices persist under claims of ignorance or alternative interpretations.

CHED's role must extend beyond regulation to proactive ethical literacy, ensuring that institutions, professionals, and the public understand the limits and meaning of honorary distinctions.

### Preserving the Honor and Integrity of the *Honoris Causa*

Participants emphasized that safeguarding academic honor requires moral leadership alongside policy compliance.

#### *Significant Participant Texts*

"Honorary degrees should come with clarity—clear language, clear limits, clear purpose."  
(*Graduate Faculty Member 3*)

"If educators do not defend academic honor, no one else will."  
(*Research Ethics Expert 1*)

Ethical scholarship affirms that integrity is sustained through shared norms and principled leadership, not regulation alone. Graduate educators and research leaders serve as custodians of academic culture and must resist the normalization of ethically compromised practices.

### Conclusion

This study established that the legitimacy and moral defensibility of the *Honoris Causa* are anchored on three inseparable conditions: a proper ethical object (honor without compensation), a noble intention (recognition rather than commercialization), and responsible circumstances (authorized conferment and truthful public representation). Honorary degrees remain academically and ethically valid only when conferred gratuitously by CHED-recognized institutions and clearly distinguished from earned academic credentials.

Practices involving payment, misrepresentation, or lack of degree-conferring authority fundamentally undermine the symbolic value of the honorary degree and erode public trust in higher education. More critically, such practices contribute to the commodification of academic honor and weaken the moral foundations upon which scholarly communities depend.

As educators, administrators, and research leaders, academic stakeholders carry a professional and ethical responsibility to safeguard the integrity of academic distinctions. Upholding CHED policies is not merely a regulatory obligation but a moral commitment to truth, fairness, and institutional credibility.

### Recommendations

1. For Higher Education Institutions. Institutions may strictly confine the conferment of honorary degrees to CHED-recognized authority and adopt transparent, publicly accessible internal policies detailing criteria, processes, and limits of honorary recognition.
2. For CHED and Regulatory Bodies. CHED may strengthen monitoring and enforcement mechanisms, issue more explicit advisories addressing fee-based honorary practices, and intensify nationwide information campaigns on proper academic title usage.
3. For Research and Academic Organizations. Organizations may refrain from using degree-conferring language and instead adopt alternative forms of recognition that do not mimic earned or honorary academic degrees.
4. For Graduate Educators and Scholars. Graduate educators may integrate academic ethics, credential integrity, and distinctions between earned and honorary titles into instruction, mentoring, and research supervision.



5. For the General Public and Professionals. Public education initiatives may be undertaken to help individuals critically distinguish between earned degrees, honorary titles, and non-academic recognitions.
6. For Future Researchers. Future studies may employ quantitative or mixed-method approaches to examine the prevalence, perception, and professional impact of honorary degree misuse across sectors in the Philippines.

## REFERENCES

- Bowman, J. S., & West, J. P. (2021). *Public service ethics: Individual and institutional responsibilities*. Routledge. <https://doi.org/10.4324/9781003203148>
- Campos, V. M., Maggitti-Bezerril, M., Menezes, R. C., Sobral, L., Avena, K. D. M., & Andrade, B. B. (2025). Doctors in the making, or degrees for sale? A student's view of Brazil's medical education crisis. *Frontiers in Medicine, 12*, 1687117. <https://doi.org/10.3389/fmed.2025.1687117>
- CHED Memorandum Order (CMO) No. 09, Series of 2021, entitled *Revised Policies and Guidelines on the Conferment of Honorary Doctorate Degrees by Higher Education Institutions in the Philippines*. <https://chedregion2.com/wp-content/uploads/series-of-2021-Regional-Memorandum-No.-230.pdf>
- Eaton, S. E., & Carmichael, J. J. (2023). Fake degrees and credential fraud, contract cheating, and paper mills: Overview and historical perspectives. *Fake Degrees and Fraudulent Credentials in Higher Education, 1-22*. [https://doi.org/10.1007/978-3-031-21796-8\\_1](https://doi.org/10.1007/978-3-031-21796-8_1)
- Freeman Jr, S., Karkouti, I. M., & Douglas, T. R. (2020). Avoiding fake degrees from diploma mills: recommendations for educators and academic administrators. *The Journal of Adventist Education, 82(1)*, 4. [https://fount.aucegypt.edu/cgi/viewcontent.cgi?article=2687&context=faculty\\_journal\\_articles](https://fount.aucegypt.edu/cgi/viewcontent.cgi?article=2687&context=faculty_journal_articles)
- Heffernan, M., & Jöns, H. (2007). Degrees of influence: The politics of honorary degrees in the Universities of Oxford and Cambridge, 1900–2000. *Minerva, 45(4)*, 389-416. <https://doi.org/10.1007/s11024-007-9065-8>
- Leraczyk, I. (2022). The awarding of the Honorary Doctoral Degree of the John Paul II Catholic University of Lublin to Reinhard Zimmermann on 22 June 2021.
- Little, D., & Green, D. A. (2022). Credibility in educational development: trustworthiness, expertise, and identification. *Higher Education Research & Development, 41(3)*, 804-819. <https://doi.org/10.1080/07294360.2020.1871325>
- Mitchell, P., Reinap, M., Moat, K., & Kuchenmüller, T. (2023). An ethical analysis of policy dialogues. *Health Research Policy and Systems, 21(1)*, 13. <https://doi.org/10.1186/s12961-023-00962-2>
- Mudzakkir, M., Bustami, M. R., Ikomatussuniah, I., & Maler, W. (2021). The Policy of Honoris Causa Doctorate in Indonesian Higher Education 2000-2020. *Journal of Governance and Public Policy, 8(3)*, 248-267. <https://doi.org/10.18196/jgpp.v8i3.12224>
- OECD (2019). *The Governance of Regulators*. <https://www.oecd.org/en/publications.html>
- Ospanova, A. N., Sabitov, Z. M., & Nurbayev, Z. E. (2021). "Diploma mill" issues in the higher education system: the case of the United Kingdom. <https://doi.org/10.1007/s40979-023-00138-z>
- Mason, M. (2001). The ethics of integrity: Educational values beyond postmodern ethics. *Journal of Philosophy of education, 35(1)*, 47-69. <https://doi.org/10.1111/1467-9752.00209>
- Resane, K. T. (2024). Honorary degree qualifications from unaccredited institutions: Anathema for Pentecostal self-discovery. *Stellenbosch Theological Journal, 10(2)*, 1-24. [https://hdl.handle.net/10520/ejc-ngtt1\\_v10\\_n2\\_a9](https://hdl.handle.net/10520/ejc-ngtt1_v10_n2_a9)
- Sanchez, R. (2020). Preserving the Honor of the 'Honoris Causa': Revisiting the Guidelines on the Conferment of Honorary Degrees. SunStar Pampanga. <https://www.pressreader.com/philippines/sunstar-pampanga/20201227/281608128045257>



## Analisis sa mungkahing glosaryo ng mga terminolohiyang ginamit sa Transport Network Vehicle Service

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### Abstrak

**Layunin:** Nilalayan ng pag-aaral na ito na suriin at suriin ang mungkahing glosaryo (*glossary*) ng mga terminolohiyang ginagamit sa Transport Network Vehicle Service (TNVS) upang matukoy ang antas ng katanggapan at gamit ng mga ito, at upang makatulong sa patuloy na intelektuwalisasyon (*intellectualization of language*) ng wikang Filipino sa larangan ng teknolohiya at transportasyon.

**Metodolohiya:** Gumamit ang pananaliksik ng deskriptibong kwalitatibong disenyo na nakatuon sa pagsusuri ng mga tekstuwal na sanggunian at opisyal na dokumento mula sa iba't ibang TNVS platform. Isinailalim ang mga nakalap na terminolohiya sa pagsusuri gamit ang Tagalog Database Corpus Tool (TDC Corpus Tool) upang maberipika ang dalas ng paggamit, konteksto, at antas ng katanggapan (*acceptability*) ng mga termino sa wikang Filipino.

**Natuklasan:** Ipinakita ng mga resulta na ang TNVS ay gumagamit ng mga terminolohiyang teknikal na malaki ang impluwensiya ng teknolohiya at digital platform economy. Natuklasan din ang pagkakaiba-iba sa pag-unawa at paggamit ng mga terminolohiyang ito sa hanay ng mga drayber, pasahero, at regulator, na nagiging sanhi ng kalituhan sa komunikasyon at implementasyon ng mga patakaran. Ang nabuong mungkahing glosaryo ay nakatulong sa paglilinaw ng mga konseptong kaugnay ng TNVS at sa pagpapabuti ng pagkakaunawaan sa industriya.

**Konklusyon:** Ipinakita ng pag-aaral na ang pagbuo ng isang sistematiko at kontekstuwalisadong glosaryo ng TNVS ay mahalagang hakbang sa pagpapalakas ng komunikasyon, regulasyon, at serbisyo sa sektor ng transportasyon. Nagbibigay ito ng ambag sa akademikong diskurso sa leksikograpiya at nagsisilbing praktikal na sanggunian para sa mga developer, policy maker, at gumagamit ng TNVS sa Pilipinas.

**Susing Salita:** *glosaryo, TNVS, terminolohiya, leksikograpiya, Tagalog Database Corpus Tool, intelektuwalisasyon*

### INTRODUKSYON

Sa patuloy na pag-unlad ng teknolohiya at digital na ekonomiya, nagbunsod ng radikal na pagbabago sa estruktura ng pandaigdigang transportasyon. Sentro ng pagbabagong-anyo nito ang pag-usbong ng Transport Network Vehicle Service (TNVS), isang teknolohikal na penomeno na hindi lamang muling humubog sa mobilidad ng mga tao kundi nagluwal din ng isang bagong lingguwistiko. Tinatawag na revolutionary ng mga eksperto ang ideyang TNVS o Transport Network Companies (TNC) ng magkaibigang sina Garret Camp at Travis Kallanick na mula sa San Francisco, California sa Amerika (Briones, 2017). Sa buong mundo, ang pagsikat ng mga platapormang tulad ng Uber at Lyft ay nagpakilala ng mga konsepto ng *ride-hailing*, *dynamic pricing*, at *gig economy*, mga terminong naging bahagi na ng pang-araw-araw na diskurso. Ang penomenong ito ay itinuturing na "disruptive innovation", kung saan ang tradisyunal na sistema ay pinalitan ng mga algorithm-based na transaksyon, na nagresulta sa pangangailangan para sa isang istandardisadong bokabularyo upang mapadali ang ugnayan sa pagitan ng teknolohiya at ng tao.

Sa konteksto ng Pilipinas, ang pagpasok ng TNVS ay hindi lamang isang simple at pag-aangkop ng dayuhang sistema bagkus isang masalimuot na integrasyon sa lokal na kultura ng transportasyon. Mula nang pormal na kilalanin ng pamahalaan ang mga TNC noong 2015, ang Pilipinas ay naging isang dinamikong laboratoryo ng mga pandaigdigang kasanayan (global practices) na hinaluan ng lokal na sensibilidad. Ang mga terminong gaya ng "surge", "booking", at "pick-up point" ay pumasok sa bokabularyo ng mga Pilipinong komyuter, habang ang mga lokal na salita gaya ng "kolorum" at "pila" ay muling nabigyang-kahulugan sa loob ng digital na espasyo. Ang



impluwensiyang ito ay lumikha ng isang natatanging kapaligiran kung saan ang teknolohikal na usapin ay kakambal ng lingguwistikong ebolusyon.

Gayunpaman, sa kabila ng malawakang paggamit ng TNVS, kapansin-pansin ang kakulangan sa isang komprehensibo at istandardisadong glosaryo na nagsalalin at nagpapaliwanag sa mga teknikal na terminolohiyang ito sa paraang mauunawaan ng mga drayber, operator, at komyuter. Ang kalituhan sa mga terminolohiya ay madalas na nagbubunga ng hindi pagkakaunawan sa pagitan ng mga gumagamit at ng mga regulator tulad ng Land Transportation Franchising and Regulatory Board (LTFRB). Ang isang leksikograpiya at corpus-based na pag-aaral sa TNVS sa Pilipinas ay nananatiling birhen na larangan dahil sa disiplinal na paghihiwalay. Ang pag-aaral ng transportasyon ay tradisyunal na nasa ilalaim ng *Engineering at Social Sciences*, samantalang ang Leksikograpiya ay nasa Lingguwistika. Ang kakulangan ng interdisiplinaryong pag-aaral ang dahilan kung bakit hindi pa ito natutuklasan (Tiglaio et al., 2025). Dahil dito, mahalagang suriin ang mga salitang nabuo at ginagamit sa industriya upang matiyak ang episyenteng paghahatid ng impormasyon.

Ngunit sa pag-aaral na ito, ang TDC Corpus Tool ang nagsilbing matibay na pundasyon ng ebidensya. Hindi lamang ito hula-hula. Ginamit ang corpus tool upang makita ang dalas ng paggamit (frequency) at konteksto (concordance) ng mga salita gaya ng "pin", "surge" o "rebook" sa aktuwal na usapan ng mga drayber at komyuter. Pinatutunayan ng tool na ang mga terminong ito ay bahagi na ng buhay na wika (living language) at hindi lamang mga teknikal na salitang hiram na walang gumagamit.

Ang pag-aaral na ito ay naglalayong ginawa ang isang kritikal na analisis sa mungkahing glosaryo ng mga terminolohiyang ginagamit sa sektor ng TNVS sa Pilipinas. Sinuri sa pananaliksik na ito kung paano sumasalamin ang mga terminong ito sa pandaigdigang pamantayan at kung paano sila nag-a-adapt sa sosyo-kultural na aspeto ng bansa. Sa pamamagitan ng pagbuo ng isang sistematikong glosaryo, layon ng pananaliksik na mag-ambag sa literaturang pangtransportasyon at lingguwistika, habang nagsisilbing gabay sa mas malinaw na polisiya at operasyon ng modernong transportasyon sa bansa.

## **Rebyu ng mga Kaugnay na Literatura**

### **Pag-usbong ng Transport Network Vehicle Service sa Pilipinas**

Maraming Pilipino ang may negatibong pananaw pagdating sa mga pampublikong sasakyang pang-utility dahil sa mapanganib na pagmamaneho ng ilang drayber, kahit na ito ang pinakamurang paraan ng transportasyon sa lipunan (Tribdino, 2016). Ang pag-usbong ng TNVS ay nagdulot ng malaking pagbabago sa urban mobility lalo na sa Metro Manila, Cebu at Davao.

Pinagtitibay nina Feng at Jantarakolica (2023) na ang mataas na kalidad ng serbisyo ay mahalaga para masiguro ang katapatan ng kustomer sa mga serbisyong nakabatay sa teknolohiya, kabilang ang ride-hailing. Binigyang-diin nina Sukmadewi et al. (2023) na ang aktwal na paggamit ng isang apps ay mahalaga para sa patuloy na pakikipag-ugnayan sa TNVS.

### **Ang Transport Network Vehicle Service sa Asya**

Sa pagpasok sa merkado ng Timog-Silangang Asya, gumamit ang Grab ng komprehensibong pamamaraan sa pamamagitan ng pagsasagawa ng malalimang pananaliksik at pagsusuri sa merkado upang maunawaan ang mga natatanging pangangailangan ng bawat bansa at rehiyon. Ang masusing pamamaraang ito ay nagbigay-daan sa Grab na iayon ang mga serbisyo nito nang tumpak upang matugunan ang mga lokal na pangangailangan, sa gayon ay nagkakaroon ng kalamangan sa kompetisyon laban sa mga karibal nito (Wang, 2024).

Bagaman malaki ang naitulong ng TNVS sa modernisasyon ng transportasyon sa Asya, nananatiling hamon ang balanse sa pagitan ng inobasyon at regulasyon. Ayon sa mga pag-aaral sa Singapore at Malaysia, ang pag-usbong ng 'super-apps' ay nagpabago sa depinisyon ng urban mobility, ngunit nagdulot din ito ng tension sa tradisyunal na sektor ng transportasyon (Swamy, 2023).

### **Mga Proyektong Glosaryo sa Pangtransportasyon sa Pilipinas**

May mga proyekto at inisyatibo na nakatuon sa paglikha ng mga glosaryo at iba pang kaugnay na dokumento para sa sektor ng transportasyon. Ang mga ganitong proyekto ay tumutulong sa istandardisasyon ng mga termino upang mapadali ang komunikasyon, pagpapalano, at pagpapatupad ng mga programa sa transportasyon. Mayroong glosaryo ng pampublikong transportasyon ang Metropolitan Manila Development Authority (MMDA). Layunin ng nasabing ahensya na magbigay ng malinaw na depinisyon ng mga salitang ginagamit sa pamamahala ng trapiko at pampublikong transportasyon sa Metro Manila.



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May mga unibersidad tulad ng UP National Center for Transportation Studied (UP NCTS) at Polytechnic University of the Philippines (PUP) ay mga akademikong inisyatibo para sa wika ng transportasyon. Ang layunin ay bumuo ng mga multilinggwal na glosaryo para sa transportasyon sa mga wikang Filipino, Ingles at iba pang wika sa bansa.

Ang mga proyektong glosaryo para sa transportasyon sa Pilipinas ay bahagi ng pagpapabuti sa komunikasyon, edukasyon, at implementasyon ng mga programang may kinalaman sa transportasyon. Ang mga ito ay mahalaga upang maiwasan ang hindi pagkakaintindihan at matiyak ang maayos na operasyon ng sistema ng transportasyon sa buong bansa.

### **Mga Proyektong Glosaryo sa Pangtransportasyon sa Asya / Mundo**

Sa buong Asya, may iba't ibang inisyatibo at proyekto na naglalayong bumuo ng mga glosaryo para sa sektor ng transportasyon. Ang mga proyektong ito ay mahalaga sa pagpapabuti ng komunikasyon, istandardisasyon, at integrasyon ng mga sistema ng transportasyon sa rehiyon.

Isa ang Singapore's Integrated Transport Glossary na tumutukoy at ginagawang pamantayan ang mga teknikal na termino para sa pinagsamang mga sistema ng transportasyon sa bansa. Saklaw nito ang mga termino para sa Mass Rapid Transit (MRT), autonomous shuttles, at contactless payment systems. Isa sa naging awtput nila ay ang interaktibong online glossary na ginagamit ng gobyerno, pribadong sektor, at akademya (Swamy, 2023).

Sa bansang Japan mayroon silang Japan's Smart Transport Terminology Project na ang pangunahing layunin ay bumuo ng istandardisadong glosaryo para sa pagsulong ng teknolohiya sa transportasyon tulad ng autonomous vehicles, smart roads, at intelligent transport systems. Ang ahensyang namamahala nito ay ang Ministry of Land, Infrastructure, Transport and Tourism (MLIT) ng Japan. Isa sa magiging layon ng proyekto ay ang glosaryo na magbabahagi ng mas malaking plano para sa pagpapalaganap ng teknolohiyang "Society 5.0." (Ryu & Lim, 2023).

### **Mga Aplikasyon sa Pagbuo ng Leksikograpiya**

Sa gitna ng modernisasyon at mabilis na pag-unlad ng teknolohiya, nangangailangan para sa dokumentasyon ng mga bagong terminolohiya sa wikang Filipino. Isa sa mga epektibong paraan upang maisakatuparan ito ay sa pamamagitan ng pagbuo ng glosaryo.

Ayon kay San Juan (2012), ang paggawa ng glosaryo ay isang pananaliksik na layuning makabuo ng isang listahan ng mga piling salita o termino na may kasamang malinaw at angkop na depinisyon para sa target na mambabasa, tulad ng mga drayber at pasahero. May mga hakbang sa paggawa ng glosaryo ayon sa kanyang pag-aaral. Sa mga nakalap na kaugnay na literatura at pag-aaral, natalakay ang papel na ginagampanan ng wika sa mundo ng TNVS. Maraming kinokonsidera sa pagbuo ng isang glosaryo. Ginagamit ang TDC Corpus Tool upang makahanap ng mga halimbawa kung paano ginagamit ang mga salitang Tagalog sa mga mapagkukunan nito.

Sa kabuuan, isinusulong ni San Juan ang paggamit ng glosaryo, hindi lamang bilang listahan ng salita, kundi bilang ambag sa pagpapalallim ng diskurso sa wikang Filipino. Kaya naman ang pagbuo ng glosaryo sa larangan ng TNVS ay hindi lamang akademikong proyekto, kundi isang hakbang tungo sa pagpapalakas ng pambansang identidad sa pamamagitan ng wika.

### **Sintesis**

Ipinakita ng mga naunang pag-aaral na malaki ang papel ng TNVS sa modernong sistemang pangtransportasyon, partikular sa konteksto ng digital platforms at urban mobility. Nananatiling limitado ang pagsusuri sa wikang ginagamit sa mismong digital na interaksyon ng mga drayber at pasahero. Bagamat may ilang pananaliksik hinggil sa terminolohiyang teknikal at digital discourse, karamihan sa mga ito ay hindi nakatuon sa TNVS bilang espesipikong larangan at lalong hindi gumagamit ng corpus-based na metodolohiya sa wikang Filipino. Ipinakita rin ng literatura sa leksikograpiya na ang epektibong glosaryo ay dapat nakabatay sa aktuwal na paggamit ng wika, subalit walang sapat na pag-aaral na nagsusuri sa mga terminolohiyang TNVS batay sa empirikal corpus data sa lokal na konteksto.

Dahil dito, lumilitaw ang malinaw na kakulangan sa pananaliksik dahil sa kawalan ng isang sistematikong corpus-based at leksikograpikong pagsusuri ng mga terminolohiyang ginagamit sa TNVS sa Pilipinas. Tinutugunan ng kasalukuyang pag-aaral ang kakulangang ito sa pamamagitan ng paggamit ng TDC Corpus Tool upang matukoy, masuri at mairanggo ang katanggapan ng mga terminolohiyang TNVS na magsisilbing batayan sa pagbuo ng mungkahing glosaryo sa wikang Filipino. Sa ganitong paraan, direktang iniugnay ng pag-aaral ang mga natuklasan sa literatura sa isang kongkretong ambag sa wika, teknolohiya, at transportasyon.



### Teoretikal na Balangkas

Sa pagpapanatili ng kaayusan ng mga terminolohiya, ginamit ang Leksikograpiyang Teoritikal nina Hartmann at James (1998) na nakatuon sa mga prinsipyo, estruktura, at proseso ng sistematikong pagsasaayos ng mga salita sa diksyonaryo o glosaryo. Siniguro ng mananaliksik na wasto ang pag-uuri, pagbibigay kahulugan at pagtatala ng mga salita o termino batay sa kanilang gamit, pinagmulan at kontekstong pinanggagamitan.

Ayon kay Hartmann (2016), may tatlong pangunahing sangguniang leksikograpikal: ang diskyunaryo, tesauro at ang ensayklopedya. Ayon sa Dictionary of Lexicography, ang diksyunaryo ang pinakakaraniwang sangguniang leksikograpikal na binubuo ng makro at mikrostruktura. Sa simpleng pagpapahayag, ang makrostruktura ay tumutukoy sa panimula at iba pang preliminaryong bahagi ng diksyunaryo, mga salitang lahok o entri at mga apendiks at iba pang bahagi pagkatapos ng mga salitang lahok. Samantala ang mikrostruktura naman ay tumutukoy sa deskripsyon o depinisyon ng mga salitang lahok.

Sa huli, gamit ang TDC Corpus Tool, upang malaman ang dalas at gamit ng mga piling terminolohiya ng TNVS. Ginamit ito upang mahanap ang mga salita sa aktwal na mga teksto. Tinukoy at tinipon ang mga terminolohiya na may kaugnay sa TNVS upang matiyak na ang mga kahulugan sa glosaryo ay tumpak at sumasalamin sa karaniwang paggamit ng mga termino.

### Konseptwal Balangkas

Lubhang napakalaki ng gampanin na itinakda sa isinagawang pag-aaral kaya't ito ay nagsilbing giya ng mananaliksik upang ilapat ang balangkas konseptwal na nararapat isakatuparan. Ipinakita ang ugnayan ng mga piling salik na pinagmumulan ng mga termino, ang paraan ng pangangalap at pagsusuri ng mga datos, at ang inaasahang kinalabasan ng pag-aaral.

Nilalayan nitong magsilbing gabay sa sistematikong pag-unawa sa mga terminolohiyang kaugnay ng TNVS at makatulong sa pagpapalawak ng kaalaman ng mga pasahero, drayber, operator at mananaliksik hinggil sa makabagong transportasyon.

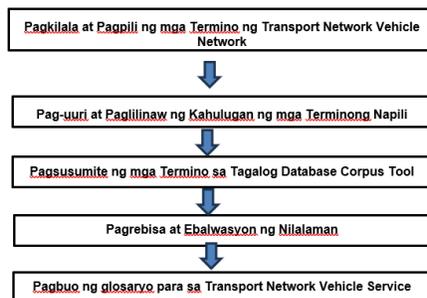


Figura 1: Pag-aaral na nakabatay sa Teoretikal na Leksikograpiya

Ang balangkas konseptwal na ito ay nagpapakita kung paano kikilalanin at pinili ang mga termino ng TNVS upang uriin at bigyang linaw ang kahulugan upang isumite gamit ang TDC Corpus Tool. Masusing nirebisa at nagkaroon ng ebalwasyon ang nilalaman upang makabuo ng isang glosaryo na tutulong sa mga pasahero, drayber, operator at mananaliksik na may kinalaman sa transportasyon.

### Paglalahad ng Suliranin

Sa patuloy na digitalisasyon at pag-usbong ng Transport Network Vehicle Service (TNVS) sa Pilipinas, naging bahagi na ng pang-araw-araw na pamumuhay ng maraming Pilipino ang paggamit ng mga mobile application para sa transportasyon. Ang mabilis na paglaganap ng mga platform tulad ng Grab, JoyRide, at iba pa ay nagbunsod ng paglitaw ng maraming terminolohiyang teknikal na kadalasang hango sa wikang Ingles at sa digital platform economy. Ang mga terminong ito ay hindi palaging malinaw at pare-pareho ang kahulugan para sa mga pasahero, drayber, at operator ng TNVS.

Sa kabila ng malawakang paggamit ng TNVS, kapansin-pansin ang kakulangan ng isang sistematiko at kontekstuwalisadong glosaryo ng mga terminolohiyang ginagamit sa sektor na ito sa wikang Filipino. Ang kawalan ng pamantayang depinisyon at lokal na beripikasyon ng mga termino ay nagdudulot ng kalituhan sa komunikasyon, interpretasyon ng mga patakaran, at implementasyon ng mga serbisyong may kinalaman sa transportasyon. Sa



konteksto ng lumalawak na gig economy at patuloy na pagtaas ng bilang ng mga gumagamit ng TNVS sa bansa (Porras, 2023), nagiging mas mahalaga ang pagkakaroon ng malinaw, katanggap-tanggap, at akademikong batayang terminolohiya.

Bunga nito, naging mahalaga ang pagsasagawa ng pananaliksik na ito na nakatuon sa pagsusuri at pagbuo ng mungkahing glosaryo ng mga terminolohiyang ginagamit sa Transport Network Vehicle Service. Nilalayan ng pag-aaral na tugunan ang umiiral na puwang sa pananaliksik sa larangan ng leksikograpiya at intelektuwalisasyon ng wikang Filipino, partikular sa konteksto ng makabagong transportasyon at teknolohiya.

## Mga Layunin ng Pananaliksik

### Pangkalahatang Layunin

Layunin ng pag-aaral na suriin at bigyang-kahulugan ang mga terminolohiyang ginagamit sa Transport Network Vehicle Service batay sa kanilang gamit, pinagmulan, at kontekstong pinaggagamitan sa wikang Filipino.

### Mga Tiyak na Layunin

1. Tukuyin ang pinagmulan, kahulugan, at anyo ng mga terminolohiyang ginagamit sa TNVS.
2. Suriin ang antas ng katanggapan ng mga nakalap na terminolohiya sa wikang Filipino gamit ang Tagalog Database Corpus Tool.
3. Makabuo ng isang mungkahing pamantayan para sa mga teknikal na terminolohiyang TNVS na maaaring gamitin ng mga pasahero, drayber, at operator.

### Mga Tanong Pananaliksik

1. Ano-anong mga terminolohiya at kahulugan ang ginagamit sa Transport Network Vehicle Service batay sa pangangailangan ng mga drayber at pasahero?
2. Alin sa mga terminolohiyang nakalap ang katanggap-tanggap sa wikang Filipino batay sa pagsusuri gamit ang Tagalog Database Corpus Tool?
3. Ano-ano ang mga salik na nagiging dahilan ng katanggapan at hindi katanggapan ng mga terminolohiyang nakalap?
4. Ano ang mga implikasyon sa wikang Filipino ng mga terminolohiyang ginagamit sa Transport Network Vehicle Service?

## METODOLOHIYA

### Disenyo ng Pananaliksik

Ang pag-aaral na ito ay ginamit ang deskriptibong kwalitatibong uri ng pananaliksik upang masusing masuri at mailarawan ang mga terminolohiyang ginagamit sa sistema ng TNVS. Ang disenyong ito ang pinakaangkop dahil nagbibigay ito ng espasyo para sa malalim na interpretasyon ng mga datos na makukuha mula sa TDC Corpus Tool. Ang korpus ay mga hilaw na datos na hinalaw sa isang teksto at binigyang susi o proseso upang maging ganap na datos sa pananaliksik bilang entradang salita ng glosaryo. Hindi nito sinusuri ang sanhi ngunit sa halip ay nagbibigay ng detalyadong impormasyon tungkol sa umiiral na mga kondisyon (Hassan, 2024). Sa halip na limitahan ang pag-aaral sa estatistikal na bilang, layunin ng disenyong ito na ipinta ang aktwal na sitwasyon ng wika sa intersekyon ng teknolohiya at transportasyon na magiging matibay na pundasyon sa pagbuo ng isang makabuluhan at kontekstuwalisadong glosaryo.

Binigyang-diin nina Creswell at Poth (2018) na ang kwalitatibong pananaliksik ay nakatuon sa pag-unawa sa kahulugang ibinibigay ng mga indibidwal o grupo sa isang panlipunang problema. Sa kasong ito, ang pagbibigay-kahulugan sa mga terminong TNVS ay isang proseso ng pag-unawa sa digital na kultura ng transportasyon sa Pilipinas.

### Pinagmumulan ng Datos

Ang pag-aaral ay nakatuon sa mga clippings ng pahayagan, kontrata na nagmula sa internet, mga online na pinagmumulan, vertical files mula sa iba't ibang silid-aklatan, opisyal na rekord mula sa gobyerno at kumpanya ng TNVS, at ang mga teknikal na termino mula sa mga mobile apps. Ginamit din ang pagsusuri sa mga dokumento mula sa mga website ng kumpanya ng Grab, Joyride, Angkas, MoveIt at iba pa na hinanapan ng mga salita o pariralang teknikal na may kinalaman sa serbisyo tulad ng seksyon ng Frequently Asked Question (FAQ), Help Center / Support,



Terms and Conditions / Privacy Policy, blog o seksyon ng balita, driver registration portals at user guides o app features. Humango rin ng impormasyon at mga lathalain sa mga mananaliksik sa mga online journal tulad ng Journal of the Eastern Asia Society for Transportation Studies at iba pa.

Nakakalap ng 148 termino na karaniwang ginamit sa apps ng TNVS. Alinsunod sa mga prinsipyo nina Batnag at Petras (2009) hinggil sa pagbuo ng terminolohiya, ginamit ang pag-aaral na ito ng purposive sampling upang matiyak na ang mga salitang isasama sa mungkahing glosaryo ay hango sa mga aktuwal na gumagamit ng rehistro ng TNVS. Ang paggamit ng TDC Corpus Tool ay nangangailangan ng input na "pure" o direkta mula sa sektor. Ang purposive sampling ang sumasala sa "noise" upang ang papasok sa corpus ay ang mga terminong tunay na nagpapayaman sa modernong Pilipino.

### **Mga Instrumento sa Pananaliksik**

Sa pananaliksik ginamit ang TDC Corpus Tool bilang pangunahing analytical tool upang sistematikong masuri ang aktuwal na paggamit ng mga termino sa wikang Filipino. Sa pamamagitan ng corpus tool, natukoy kung ang mga terminolohiyang isinama sa glosaryo ay umiiral, ginagamit at may kabuluhan sa mga tekstong Filipino na nagmumula sa iba't ibang diskurso tulad ng balita, akademikong sulatin at online na publikasyon.

Natiyak ang pagpapatunay (validation) ng mga terminolohiya sa pamamagitan ng corpus frequency at paggamit ng konteksto. Ginamit ang corpus frequency upang masukat kung gaano kadalas lumilitaw ang isang terminong TNVS, sa loob ng corpus. Ang mataas na dalas ng paglitaw ng isang termino ay nagsilbing indikasyon na ito ay malawak na ginagamit at tinatanggap sa aktuwal na diskursong Filipino. Samantala, ang mga terminong may mababang frequency ay masusing tinalakay kung angkop pa bang isama sa glosaryo o kung nangangailangan ng karagdagang paglilinaw. Sinuri ang paggamit ng termino sa konteksto sa pamamagitan ng halimbawang pangungusap sa corpus. Sa paraang ito, natukoy ang eksaktong kahulugan, gamit at semantikong saklaw ng bawat termino sa loob ng tunay na komunikasyon. Ang pagsusuring kontekstuwal ay nakatulong upang maiwasan ang maling interpretasyon at upang matiyak na ang inilalarawang depinisyon sa glosaryo ay tumutugma sa aktuwal na gamit ng wika.

### **Pangangalap ng Datos**

Ang mananaliksik ay nakakalap ng datos na isinagawa mula Enero 2024 hanggang Disyembre 2024. Sa panahong ito, sistematikong tinipon ang mga terminolohiyang lumitaw sa mga opisyal at di-opisyal na sanggunian ng TNVS upang matiyak ang kasalukuyan at aktuwal na paggamit ng mga termino sa industriya.

Ang mga termino ay kinuha sa mga digital na aplikasyon ng TNVS gaya ng Grab application at iba pang TNVS apps na aktibong ginagamit sa Pilipinas. Mula rito, kinuha ang mga terminong makikita sa mga menu, booking interface, notification at serbisyo ng aplikasyon. Sa mga dokumento at online sanggunian tulad ng opisyal na website ng mga TNVS, mga patakaran at gabay ng LTFRB, at FAQ, terms and conditions at driver/passenger guides. Pinili ang mga dokumentong ito dahil naglalaman ang mga ito ng pormal at teknikal na terminolohiyang ginagamit sa operasyon ng TNVS.

Isinagawa ang pangangalap ng datos sa pamamagitan ng pagtukoy muna sa mga aplikasyong TNVS at dokumentong may mataas na antas ng paggamit at kredibilidad sa Pilipinas. Sistematikong sinuri ang mga interface ng app at mga dokumento upang tukuyin ang mga salitang teknikal, operasyonal at madalas gamitin. Ang mga nakuhang termino ay itinala at inayos sa kategorya ng gamit. Pinili lamang ang mga terminong may malinaw na kahulugan, madalas gamitin at may potensiyal na isama sa mungkahing glosaryo.

### **Pagsusuri ng Datos**

Sa pamamagitan ng mga nakalap na datos, sinuri ng mananaliksik ang mga ito batay sa napiling saligang teorya upang masagot ang mga inihaing tanong at makapagbigay ng interpretasyon at pag-unawa sa mga terminolohiyang nakalap.

Upang mapanatili ang kaayusan ng mga terminolohiya, gamit ang Leksikograpiyang Teoritikal nina Hartmann at James (1998) sinuri ang bawat termino batay sa anyo, kahulugan, at aktuwal na gamit nito sa larangan ng TNVS. Binibigyang-diin ng teoryang ito ang kahalagahan ng konteksto sa pagbibigay-kahulugan, lalo na sa mga terminong teknikal na ginagamit sa digital na plataporma. Sa ganitong paraan, ang mga termino ay hindi lamang inilista kundi inilarawan batay sa tunay na sitwasyon ng paggamit sa mga aplikasyon at opisyal na dokumento ng TNVS.

Sa huli, gamit ang TDC Corpus Tool, upang malaman ang dalas at gamit ng mga piling terminolohiya ng TNVS. Ginamit ito upang mahanap ang mga salita sa aktuwal na mga teksto. Tinukoy at tinipon ang mga terminolohiya na may kaugnay sa TNVS upang matiyak na ang mga kahulugan sa glosaryo ay tumpak at



sumasalamin sa karaniwang paggamit ng mga termino. Ang teknikal na hakbang na ito ay nagbigay ng empirikal na ebidensya sa aktuwal na gamit ng wika sa kalsada kumpara sa pormal na diksyunaryo. Mula sa sistematikong listahan na naglalayong irehistro ang TNVS bilang isang mahalagang domeyn sa intelektuwalisasyon ng wikang Filipino.

**Mga Etikal na Konsiderasyon**

Ang pananaliksik na ito ay nagbigay ng etikal na konsiderasyon sa kahalagahan ng mga kahulugan sa glosaryo upang maging tumpak, kumpleto, at walang pagkiling. Ang datos ay nakolekta mula sa mga dokumento at aplikasyon ng TNVS, at walang direktang kalahok na tao ang kasangkot, kaya't tiniyak na walang pribadong impormasyon ang ginamit. Ang pagsusuri ng terminolohiya ay isinagawa lamang sa paraang akademiko at ayon sa patakaran ng paggamit ng datos, kabilang ang pahintulot mula sa mga platform kung kinakailangan.

Bilang limitasyon, ang datos ay nakabatay lamang sa mga dokumento at corpus output, kaya maaaring hindi masaklaw ang lahat ng terminolohiya sa buong operasyon ng TNVS. Maaaring magkaroon din ng pagkakaiba sa terminolohiya sa iba't ibang platform o bersyon ng aplikasyon. Sa kabila nito, ang sistematikong pagsusuri gamit ang TDC Corpus Tool ay nagbigay ng sapat na empirikal na batayan para sa mungkahing glosaryo ng TNVS sa wikang Filipino.

**RESULTA AT DISKUSYON**

Inilalahad sa bahaging ito ang resulta at interpretasyon ng mga datos batay sa ginawang pagsagot sa mga inilalahad na layunin.

**Ano-anong terminolohiya at kahulugan nito ang ginagamit sa Transport Network Vehicle Service batay sa pangangailangan ng drayber at pasahero.**

Ang paggamit ng glosaryo ay mahalaga upang mapanatili ang pagkakapare-pareho at malinaw na komunikasyon sa industriya ng TNVS. Ang glossaryo ay isang listahan ng mga terminolohiya at kahulugan na ginagamit upang maunawaan ang mga teknikal na aspeto ng isang sistema o industriya.

Ang glosaryong ito ay naglalaman ng mga piling termino, teknikal at banyagang salitang karaniwang ginagamit sa konteksto ng TNVS sa Pilipinas. Layunin nitong linawin ang mga salitang maaaring magdulot ng kalituhan sa mga mananaliksik, pasahero, drayber, o opisyal ng pamahalaan na may kinalaman sa TNVS.

Talahanayan 1  
Talaan ng mga Terminolohiya na Gamit ng mga TNVS Drayber

SALITA (DRAYBER)	LESIKO-GRAMATIKA (MORPOLOHIYA AT SINTAKS)	KAHULUGAN	KUMPANYA NG TNVS			
			GRAB	ANGKAS	MOVEIT	JOYRIDE
Acceptance Rate (AR)	png.	Ang porsyento ng mga bookings na tinanggap ng driver kumpara sa kabuuang natanggap na bookings.	✓	✓	✓	✓
Accreditation / Akreditasyon	png.	Proseso ng pag-apruba ng LTFRB sa TNC at TNVS upang legal na makapag-operate.	✓	✓	✓	✓
Accredited Driver (Aprubadong Tsuper)	png.	Driver na aprubado ng isang TNVS platform at nakarehistro sa LTFRB.	✓	✓	✓	✓
Airport Transfer	png.	Isang dedikadong serbisyo para sa pagbiyahe papunta at mula sa airport,				✓



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		kadalasang gumagamit ng Super Taxi. Mayroon din silang Airport Transfer Lounge sa NAIA Terminal 3.				
Algorithm	png.	Ang mga proseso na ginagamit ng app para sa pag-match ng mga driver at pasahero.	✓	✓	✓	✓
App Interface	png.	Grapikal na bahagi ng TNVS application kung saan nagaganap ang interaksyon sa user.	✓	✓	✓	✓
Application Programming Interface (API)	png.	Ito ay isang set ng mga panuntunan at protocol na nagpapahintulot sa iba't ibang mga application na makipag-ugnayan sa isa't isa. Ginagamit ito para makipag-ugnayan sa mga third-party apps, tulad ng mga navigation apps o mga payment gateways.	✓	✓	✓	✓
App/Application	png.	Ang mobile application na ginagamit para sa pag-book ng biyahe.	✓	✓	✓	✓
Auto-Accept (Awtomatikong Pagtanggap)	pu.	Setting ng app kung saan awtomatikong tinatanggap ng driver ang booking.	✓	✓	✓	✓
Availability score	png.	Ito ay isang puntos na nagpapakita kung gaano kadalas available ang isang driver-partner para sa mga booking. Ang mas mataas na availability score, mas malamang na makakuha ng mga booking ang driver-partner.	✓	✓	✓	✓
Base user	png.	Tumutukoy sa mga driver o operator na may nakatalagang home location o base of operations sa isang partikular na lugar, karaniwang isang lungsod o rehiyon.	✓	✓	✓	✓
Bus	png.	Isa sa mga bagong				✓



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		serbisyo ng JoyRide kung saan pwede kang bumili ng bus tickets sa loob ng app (hal. Victory Liner bus tickets).				
Cancellation Rate (CR)	png.	Ang porsyento ng mga bookings na kinansela ng driver o pasahero.	√	√	√	√
Cash-out / Pag-withdraw o Pagkuha ng Kita		Paglipat ng kita mula wallet papunta sa personal bank account ng driver	√	√	√	√
Certificate of Public Convenience (CPC)	png.	Prangkisa o permit na kailangan ng TNVS upang makapag-operate bilang public utility vehicle.	√	√	√	√
Commission	png.	Porsyento ng bayad na kinukuha ng TNVS company mula sa kabuuang kita ng driver.	√	√	√	√
Counter Offer	pd.	Sa ilang apps (hal. inDrive), puwedeng tumawad o magbigay ng sariling presyo ang drayber o pasahero bago kumpirmahin ang biyahe.				
Data analytics	png.	Ginagamit ng Grab ang data analytics para masuri ang kanilang mga operasyon at mapabuti ang kanilang mga serbisyo. Halimbawa, maaari nilang gamitin ang data para matukoy ang mga lugar na may mataas na demand, o para masuri ang pagganap ng mga driver-partner.	√	√	√	√
Deactivation	png.	Pagkakatanggal ng access ng driver o sasakyan sa platform dahil sa violation o expiration ng dokumento.	√	√	√	√
Digital Platform/ Application	pu.	Ang mobile app na ginagamit ng mga pasahero para mag-book ng biyahe at ng	√	√	√	√



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		mga driver para tumanggap ng booking.				
Dispatch	pd.	Ang proseso ng pag-assign ng isang driver-partner sa isang booking.	✓	✓	✓	✓
Distance Fare	png.	Ang halaga ng bayad na nakabatay sa distansya ng biyahe.	✓	✓	✓	✓
Driver Guidelines	png.	Mga patakaran at alituntunin na dapat sundin ng mga driver upang mapanatili ang kalidad ng serbisyo at kaligtasan ng mga pasahero.	✓	✓	✓	✓
Driver Incentives	png.	Mga bonus o dagdag na kita batay sa dami ng biyahe o kalidad ng serbisyo.	✓	✓	✓	✓
Driver Profile/ Profile ng Driver	png.	Ang impormasyon tungkol sa driver (e.g., pangalan, larawan, rating).	✓	✓	✓	✓
Driver Rating (DR) / Rating ng Driver	png.	Ang average na rating ng driver batay sa feedback ng mga pasahero.	✓	✓	✓	✓
Dynamic Pricing	pu.	Ito ay isang sistema ng pagpepresyo na nagbabago depende sa demand at iba pang mga kadahilanan. Ginagamit ito para ayusin ang mga presyo ng rides, lalo na sa panahon ng mataas na demand.	✓	✓	✓	✓
Do's and Don'ts	png.	Mga alituntunin na nagsasaad kung ano ang dapat at hindi dapat gawin ng mga driver at pasahero habang gumagamit ng serbisyo.	✓	✓	✓	✓
E-Hailing	pd.	Ang sistema ng pagsundo ng sasakyan gamit ang electronic/mobile app.	✓	✓	✓	✓
Fare Computation	png.	Sistema ng pagtukoy ng pamasaha na awtomatikong kinukwenta ng app	✓	✓	✓	✓



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		batay sa distansya, oras, demand, at iba pang salik.				
Franchise / Prangkisa	png.	Pormal na pahintulot mula sa gobyerno na nagpapahintulot sa sasakyan na legal na mag-operate bilang pampublikong transportasyon.	✓	✓	✓	✓
Fraud detection system	png.	Ito ay isang sistema na naghahanap ng mga potensyal na pandaraya sa Grab. Halimbawa, maaari itong makatukoy kung ang isang pasahero ay nagbibigay ng maling impormasyon o kung ang isang driver-partner ay nag-aangkin ng mga pekeng biyahe.	✓	✓	✓	✓
Geo-fencing	png.	Ito ay isang teknolohiya na nagtatakda ng mga virtual na hangganan sa isang partikular na lugar. Ginagamit ito para magtakda ng mga lugar kung saan maaaring mag-operate ang mga driver-partner, o kung saan maaaring magamit ang mga promosyon.	✓	✓	✓	
GCash Payout (Bayad sa GCash)	png.	Pag-cashout ng kita gamit ang GCash.	✓		✓	
Geolocation	png.	Ang pagtukoy ng lokasyon ng isang aparato.	✓	✓	✓	
Geo-location Technology	png.	Teknolohiyang ginagamit upang matukoy ang lokasyon ng pasahero at drayber, mahalaga para sa real-time tracking at pairing ng booking.	✓	✓	✓	
GPS/Global Positioning System	pu.	Ang sistema ng pagtukoy ng lokasyon.	✓	✓	✓	
GrabBike	png.	Ang Grab service na gumagamit ng mga motorsiklo para maghatid ng mga	✓			



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		pasahero.				
GrabCar	png.	Ang Grab service na gumagamit ng mga kotse para maghatid ng mga pasahero.	✓			
GrabChat	png.	Isang in-app messaging feature na nagpapahintulot sa mga driver at pasahero na makipag-ugnayan nang direkta habang nasa biyahe.	✓			
GrabExpress	png.	Ang delivery service ng Grab para sa mga pakete.	✓			
GrabFood	png.	Ang food delivery service ng Grab	✓			
GrabMart	png.	Ang online grocery shopping service ng Grab.	✓			
GrabPay	png.	Isang digital wallet na ginagamit para sa mga transaksyon sa loob ng Grab app, kabilang ang pagbabayad para sa mga rides at pagkain.	✓			
GrabRewards:	png.	Isang loyalty program na nagbibigay ng mga gantimpala at benepisyo sa mga gumagamit batay sa kanilang mga transaksyon sa Grab.	✓			
GrabShare	png.	Ang Grab service na nagpapahintulot sa mga pasahero na magbahagi ng isang ride.	✓			
GrabTaxi	png.	Ang Grab service na nagpapahintulot sa mga pasahero na mag-book ng mga taxi.	✓			
Hatchback	png.	Uri ng sasakyan na may rear door na pataas ang bukas; pinapayagan sa TNVS sa ilang kaso	✓			
Heat Map	png.	Ito ay isang visual na representasyon ng mga lugar na may mataas na demand para sa rides. Ginagamit ito ng mga driver-partner para	✓	✓	✓	



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		matukoy kung saan sila makakakuha ng mas maraming pasahero.				
Hotspot / Hotzone (Mainit na Lugar ng Biyahe)	png.	Lugar na may mataas na demand sa biyahe	✓	✓	✓	
Incentive (Insentibo)	png.	Karagdagang kita na ibinibigay sa driver sa tuwing natatapos ang target trips	✓	✓	✓	
Insurance	png.	Ang insurance coverage ng sasakyan at driver.	✓	✓	✓	
In transit	png.	Status ng biyahe kapag nasa daan na	✓	✓	✓	
JoyRide MC Taxi	png.	Ito ang pangunahing serbisyo ng JoyRide na gumagamit ng motorsiklo para sa mabilis na pagbiyahe, lalo na para sa pag-iwas sa traffic.				
JoyRide Car	png.	Serbisyo ng JoyRide para sa pribadong sasakyan (4-seater o 6-seater) para sa mas komportableng biyahe. Ito ay isang uri ng TNVS.				
JoyRide Taxi Cab	png.	Serbisyo para sa pag-book ng mga tradisyonal na metered taxi.				
JoyRide Super Taxi	png.	Ito ay isang "next-generation taxi service" na ino-offer ng JoyRide.				
LTFRB	png.	Land Transportation Franchising and Regulatory Board – ahensiyang nangangasiwa sa TNVS	✓	✓	✓	
LTO	png.	Land Transportation Office – ahensiyang nagrehistro ng mga sasakyan	✓	✓	✓	
Matching algorithm	pu. png.	Ito ay isang kumplikadong sistema na nagpapares ng mga driver-partner sa mga pasahero. Isinasaalang-alang nito ang mga kadahilanan tulad ng lokasyon, oras	✓	✓	✓	



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		ng paglalakbay, at uri ng sasakyan.				
Mobile Application	pu. png.	Ang mismong app na ginagamit ng pasahero at drayber upang mag-book, tumanggap, at mag-monitor ng biyahe. Dito rin ginagawa ang pre-arranged transportation services.	√	√	√	
Moto-Taxi / Motorcycle Taxi	png.	Ito ang pangunahing serbisyo na inaalok – ang paggamit ng motorsiklo para sa transportasyon ng pasahero, lalo na para makaiwas sa traffic.		√	√	
Multiple Booking (Maramihang Booking)	png.	Kakayahan ng app na mag-assign ng higit sa isang pasahero.	√			
Notifications	png.	Mga alerto o paalala mula sa app tungkol sa status ng booking, promos, o updates.	√	√	√	
Offline	pu.; pa.	Ito ay ang estado ng isang Grab driver kapag hindi siya tumatanggap ng mga booking.	√	√	√	
Online	pu.; pa.	Status ng driver kung available o hindi para sa mga booking.	√	√	√	
On-trip	pkl.; pa.	Ito ay ang estado ng isang Grab driver kapag mayroon na siyang pasahero.	√	√	√	
Operating Area	pa.; png.	Ang lugar o rehiyon kung saan pinapayagang bumiyaha ang TNVS base sa kanilang PA o franchise.	√	√	√	
Operating Hours	pa.	Takdang oras kung kailan pinapayagan ang TNVS driver na mamasada	√	√	√	
PA (Provisional Authority) / Pansamantalang Awtoridad	png.	Pansamantalang awtorisasyon mula sa LTFRB upang makapag-operate habang pending ang full franchise	√	√	√	
Passenger Rating	png.	Ang rating na	√	√	√	



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/Rating ng Pasahero		ibinibigay ng mga driver sa pasahero.				
Payment Methods	png.	Mga opsyon sa pagbabayad gaya ng cash, GCash, o credit/debit card.	√	√	√	
Platform	png.	Tumutukoy ito sa app at iba pang online na sistema kung saan nag-ooperate ang Grab, kasama ang lahat ng serbisyo at solusyon nito.	√	√	√	
Pending Slot (Nakabinbing slot)	pu.	TNVS slot na hinihintay pang maaprubahan o makuha.	√	√	√	
Pending Application	pu.	TNVS application na kasalukuyang nasa proseso ng pagsusuri o pag-apruba.	√	√	√	
Permit	pd.	Ang permiso na magpatakbo ng sasakyan bilang TNVS.	√	√	√	
Pre-arranged Ride/Transportation Service	pu.	Biyahe na na-book o na-schedule gamit ang app bago pa man magsimula ang aktwal na sakay.	√	√	√	
Quota	png.	Ang itinakdang dami ng rides na kailangang makuha upang makatanggap ng incentives.	√	√	√	
Reactivation	png.	Proseso ng pagbabalik ng access sa account ng driver na na-deactivate	√	√	√	
Real-time Tracking/ Pagsubaybay sa Real-time	png.	Ang pagsubaybay sa lokasyon ng sasakyan sa real-time.	√	√	√	
Real-Time Tracking / GPS Location	png.	Kakayahan ng app na ipakita ang kasalukuyang lokasyon ng sasakyan habang papunta sa pickup point at habang bumibiyaha.	√	√	√	
Referral Code / Kodigo ng Pag-anyaya	png.	Code na ginagamit para mag-refer ng bagong driver o rider	√	√	√	
Regulatory Body	pu.	Ang ahensya ng gobyerno na nag-uugnay sa TNVS.	√	√	√	
Ride-hailing	png.	Ang pangkalahatang	√	√	√	



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		termino para sa serbisyo ng pag-book ng biyahe gamit ang isang mobile app.				
Ride History	pd.	Listahan ng mga nakaraang biyahe ng rider o driver	√	√	√	
Route/Ruta	png.	Ang landas na tatahakin ng sasakyan.	√	√	√	
Route optimization	png.	Ito ay isang proseso na naghahanap ng pinakamabilis at pinaka-epektibong ruta. Ginagamit nito ang mga data ng trapiko at iba pang mga kadahilanan.	√	√	√	
Safety Gear	png.	Ang mga kagamitan para sa kaligtasan na ibinibigay ng Angkas sa pasahero, tulad ng helmet (na may disposable hair net para sa hygiene).		√		
Safety Training	png.	Mahigpit na safety training na pinagdadaan ng mga Angkas Biker upang masiguro ang kaligtasan ng mga pasahero.		√		
Sagot Kita	png.	Isang kampanya ng Grab na naglalayong tulungan ang mga Pilipino na makabalik sa normal na pamumuhay sa pamamagitan ng pag-aalok ng mga promos at serbisyo na makatutulong sa kanilang pang-araw-araw.	√			
Sedan	png.	Karaniwang uri ng 4-door na sasakyan para sa TNVS	√			
Service Charge / Commission	png.	Ang porsyento ng pamasaha na kinukuha ng app mula sa drayber, karaniwan itong nababawas sa kita ng drayber.	√	√	√	
Shared Ride	pu.	Ang pagbabahagi ng sasakyan ng maraming	√	√	√	



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		pasahero patungo sa magkakaibang destinasyon.				
Star Rating System	png.	Isang sistema kung saan ang mga pasahero ay nagbibigay ng rating mula 1 hanggang 5 bituin pagkatapos ng bawat biyahe, na ginagamit upang suriin ang kalidad ng serbisyo ng mga driver.	√	√	√	
Support Center (Sentro ng Suporta)	png.	Online o physical center na sumasagot sa concerns ng driver	√	√	√	
Surge Pricing / Dinamikong pamasaha / Tumaas na pamasaha	png.	Pansamantalang pagtaas ng pamasaha tuwing mataas ang demand para sa TNVS.	√	√	√	
Taxicle	png.	Serbisyo ng JoyRide para sa pag-book ng tricycle.				
Time Fare	png.	Ang halaga ng bayad na nakabatay sa tagal ng biyahe.	√	√	√	
TNC (Transport Network Company)	png.	Tumutukoy sa kumpanya na gumagamit ng internet-based o digital platform upang i-connect ang mga pasahero at drayber gamit ang kanilang personal na sasakyan. Halimbawa: Grab, Uber.	√	√	√	
TNVS (Transport Network Vehicle Service)	png.	Ang aktwal na serbisyo ng transportasyon na ibinibigay ng mga drayber/partner na konektado sa TNC gamit ang app.	√	√	√	
TNVS Operator (Taong may-ari ng sasakyang rehistrado sa TNVS)	png.	Tumutukoy sa hindi drayber kundi may-ari ng TNVS unit	√	√	√	
TNVS Slot	png.	Bilang ng available permit na inilalabas ng LTRFB para sa TNVS application	√	√	√	
Trade Dress	png.	Ito ang mga visual na	√	√	√	



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PTR-2025-749**

		pagkakakilanlan ng isang TNC o TNVS, tulad ng logo o stickers, na nakadikit sa sasakyan para madaling makilala.				
Trip Duration	pu.	Kabuuang oras mula simula hanggang matapos ang biyahe	√	√	√	
Trip History	png.	Listahan ng mga nakaraang biyahe ng user o drayber na makikita sa app.	√	√	√	
Unit	png.	Tawag sa isang (1) sasakyan na rehistrado sa ilalim ng TNVS	√	√	√	
User Interface/ Interface ng Gumagamit	png.	Ang disenyo at layout ng app.	√	√	√	
Vehicle Accreditation	png.	Pag-apruba sa sasakyan na pumasa sa mga requirement para makasali sa TNVS	√	√	√	
Vehicle Details	png.	Impormasyon tungkol sa sasakyan gaya ng plate number, modelo, at kulay, na ipinapakita sa pasahero para sa seguridad at pagkakakilanlan.	√	√	√	
Vehicle Information/ Impormasyon ng Sasakyan	png.	Ang impormasyon tungkol sa sasakyan (e.g., plaka, modelo).	√	√	√	
Violation / Paglabag	png.	Anumang paglabag sa rules ng app o LTFRB	√	√	√	
Wallet (Driver Wallet)	png.	Virtual account ng driver kung saan pumapasok ang kita sa bawat biyahe	√			
Zero Tolerance Policy	png.	Mahigpit na patakaran laban sa anumang uri ng pang-aabuso, harassment, o illegal na aktibidad.			√	

Makikita sa Talahanayan 1 ang iba't ibang terminong teknikal na nauugnay sa TNVS ng mga drayber kasama ang kani-kanilang kahulugan at kung aling mga kumpanya ang kasalukuyang gumagamit ng mga ito. Ang bawat termino ay kritikal sa pag-unawa sa mga operasyon o inobasyon sa sektor na ito. Mapapansin na ang mga terminong tulad ng "Accreditation" at "Base User" ay ginagamit ng karamihan sa mga kumpanya, na nagpapahiwatig ng kanilang sentral na papel sa kasalukuyang teknolohiya. Sa kabilang banda, ang terminong "GrabBike", "GrabCar" ay eksklusibong ginagamit lamang ng kumpanya ng Grab o kaya naman ng "Counter Offer" na tanging ang



kumpanyang InDrive lamang ang gumagamit, na maaaring magpahiwatig ng kanilang espesyalisasyon o pangunguna sa bagong teknolohiya.

Binibigyang-diin ng pananaw ni San Juan na ang terminolohiya ay instrumento ng komunikasyon at kaalaman sa propesyon na nakabatay sa aktuwal na paggamit at konteksto ng larangan. Sa ganitong diwa, ang talaan ay nagsisilbing praktikal na gabay at batayan sa pagbuo ng glosaryo na naglalarawan ng wika ng TNVS drayber na akma sa kanilang pangangailangan.

Talahanayan 2

Talaan ng mga Terminolohiya na Gamit ng mga Pasahero ng TNVS

SALITA (PASAHERO)	LEKSIKO- GRAMATIKA (MORPOLOHIYA AT SINTAKS)	KAHULUGAN	KUMpanyA NG TNVS			
			GRAB	ANGKAS	MOVEIT	JOYRIDE
Angkas App	png.	Ito ang mobile application na ginagamit para mag-book ng biyahe, i-track ang driver, at magbayad. Available ito sa iOS at Android.		√		
Angkas Biker / Angkas Rider	png.	Ito ang tawag sa mga driver-partners ng Angkas na nagmamaneho ng motorsiklo. Sila ang naghahatid ng pasahero o parcel.		√		
Availability Score	pu.	Ito ay isang puntos na nagpapakita kung gaano kadalas available ang isang driver-partner para sa mga booking. Ang mas mataas na availability score, mas malamang na makakuha ng mga booking ang driver-partner.	√	√	√	√
Base Fare	png.	Ang panimulang singil bago pa dumagdag ang toll fees, distance fare, at iba pang charges.	√	√	√	√
Booking / Pagbu-book o Pagre-reserba	png.	Proseso ng pagrerehistro o pag-request ng biyahe gamit ang TNVS app.	√	√	√	√
Booking Fee	png.	Bayad sa pag-book ng isang biyahe.	√	√	√	√



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Cancellation	png.	Ang pagkansela ng isang ride.	√	√	√	√
Cancellation Fee	png.	Ang bayad na sinisingil sa pagkansela ng isang booking.	√	√	√	√
Cancelled Trip (Biyaha na hindi Itinuloy)	pd.	Biyaha na hindi natuloy, maaaring dahil sa driver o pasahero	√	√	√	√
Cashless Payment:	png.	Ang option na magbayad gamit ang Wallet (kung available), o konektadong credit/debit card sa app.		√	√	
Dispatch	pd.	Ang proseso ng pag-assign ng isang driver-partner sa isang booking.	√	√	√	√
Dispatch Algorithm	pd.	Ito ay isang set ng mga panuntunan at formula na ginagamit para mag-assign ng mga driver-partner sa mga booking. Ang algorithm ay isinasaalang-alang ang mga kadahilanan tulad ng lokasyon ng driver-partner, ang distansya sa pick-up point, at ang availability ng driver-partner.	√	√	√	√
Driver-partner / Driver / Partner-Driver (Katuwang na Tsuper)	png.	Tawag ng mga TNVS companies sa kanilang drivers bilang pagpapakita ng pantay na pakikitungo.	√	√	√	√
Drop-off point / Drop-Off Location	png.	Ang destinasyon o bababaan ng pasahero. Kailangan ding ilagay ito sa app para makumpleto ang booking.	√	√	√	√
ETA (Estimated Time of Arrival)	png.	Ito ay isang kalkulasyon ng oras na kailangan ng isang ride mula sa pick-up point hanggang sa drop-off point. Ang ETA ay nakasalalay sa mga kadahilanan tulad ng trapiko, distansya,	√	√	√	√



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		at bilis ng driver-partner.				
Estimated Fare/Tinatayang Bayad	pu.	Ang tinatayang halaga ng bayad bago ang biyahe.	√	√	√	√
Fare / Bayad / Estimated Fare	pu.	Ang kabuuang halaga ng pamasaha para sa biyahe, kadalasang ipinapakita agad bago kumpirmahin ang booking. Sa ilang apps gaya ng inDrive, puwedeng mag-propose ng sariling fare ang pasahero.	√	√	√	√
Fare Breakdown (Hati ng Pamasaha)	png.	Detalyadong listahan ng singil: base fare, distance fare, surge, etc.	√	√	√	√
Feedback / Comments	png.	Opsyon para magbigay ng karagdagang komento o reklamo tungkol sa biyahe, drayber, o pasahero.	√	√	√	√
In-app Chat/Call	png.	Ang feature sa loob ng app para makipag-ugnayan sa iyong driver.	√	√	√	√
No-Show	png.	Kapag hindi dumating ang pasahero sa itinakdang pick-up point, maaaring magresulta sa cancellation at penalty.	√	√	√	√
Offline	pu.; pa.	Ito ay ang estado ng isang driver kapag hindi siya tumatanggap ng mga booking.	√	√	√	√
On-trip	pkl.; pa.	Ito ay ang estado ng isang driver kapag mayroon na siyang pasahero.	√	√	√	√
Payment Method/Paraan ng Pagbabayad	png.	Ang mga paraan ng pagbabayad na tinatanggap (e.g., cash, credit card, e-	√	√	√	√



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		wallet).				
Passenger	png.	Ang mga taong gumagamit ng services para maglakbay	√	√	√	√
Peer-to-Peer Ride Sharing	pd.	Sistema kung saan ordinaryong pribadong sasakyan ay ginagamit upang magsundo ng pasahero gamit ang platform.				
Pick-up point / Pickup Location	png.	Ang lugar kung saan susunduin ang pasahero. Ito ay itinatalaga ng user sa app bago mag-book.	√	√	√	√
Promo	png.; pu.	Ang diskwento o promosyon na inaalok.	√	√	√	√
Promo Code / Cashback	png.; pu.	Mga code o diskwento na maaaring gamitin para mabawasan ang bayad sa biyahe o makakuha ng reward.	√	√	√	√
Rating	png.	Ang pagbibigay ng rating sa driver-partner o pasahero.	√	√	√	√
Rating System	png.	Paraan ng pagbibigay ng feedback ng driver at rider sa isa't isa matapos ang biyahe.	√	√	√	√
Ride	pd.	Ang mismong biyahe na isinagawa.	√	√	√	√
Ride Sharing	png.	Pagbabahagi ng isang sasakyan sa mga pasahero.	√	√	√	√
Rider (Pasahero)	png.	Tawag sa pasahero o gumagamit ng TNVS platform.	√	√	√	√
Surge Fee	png.	Dagdag na bayad kapag mataas ang demand at kakaunti ang available na sasakyan.	√	√	√	√
Surge Multiplier	png.	Ito ay isang numero na ginagamit upang kalkulahin ang surge pricing. Halimbawa, kung ang surge multiplier ay 1.5, ang presyo ng isang ride ay tataas ng 50%.	√	√	√	√



Surge Pricing / Dinamikong pamasaha / Tumaas na pamasaha	png.	Dynamic na pagtaas ng pamasaha kapag mataas ang demand o kakaunti ang available na drayber (tinatawag ding "peak pricing").	√	√	√	√
Support	pd.	Ang customer service	√	√	√	√
Tip	png.	Ang opsyonal na dagdag na bayad na maibibigay mo sa driver-partner.	√	√	√	√
Waiting Fee	pd.	Ang bayad na sinisingil sa paghihintay ng driver sa pasahero.	√	√	√	√
Wait time	pd.	Ang oras na kailangan mong maghintay para sa iyong ride.	√	√	√	√

Makikita sa Talahanayan 2 ang kalipunan ng mga piling salita ng mga pasahero sa konteksto ng paggamit ng mga digital na plataporma ng TNVS. Kabilang dito ang mga terminolohiyang may kaugnayan sa proseso ng pag-book, pakikipag-ugnayan sa drayber, sistema ng bayarin, pagmamarka o rating, reklamo, at iba pang karanasang komunikatibo sa loob ng serbisyong nakabatay sa teknolohiya.

Binibigyang-diin ni San Juan na ang pag-usbong ng mga terminong ito ay patunay na nadaragdagan ang ating bokabularyo sa pamamagitan ng pag-aampon (borrowing) at muling pagbibigay-kahulugan sa mga banyagang salita para sa lokal na karanasan.

**Alin sa mga terminolohiyang nakalap ang tanggap sa Filipino batay sa Tagalog Database Corpus Tool?**

Ang isang terminolohiya ay itinuturing na tanggap kung ito ay tumpak na naglalarawan ng konsepto o ideya at madaling maunawaan ng karamihan. Hindi ito dapat magdulot ng kalituhan o maling interpretasyon. Mahalagang suriin kung alin sa mga terminolohiyang ginagamit ang tunay na tinatanggap at nagagamit ng nakararami. Sa tulong ng TDC Corpus Tool, nagiging mas sistematiko ang pagtukoy sa mga salitang malaganap ang paggamit at tanggap sa kasalukuyang leksikon ng Filipino. Ang pag-aaral na ito ay naglalayong tukuyin at suriin ang mga terminolohiyang ito, batay sa aktuwal na datos mula sa korpus, upang makatulong sa patuloy na intelektuwalisasyon at elaborasyon ng wikang Pambansa.

Talahanayan 3

Hits sa Terminolohiyang Nakalap Batay sa TDC Corpus Tool na Gamit ng Drayber

SALITA (DRAYBER)	Bilang ng Hits sa TDC Tool (in instances)	Bilang ng Hits sa TDC Tool na Akma sa Kahulugan ng Diksyunaryo (in instances)	KONTEKSTO / GAMIT
Acceptance Rate (AR)	4	4	"...P250+ for a 30 40 min ride (traffic included) using GrabShare. The only upside is the higher <b>acceptance rate</b> compared to a couple/few months ago..."
Accreditation / Akreditasyon	18		



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Accredited Driver (Aprubadong Tsuper)			Halimbawa: driver ng Grab o Joyride
Airport Transfer			
Algorithm	32		
App Interface			Booking screen, rating screen, fare estimate
Application Programming Interface (API)			
App/Application	922	3	"...kayong phone na maganda ang GPS, 4G LTE, and long battery life (gagamitin as Grab driver <b>app</b> )?"
Auto-Accept (Awtomatikong Pagtanggap)			Optional feature para sa driver
Availability score			
Base user			
Bus	2,293		
Cancellation Rate (CR)	1	1	"Malaki din chance na mataas <b>cancellation rate</b> niya kaya umabot sa point na isususpend siya."
Cash-out / Pag-withdraw o Pagkuha ng Kita	2		
Certificate of Public Convenience (CPC)	2	2	"...sa unang paglabag at P10,000 para sa ikalawang paglabag at 6 buwang suspensiyon ng kanilang <b>Certificate of Public Convenience</b> . Ang mga operators ay mahaharap sa kanselasyon at pagpapawalang bisa ng kanilang prangkisa sa kanilang ikatlo at pinal na paglabag."
Commission	97		Halimbawa: 20% ng fare goes to the company
Counter Offer	9	2	"....mababa yang 25% higher..vs 23% higher...2% lang pagitan ok sana kung <b>counter offer</b> is 50% or higher...lalo sa 1.5 hours commute mo..."
Data analytics	4		



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Deactivation	3		
Digital Platform/Application			
Dispatch	24	4	"Sa rush hours sa umaga, mula alas 6:00 ng umaga hanggang alas 9:00 ng umaga magdi <b>dispatch</b> ng bus mula sa North Avenue at ang drop off ng mga pasahero ay sa Ortigas at Ayala Stations."
Distance Fare			
Driver Guidelines			
Driver Incentives			
Driver Profile/Profile ng Driver			
Driver Rating (DR) / Rating ng Driver			
Dynamic Pricing			
Do's and Don'ts	10		
E-Hailing			Umbrella term para sa TNVS operation
Fare Computation			
Franchise / Prangkisa	110	7	"Kamusta na po status ng grab ngayon? Nagbabalak kami mag open ng <b>franchise</b> para sa kotse namin."
Fraud detection system			
Geo-fencing			
GCash Payout (Bayad sa GCash)			
Geolocation	1		
Geo-location Technology			
GPS/Global Positioning System	1		
GrabBike			
GrabCar	11	10	"Nagbook yung friend ko ng <b>GrabCar</b> nung pumunta kami sa Birthday nung isang friend namin na lalaki."



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GrabChat			
GrabExpress			
GrabFood	8	8	"Iniisip ko pano kumikita ang Grab sa <b>GrabFood.</b> "
GrabMart			
GrabPay	9	9	"I'm quite new to grab kaya gusto ko lang malaman kung ano advantage ng <b>grabpay?</b> "
GrabRewards			
GrabShare	9	9	"Sobrang lutang ko kanina, di ko napansin na <b>GrabShare</b> ang na book ko until may nag accept na driver."
GrabTaxi	3	3	"...no <b>Grabtaxi</b> wanted to take me, pati real life taxi na kailangan ko parahin para tumigil walang tumigil, .."
Hatchback	5		Vehicle clasification
Heat Map			
Hotspot / Hotzone (Mainit na Lugar ng Biyahe)	21		Surge pricing area
Incentive (Insentibo)	60	1	"Out of the way minsan ang grab share passengers * <b>WALA NANG INCENTIVE!</b> "
Insurance	474		
In transit	8	1	"Yes, napick up na ng rider ung item and nasa system na nila na napick up nga nong Jan30 and " <b>in transit</b> " na since Jan31. "
JoyRide MC Taxi			
JoyRide Car			
JoyRide Taxi Cab			
JoyRide Super Taxi			
LTFRB	135	13	"Pinatay ang Grab dito with underhanded deals between Grab and <b>LTFRB.</b> "
LTO	212		Registration, driver's license
Matching algorithm			



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Mobile Application	4	1	"May nag eexist na <b>mobile application</b> where you can book vans and cars sa Pilipinas! OOT app ang pangalan,..."
Moto-Taxi / Motorcycle Taxi			
Multiple Booking (Maramihang Booking)			GrabShare, Joyride Pool
Notifications	15		
Offline	79		
Online	2,319		
On-trip			
Operating Area			Halimbawa: Metro Manila lamang
Operating Hours	7		Halimbawa: 6AM-10PM lamang para sa ilang PA holders
PA (Provisional Authority) / Pansamantalang Awtoridad			Legal na dokumentong kailangan bago makapamasada
Passenger Rating/Rating ng Pasahero			
Payment Methods	7		
Platform	200	1	"There are classifications of cars in the Grab / Uber <b>platform</b> ."
Pending Slot (Nakabinbing slot)			
Pending Application	1		
Permit	201	1	"Pero may mayors <b>permit</b> to operate."
Pre-arranged Ride/Transportation Service	1	1	"...ng Uber kaya nag reply sya ng "ikaw na mag cancel, kakain pa ko". Nag init ulo ko, ganito na ba <b>transportation service</b> ngayon sa Pinas?"
Quota	118	1	"... <b>quota</b> system for trips are effed up Mas mababa na raw ang required trips nila para ma meet ang <b>quota</b> nila pero mas mababa naman na ang kita. "
Reactivation	2		
Real-time Tracking/Pagsubaybay sa Real-time			



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Real-Time Tracking / GPS Location			
Referral Code / Kodigo ng Pag-anyaya	10		Incentive system para sa recruitment
Regulatory Body	1		
Ride-hailing	1	1	"I tried looking at some other <b>ride hailing</b> apps, but most of them, understandably, can not be downloaded while abroad. "
Ride History			Matatagpuan sa app account
Route/Ruta	304	1	"Sa may Jollibee/Puregold along Ligaya, meron din I think but not sure if may Ortigas na <b>route</b> . "
Route optimization			
Safety Gear			
Safety Training			
Sagot Kita			
Sedan	21		Mas pabor sa Grab Cars at premiun rides
Service Charge / Commission	28		
Shared Ride			
Star Rating System			
Support Center (Sentro ng Suporta)	1		
Surge Pricing / Tumaas na pamasaha	2	2	"Walang kakagat sa grabcar/share/taxi/6seater kahit <b>surge pricing</b> para mag book ka sa premium na doble ang presyo?"
Taxicle			
Time Fare			
TNC (Transport Network Company)	48	1	"Bukod sa Grab, wala pa akong ibang <b>TNC</b> na nasubukan."
TNVS (Transport Network Vehicle Service)	18	18	"...Manager Jojo Garcia, na hindi ligtas sa huli ang mga driver ng <b>Transport Network Vehicle Service (TNVS)</b> tulad ng Grab Philippines kung sila ay lalabag sa batas trapiko."



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TNVS Operator (Taong may-ari ng sasakyang rehistrado sa TNVS)			Halimbawa: may-ari ng 3 unit na may driver-partners
TNVS Slot			
Trade Dress			
Trip Duration			Nakikita sa trip summary
Trip History			
Unit	484		
User Interface/Interface ng Gumagamit	2		
Vehicle Accreditation			May validity period; kailangan para sa PA
Vehicle Details			
Vehicle Information/Impormasyon ng Sasakyan			
Violation / Paglabag	84		Halimbawa: Hindi pagsunod sa tamang ruta
Wallet (Driver Wallet)	403		
Zero Tolerance Policy			

Matutunghayan sa Talahanayan 3 kung ilan ang hits sa TDC Corpus Tool ang akma sa diksyunaryo ang may kinalaman sa TNVS. Sa ikaapat na kolum makikita ang ilang halimbawang pangungusap na ipinakita ng nasabing korpus. Hindi lahat ng pangungusap na nakita sa hits ay akma sa TNVS. Kaya't maingat na sinuri ang pangungusap na lumabas sa naturang tool. Pinatutunayan lamang nito na mahalaga ang isang terminolohiya na ginagamit nang pare-pareho sa iba't ibang konteksto at disiplina. Nakakatulong ito upang maiwasan ang pagkalito at mapanatili ang kaayusan sa paggamit ng wika.

Batay sa pagsusuri ng datos mula sa TNVS applications at dokumento gamit ang TDC corpus tool natukoy ang mga terminolohiyang ginagamit ng drayber sa pang-araw-araw na operasyon. Ang mga termino ay karaniwang hiram mula sa Ingles, ngunit maraming salitang pinaikli, binago ang baybay o inaangkop sa lokal na konteksto upang maging mas madaling gamitin sa interface ng aplikasyon. Ang mga ito ay nauugnay sa pangunahing pangangailangan ng drayber tulad ng booking, ruta, payment method at feedback.

Talahanayan 4  
Hits sa Terminolohiyang Nakalap Batay sa TDC Corpus Tool na Gamit ng Pasahero

	<b>Bilang ng Hits sa TDC</b>	
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<b>SALITA (PASAHERO)</b>	<b>Bilang ng Hits sa TDC Tool (in instances)</b>	<b>Tool na Akma sa Kahulugan ng Diksyunaryo (in instances)</b>	<b>Konteksto / Gamit</b>
Angkas App	2	2	"May nabalitaan ako na sa <b>Angkas app</b> , pwedeng ikaw mismo yung package? "
Angkas Biker			
Availability Score			
Base Fare	4		
Booking / Pagbu-book o Pagre-reserba	94	9	"I was still a few blocks away from my house when no Grabcar wanted to take my <b>booking...</b> "
Booking Fee			
Cancellation	21	2	"Kakabalik ko pa lang pa naman ng Pinas so hindi ko alam na may bagong rules na pala sa <b>cancellation</b> si Grab. "
Cancellation Fee	2		
Cancelled Trip (Biyaheng hindi Itinuloy)			Karaniwang notipikasyon sa app
Cashless payment	1		
Dispatch	24		
Dispatch Algorithm			
Driver-partner / Driver / Partner-Driver (Katuwang na Tsuper)			
Drop-off point / Drop-Off Location			
ETA (Estimated Time of Arrival)	54		
Estimated Fare/Tinatayang Bayad			
Fare / Bayad / Estimated Fare	256	4	Lastly, tigilan nyo yang pataasan ng grab <b>fare</b> for 2018.



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Fare Breakdown (Hati ng Pamasaha)			Transparent pricing
Feedback / Comments	190		
In-app Chat/Call			
No-Show	4		
Offline	79		
On-trip			
Payment Method/Paraan ng Pagbabayad	19	2	"...pwede bang magchange ng <b>payment method</b> kahit otw na?? "
Passenger	124	9	"Minsan rin daw kahit na cancel na yung trip from the <b>passenger's</b> app, hindi pa rin nacacancel sa side ng Driver."
Peer-to-Peer Ride Sharing			Karaniwang modelo ng Grab at Joyride
Pick-up point / Pickup Location	1		
Promo	400	3	"Pero sulit yung <b>promo</b> ng grab ngayon na 80Php pag nakagrabpay Salcedo Street is at the back of Makati Medical Center."
Promo Code / Cashback	13	2	"Magbibigay ng <b>promo code</b> ang grab pero pag gagamitin naman hindi makapag book..."
Rating	155	2	"Malaking hit sa kanila ang mababang <b>rating</b> daw based dun sa nakausap kong grab driver noon."
Rating System	2		1 ro 5 stars scale
Ride	453		
Ride Sharing	3	2	"...there's this other <b>ride sharing</b> company, I forgot the name lang. "



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Rider (Pasahero)	122	6	"Nagets ko naman if out of the way ako or pagod na sila pero umeeffort naman ung rider, sana same effort din sa ibang Grab drivers."
Surge Fee			
Surge Multiplier			
Surge Pricing / Tumaas na pamasahе	2	2	"Walang kakagat sa grabcar/share/taxi/6seater kahit surge pricing para mag book ka sa premium na doble ang presyo?"
Support	1,139		
Tip	402		
Waiting Fee			
Wait time	2	1	"What are the other things to expect maliban sa *loooong* wait time?"

Matutunghayan sa Talahanayan 4 kung ilan ang hits na makikita sa TDC Corpus Tool gamit ang terminolohiyang ginagamit ng pasahero sa TNVS. Ang talaang ito ay nagsisilbing pangunahing korpus na pinagmumulan ng datos na sinusuri batay sa kahulugan, gamit, anyo, at kontekstong sosyoteknolohikal ng bawat termino. Inilalarawan nito kung paano umusbong ang wika ng mga pasahero bilang tugon sa modernisasyon ng transportasyon at digitalisasyon ng serbisyo. Ang mga terminolohiyang ito ay hindi lamang nagsisilbing teknikal na leksikon kundi replaksiyon din ng karanasan, pananaw, at diskursong panlipunan ng mga gumagamit ng TNVS.

**Ano-ano ang mga dahilan ng katanggapan at hindi katanggapan ng mga terminolohiyang nakalap gamit ang Tagalog Database Corpus Tool?**

Talahanayan 5

Ranggo ng Katanggapan at Hindi Katanggapan ng mga Terminolohiya

Ranggo	Terminolohiya	Bilang ng Hits (Instances) Mula sa TDC Corpus Tool	Bilang ng Hits (Instances) Akma sa TNVS
1	Online	2,319	
2	Bus	2,293	
3	Support	1,139	
4	App/Application	922	
5	Ride	453	



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6	Unit	484	
7	Insurance	474	1
8	Wallet	403	
9	Tip	402	
10	Promo	400	3
11	Route	304	
12	Fare	256	4
13	LTO	212	1
14	Permit	201	1
15	Platform	200	1
16	Feedback	190	
17	Rating	155	2
18	LTFRB	135	13
19	Passanger	134	9
20	Rider	122	6
21	Quota	118	
22	Franchise	110	7
23	Commision	97	
24	Booking	94	9
25	Violation	84	
26	Offline	79	
27	Incentive	60	
28	ETA (Estimated Time of Arrival)	54	
29	TNC (Transport Network Company	48	1
30	Algorithm	32	
31	Sedan	28	
32	Service Charge/Commision	28	
33	Dispatch	24	5
34	Cancellation	21	2
35	Hotspot	21	
36	Payment Method/Paraan ng Pagbabayad	19	2
37	Accreditation	18	1
38	TNVC (Transport Network Vehicle Company)	18	18
39	Notifications	15	
40	Promo Code / Cashback	13	2
41	GrabCar	11	10



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42	Do's and Don'ts	10	
43	Referral Code	10	
44	Counter Offer	9	4
45	GrabPay	9	9
46	GrabShare	9	9
47	GrabFood	8	8
48	InTransit	8	1
49	Operating Hours	7	
50	Payment Method	7	
51	Hatchback	5	
52	Acceptance Rate	4	4
53	Base Fare	4	
54	Data Analytics	4	
55	No-Show	4	
56	Mobile Application	4	2
57	Deactivation	3	
58	GrabTaxi	3	3
59	Ride Sharing	3	2
60	Angkas App	2	2
61	Cancellation Fee	2	
62	Cash-out	2	
63	Certificate of Public Convenience	2	2
64	Rating System	2	
65	Reactivation	2	
66	Surge Pricing	2	2
67	User Interface	2	
68	Wait Time	2	1
69	Auto-accept	1	1
70	Cancellation Rate	1	1
71	Cashless Payment	1	
72	Geolocation	1	
73	GPS / Global Positioning System	1	
74	Pending Application	1	
75	Pick-up point / Pickup Location	1	
76	Pre-arrange Ride/Transportation Service	1	1
77	Regulatory Body	1	
78	Ride Hailing	1	



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79	Support Center	1	
80	Accredited Driver		
81	Airport Transfer		
82	Angkas Biker		
83	App Interface		
84	Application Programming Interface		
85	Availability score		
86	Base User		
87	Booking Fee		
88	Cancelled Trip		
89	Digital Platform/Application		
90	Dispatch Algorithm		
91	Distance Fare		
92	Driver Guidelines		
93	Driver Incentives		
94	Driver-partner / Driver / Partner-Driver		
95	Driver Profile		
96	Driver Rating (DR)		
97	Drop-off point / Drop-Off Location		
98	Dynamic Pricing		
99	E-Hailing		
100	Estimated Fare		
101	Fare Breakdown		
102	Fare Computation		
103	Fraud Detection System		
104	Geo-fencing		
105	Gcash Payout		
106	Geo-location Technology		
107	GrabBike		
108	GrabChat		
109	GrabExpress		
110	GrabMart		
111	GrabRewards		
112	HeatMap		
113	In-app Chat/Call		
114	JoyRide MC Taxi		



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PTR-2025-749**

115	JoyRide Car		
116	JoyRide Taxi Cab		
117	JoyRide Super Taxi		
118	Matching Algorithm		
119	Moto-Taxi / Motorcycle Taxi		
120	Multiple Booking		
121	On-trip		
122	Operating Area		
123	PA (Provisional Authority)		
124	Passenger Rating		
125	Peer-to-Peer Ride Sharing		
126	Pending Slot		
127	Real-Time Tracking		
128	GPS Location		
129	Ride History		
130	Route Optimization		
131	Safety Training		
132	Sagot Kita		
133	Shared Ride		
134	Star Rating System		
135	Surge Fee		
136	Surge Multiplier		
137	Taxicle		
138	Time Fare		
139	TNVS Operator		
140	TNVS Slot		
141	Trade Dress		
142	Trip Duration		
143	Trip History		
144	Vehicle Accreditation		
145	Vehicle Details		
146	Vehicle Information		
147	Waiting Fee		
148	Zero Tolerance		

Makikita sa Talahanayan 5 ang terminolohiyang “online” na may pinakamataas na bilang ng paglitaw (hits) sa TDC corpus tool, ipinahihiwatig na ito ay isang pormal at karaniwang ginagamit na termino sa mga dokumentong may kaugnayan sa TNVS. Sa kabilang banda, ang mga terminong tulad ng “zero tolerance” o “accredited driver” ay



walang hits, na maaaring nangangahulugang mas teknikal ito, ginagamit lamang sa partikular na aplikasyon o hindi pa ganap na naiintelektuwalisa sa wikang Filipino.

Ang mas mataas na hits ng terminong "online" ay nagpapakita ng malawakang paggamit nito sa mga artikulo, ulat, at iba pang teksto kaugnay ng TNVS. Subalit, ayon sa pagsusuri, iilan lamang sa mga kumpanya ng TNVS ang aktwal na tumutukoy sa kanilang sistema bilang "app", kaya't maaaring ang paggamit nito ay mas laganap sa midya o mga user, kaya sa opisyal na dokumento ng mga kumpanya.

Ipinakita sa resulta na mas mataas ang katanggap-tanggap na termino kapag mataas ang frequency, malinaw ang kahulugan, at akma sa konteksto ng TNVS, alinsunod sa teorya ng leksikograpiya. Samantalang, ang hindi katanggap-tanggap na termino ay madalas bihira, hindi standardized, o mahirap maintindihan, kaya nangagailangan ng lingguwistikong adaptasyon para sa pagbuo ng glosaryo. Sa kabuuan, ang resulta ng ranggo ng katanggapan ay nagsisilbing empirikal na batayan sa pagpili ng mga terminolohiya para sa mungkahing glosaryo ng TNVS na naaayon sa wikang Filipino, at nagbibigay-daan sa mas sistematiko at madaling gamitin sa aplikasyon para sa drayber at pasahero.

Bilang karagdagan, tingnan ang dayagram 1 upang mas lalong maunawaan ang paggamit ng TDC corpus tool sa mga nakalap na terminolohiya na ginagamit sa TNVS.

Dayagram 1  
Nangungunang Terminolohiya sa TNVS Ayon sa TDC Corpus Tool

Sa pamamagitan ng dayagram mula sa TDC Corpus Tool natukoy ang lehitimong gamit ng mga terminolohiya sa TNVS at nagpapakita ng pangunahing pangangailangan ng drayber at pasahero. Nakatulong ito sa pag-unawa kung alin sa mga termino ang mas malapit sa wikang ginagamit sa opisyal, teknikal o kolokyal na antas. Ang mga terminolohiyang ito ang magiging batayan sa mungkahing glosaryo sa wikang Filipino na magpapadali sa komunikasyon, pag-unawa, at operasyon sa loob ng digital na transport network.

### **Ano ang implikasyon sa Filipino ang natuklasang terminolohiya na gamit sa Transport Network Vehicle Service Rides?**

Ang paglitaw at paglaganap ng TNVS, tulad ng MoveIt, Angkas, Joyride, Grab at dating Uber, ay nagdulot ng malaking pagbabago sa transportasyon sa Pilipinas. Kaakibat nito, nagkaroon din ng malaking implikasyon sa wikang Filipino, partikular sa pagbuo at pagtanggap ng mga bagong terminolohiya. Hinihikayat ang pag-angkop sa teknolohiya, nagpapalaganap ng hybrid na wika, at nagpapakita ng pangangailangan para sa mas masusing intelektuwalisasyon ng Filipino upang mapanatili ang bisa at kabuluhan ng wika sa makabagong panahon.

Ayon sa pag-aaral hinggil sa pagsasalin at glosaryo ni San Juan (2012) maaaring hiram ang mga salitang Ingles nang walang palit sa ispelang, at kung magagawa, iangkop ang mga ito sa palabaybayang Filipino. Halimbawa nito ay akreditasyon o kansel trip. Subalit para sa mga taong hindi gaanong bihasa sa wikang Ingles, maaaring maging mahirap intindihin ang mga teksto o komunikasyon na puno ng mga salitang Ingles na walang katumbas na salin sa Filipino. Ito ay maaaring magdulot ng hadlang sa komunikasyon at pag-unawa. Ang patuloy na paggamit ng mga salitang Ingles nang walang pagbabago ay maaaring magpalakas ng impluwensiya ng kulturang kanluranin sa Pilipinas at mapahina ang pagkilala at pagpapahalaga sa sariling kultura.

Iniaakma ang mga salita upang maipakita ang kultural na kabuluhan ng orihinal na termino. Hindi lamang literal na pagsasalin ang sinusunod kundi ang pagsasaalang-alang kung paano tatanggapin at mauunawaan ang salita sa kontekstong Pilipino. Sinisigurong naaayon sa gramatika at gamit sa Filipino ang mga terminong isinasalin o



inaangkop. Kinakailangang malinaw at sistematiko ang depinisyon para sa mas malawak na paggamit sa akademya o pananaliksik.

Ang direktang panghihiram bilang isang paraan ng pagsasalin, ayon kina Batnag at Petras (2009) ay madalas na ginagamit sa mga terminong walang direktang katumbas sa target na wika. Sa konteksto ng TNVS, makikita ito sa mga termino tulad ng "booking" at "app", na kadalasang hindi na isinasalin sa Filipino dahil sa kanilang pandaigdigang pagkilala at paggamit.

Ibinida rin nina Batnag at Petras ang kahalagahan ng paglikha ng bagong salita o neologism kapag ang konsepto ay bago at wala pang katumbas. Halimbawa, ang konsepto ng "surge pricing" sa TNVS, na nagpapahiwatig ng dinamikong pagtaas ng presyo batay sa demand ay maaaring mangailangan ng masusing pagsasalaang-alang sa pagbuo ng Filipino na termino na madaling maunawaan ng publiko.

Ang mga natuklasang terminolohiya mula sa paggamit ng TNVS ay nagpapahiwatig na ang wikang Filipino ay isang buhay at umuunlad na wika na patuloy na humuhubog at hinuhubog ng lipunan at teknolohiya. Ipinakita nito ang kakayahan ng wika na umangkop at isama ang mga bagong konsepto mula sa pandaigdigang konteksto habang pinapanatili ang sariling pagkakakilanlan.

### Kongklusyon

Ang pag-aaral ay hindi lamang nagtatala ng mga salita kundi nagsisilbing ebidensya ng intelektuwalisasyon ng wikang Filipino sa harap ng mabilis sa pagbabagong teknolohikal. Natuklasan na ang mga terminolohiya ng TNVS ay kombinasyon ng Ingles (teknikal) at Tagalog (kolokyal), na nagbubunga ng bagong anyo ng "Technolinguistic Register". Maraming karaniwang salitang Tagalog ang nagkaroon ng bagong kahulugan sa loob ng TNVS. Ang salitang "pagsakay" ay hindi na lamang pisikal na kilos kundi digital na transaksyon. Gamit ang TDC Corpus Tool, napatunayan na ang mga terminong ito ay may mataas na *frequency* at *consistency*, na nagpapatibay sa kanilang posisyon bilang bahagi ng pormal na bokabularyo sa transportasyon. Ipinakita ng pag-aaral na ang paggamit ng corpus tool ay mas epektibo sa pagbuo ng glosaryo kaysa sa manwal na pangangalap lamang. Ito ay ambag sa modernong leksikograpiyang Filipino.

Pinatunayan sa pananaliksik na ang wikang tagalog ay hindi estatiko (static); ito ay aktibong nakikipag-ugnayan sa teknolohiya at transportasyon. Sa pamamagitan ng corpus-based na analisis, ang binuong glosaryo at hindi lamang listahan ng salita kundi isang manipesto ng patuloy na pagsulong at modernisasyon ng pambansang wika sa digital na panahon.

### Rekomendasyon

Inirerekomenda ng pananaliksik na bigyang-atensyon ang pag-aaral tungkol sa glosaryo ng terminolohiyang ginamit sa TNVS. Maaaring bumuo ng isang multi-glossary na tutulong sa mga drayber, pasahero at operator upang magkaroon ng unawaan at walang kalituhan sa paggamit ng apps. Maaaring isama ang mga eksperto sa terminolohiya, drayber, operator at pasahero upang mabalideyt ang mga salita, alamin kung nauunawaan at tinatanggap ang mga iminumungkahing termino. Magsagawa ng simpleng sarbey o pilot testing sa piling TNVS platforms at komunidad ng mga drayber at pasahero upang masukat ang antas ng pag-unawa, pagiging angkop, at konsistensi ng mga terminolohiya. Ang resulta sa pilot testing ay maaaring magsilbing batayan sa rebisyon at istandardisasyon ng mga terminong Filipino sa larangan ng transportasyong digital.

Hinihikayat ang mga developer ng TNVS apps na makipagtulungan sa mga mananaliksik at tagaplano ng wika sa pamamagitan ng mga collaborative workshop upang maisama ang mga mungkahing terminolohiya sa interface ng aplikasyon, partikular sa mga bahagi tulad ng booking process, customer support at driver guidelines. Makapagpapalakas ito sa paggamit ng Filipino sa teknolohiyang transportasyon.

Iminumungkahi sa mga ahensiyang pangwika at tagapagplano ng wika na gamitin ang mungkahing glosaryo bilang panimulang sanggunian sa pagbuo ng opisyal na gabay o leksikon ng terminolohiyang TNVS sa Filipino, kasabay ng serye ng konsultasyon at balidasyon mula sa mga eksperto sa wika at transportasyon.

### Mga Sanggunian

Batnag, A., & Petras, J. (2009). *Teksbuk sa Pagsasalin*. C & E Publishing Inc. 54-62.



- Briones, R. (2017). Uber at Grab, Ginhawa Nga Ba o Dagdag Pahirap?. <http://www.dwiz882am.com/index.php/uber-at-grab-ginhawa-nga-ba-o-dagdag-pahirap/>.2017.10.07
- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry and research design: Choosing among five approaches* (4th ed.). SAGE Publications.
- Feng, Y., & Jantarakolica, T. (2023). Factors influencing acceptance and usage of mobile payment in China and Thailand. *Review of Integrative Business and Economics Research*, *12*(4), 259-276. <https://www.gmp-riber.com/riber-12-4.html>
- Hassan, M. (2024). Descriptive Research Design – Types, Methods and Examples. *ResearchMethods.Net*. <https://researchmethod.net/descriptive-research-design/>
- Hartmann, R. R. K., & James, G. (1998). *Dictionary of Lexicography*. Taylor & Francis Group am Informa Business. <https://doi.org/10.4324/9780203159040>
- Hartmann, R. R. K. (2016). Teaching and Researching Lexicography. *Routledge Taylor & Francis Group*. 3-20. <https://doi.org/10.4324/9781315838922>
- Porras, R., Sandrino, I., & Putong, O. (2023). Digitasyon ng Paggawa, Digitasyon ng Pagsasamantala: Panimulang pag-aaral sa mga manggagawa sa gig economy sa Pilipinas. *Bisig*. *5*(1). 78. <https://doi.org/10.70922/wc1xq085>
- Ryu, H., & Lim, H. (2023). Linking Smart City and Urban Sustainability Issue. *Urban and Regional Planning Review*, *10*(0), 269. <https://doi.org/10.14398/urpr.10.263>
- San Juan, D. (2012). *Glosaryo ng mga termino sa panitikan*. Philippine Normal University, Manila. 36-42. [https://www.researchgate.net/publication/342426128\\_GLOSARYO\\_NG\\_MGA\\_TERMINO\\_SA\\_PANITIKAN](https://www.researchgate.net/publication/342426128_GLOSARYO_NG_MGA_TERMINO_SA_PANITIKAN)
- Sukmadewi, R., Chan, A., Suryadipura, D., & Suwandi, I. (2023). Analysis of Technology Acceptance Model for using social media apps in cooperatives. *Review of Integrative Business and Economics Research*, *12*(2), 182–193. <https://www.gmp-riber.com/riber-12-2.html>
- Swamy, S. (2023). *A Guidebook on Integrated Public Transport System. Building Capacity for the Integration and Application of digital technologies in urban public transport systems in Asia-Pacific Cities* (Project ID: 2021-TD-001). [https://www.google.com/search?q=Singapore%E2%80%99s+Integrated+Transport+Glossary&sca\\_esv=115fbc7a5c2d88aa&rlz=1C1YTUH\\_enPH1085PH1085&biw=1517](https://www.google.com/search?q=Singapore%E2%80%99s+Integrated+Transport+Glossary&sca_esv=115fbc7a5c2d88aa&rlz=1C1YTUH_enPH1085PH1085&biw=1517)
- Tiglaio, N. C. C., Sanciango, E., & Tolentino, N. J. (2025). Digitally enabled collaborative governance for sustaining bus reforms on the EDSA Busway in Metro Manila. *Research in Transportation Economics*, *113*, 101633. <https://doi.org/10.1016/j.retrec.2025.101633>
- Tribdino, R. G. (2016). Road Safety Series No. 1:25 reasons the jeepney must be redesigned, re- engineered for safety. <https://verafiles.org/articles/road-safety-series-no-1-25-reasons-the-jeepney-must-be-redesigned-re-engineered-for-safety>
- Wang, Z. (2024). The Strategic analysis of Grab's strategic dominance in Southeast Asia. 7-8. <https://doi.org/10.12414/jiegg.240252>



## Self-Efficacy, self-esteem and performance of Administrative Officer II in the Division of Aklan

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### Abstract

**Aim:** This study examined the relationship between self-efficacy, self-esteem, and job performance of Administrative Officer II (AO II) in the Division of Aklan.

**Methodology:** The study employed a quantitative correlational research design using a non-experimental approach. Total population sampling was utilized, involving all 50 Administrative Officers II in the Division of Aklan. Data were collected using standardized instruments, namely the General Self-Efficacy Scale, the Rosenberg Self-Esteem Scale, and Individual Performance Commitment and Review Form (IPCRF) ratings. Descriptive statistics, Pearson's  $r$ , and chi-square tests were used to analyze the data.

**Results:** Findings revealed that Administrative Officers II demonstrated moderate levels of self-esteem and high levels of self-efficacy, while their IPCRF performance ratings were consistently outstanding. Statistical analysis showed no significant relationship between self-esteem and demographic variables, nor between self-efficacy and demographic variables. Moreover, no significant relationship was found between self-esteem or self-efficacy and the IPCRF performance ratings of Administrative Officers II.

**Conclusion:** The study concluded that although Administrative Officers II in the Division of Aklan possess positive psychological attributes and demonstrate high performance ratings, self-esteem and self-efficacy do not significantly influence their job performance or demographic characteristics. These findings suggest that the performance of Administrative Officers II is more closely associated with the nature of their administrative roles and performance evaluation system rather than with variations in self-esteem or self-efficacy.

**Keywords:** *self-efficacy, self-esteem, performance, administrative officer II*

### INTRODUCTION

Numerous studies have established a strong association between employees' work-related attitudes and overall organizational performance. At the global level, these studies consistently emphasize that individual psychological attributes function as key drivers of effectiveness across both public and private organizations, particularly in environments characterized by increasing performance demands and resource constraints. Cabrera & Estacio (2022) examined the influence of several attitudinal factors on employee performance and found that these variables significantly and positively contribute to performance outcomes, with self-efficacy and self-esteem emerging as the most influential predictors. A supportive and nurturing work environment further strengthens this relationship. Consistent with the concept of psychological empowerment discussed by Lechler & Huemann (2024), employees who experience a sense of competence and self-determination tend to demonstrate higher levels of self-efficacy and self-esteem, which in turn enhance their task performance. These findings reflect a broader international knowledge that employee attitudes operate as mediating mechanisms through which organizational contexts influence performance outcomes.

In contrast to many international studies conducted in settings that afford substantial autonomy and innovation, administrative positions in the Philippine public education system operate within a highly standardized and compliance-oriented framework (Department of Education, 2020; Resurrecion, 2025). This bureaucratic context, common in large-scale government institutions in developing countries, may limit the extent to which individual



psychological attributes such as self-efficacy and self-esteem translate into measurable differences in performance outcomes.

The Schools Division of Aklan is a medium-sized division with 379 public schools, 319 schools of which are elementary schools and 92 are secondary schools, with 50 Administrative Officer II deployed in district offices, large elementary schools, and senior high schools. Similar to education systems worldwide, the Philippine public education sector increasingly relies on non-teaching personnel to ensure administrative efficiency and institutional stability.

Administrative Officer II are responsible for the implementation of an effective and efficient administrative support function, particularly in personnel administration and property custodianship in the school. While international studies emphasize the role of psychological attributes in enhancing employee performance, the applicability of these findings to Administrative Officer II positions within the Philippine public school system remains uncertain. AO II roles are characterized by clearly defined responsibilities, procedural compliance, and performance assessments anchored on standardized indicators set by the Department of Education. Unlike positions that emphasize innovation or individual discretion, AO II performance is largely evaluated based on accuracy, timeliness, and adherence to prescribed administrative processes. These contextual characteristics may moderate the influence of psychological factors such as self-efficacy and self-esteem on performance outcomes, highlighting the importance of examining these relationships within the specific operational realities of AO II personnel. The Administrative Officer II position was formally created and deployed to strengthen administrative support functions in public elementary schools, particularly in personnel administration and property custodianship, as mandated by the Department of Education [DepEd] (2020). Administrative Officer II have three Key Result Areas. These are Personnel Administration, Property Custodianship, and General Administrative Support. The nature of these responsibilities mirrors global trends in educational administration, where administrative roles demand not only technical competence but also high levels of confidence, accountability, and adaptability. Yunus et al. (2023) highlighted the importance of understanding employees' demographic and personal characteristics in relation to job performance. Moreover, previous research consistently indicates that positive work attitudes are closely linked to improved performance outcomes. These findings further reinforce the relevance of attitudinal variables in explaining performance variations among public sector employees. However, unlike many international settings where performance is often linked to discretionary decision-making and individual innovation, the performance of Administrative Officers II in the Philippine public school system is largely evaluated through standardized criteria and compliance-based outputs, which may limit the observable influence of individual psychological attributes.

Despite these findings, there is a limited number of studies focusing specifically on Administrative Officer II employees in the Philippine context, particularly within the Province of Aklan. This gap reflects a broader limitation in localized empirical research that contextualizes global theories of employee attitudes within specific public sector roles. This study seeks to examine the status of Administrative Officer II employees in the Department of Education Division of Aklan by assessing their levels of self-efficacy, self-esteem, and job performance. Gaining insight into these factors is crucial for creating a motivated and productive workforce.

The results of this study may give sufficient evidence to policymakers in the Department of Education in developing and implementing evidence-based policies aimed at enhancing employee performance, improving public service delivery, and contributing to the overall development of the Department of Education in Aklan.

## **Review of Related Literature and Studies**

This part of the study was composed of the definition of Self-Efficacy, the description of the General Self-Efficacy Scale and its proponent, the definition of Self-Esteem and the Rosenberg Self-Esteem Scale, the Administrative Officer II, and the Synthesis.

### **Self-Efficacy**

Maddux and Kleiman (2016) define self-efficacy as individuals' beliefs regarding their capability to successfully execute actions necessary to achieve goals they personally value. Beyond simple confidence, this construct captures the level of effort, persistence, and resilience individuals are willing to invest when confronted with challenges or setbacks. Importantly, self-efficacy is domain-specific, manifesting in areas such as academic self-efficacy, problem-solving self-efficacy, and self-regulatory self-efficacy. Empirical evidence consistently demonstrates that individuals with higher self-efficacy exhibit more adaptive behaviors and attain more favorable outcomes, including improved academic performance, enhanced athletic achievement, healthier lifestyle choices, and greater satisfaction in interpersonal relationships. From an organizational perspective, these findings suggest that self-efficacy plays a critical role in determining how employees approach complex tasks, manage work-related stress, and



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sustain performance under demanding conditions. In administrative roles, where responsibilities often involve multitasking, problem resolution, and independent decision-making, self-efficacy may directly influence task execution and overall job effectiveness. This theoretical relevance underscores the importance of examining self-efficacy within public sector positions such as Administrative Officer II, whose functions require consistent performance despite procedural constraints and workload pressures. Research in performance-oriented settings demonstrates that self-efficacy plays a crucial role in how individuals approach challenging tasks, sustain effort, and regulate performance under pressure (Feltz et al., 2008).

Self-efficacy refers to an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments. Within the framework of employee performance research, this construct explains why individuals facing similar work demands may exhibit varying levels of effectiveness. Self-efficacy reflects confidence in the ability to exert control over one's own motivation, behavior, and social environment.

Taken together, these studies indicate that self-efficacy is generally associated with improved motivation, persistence, and performance across diverse organizational contexts. However, the strength and direction of this relationship appear to vary depending on job structure, performance evaluation systems, and the degree of autonomy afforded to employees. While self-efficacy has been shown to predict performance in roles that allow discretionary decision-making, its influence may be less pronounced in highly standardized and compliance-driven positions. This suggests that the relationship between self-efficacy and job performance cannot be assumed to be uniform across all occupational settings, underscoring the need to examine this construct within specific public-sector roles such as Administrative Officer II.

### **General Self-Efficacy Scale**

Luszczynska et al. (2005) conceptualize general self-efficacy as an individual's belief in their ability to cope effectively with a broad range of challenging or stressful situations, distinguishing it from task-specific self-efficacy, which is confined to particular behaviors or activities. Their work highlights strong associations between general self-efficacy and key social cognitive constructs, including intentions, outcome expectancies, self-regulatory processes, and coping mechanisms. Moreover, general self-efficacy has been shown to relate positively to psychological well-being, health-related behaviors, and adaptive coping strategies. This makes it particularly relevant to occupational contexts characterized by varied and unpredictable demands. For Administrative Officer II personnel, whose roles encompass personnel administration, property custodianship, and general administrative support, general self-efficacy may serve as a foundational psychological resource that enables consistent performance across multiple key result areas. Consequently, assessing general self-efficacy provides valuable insight into how these employees manage role complexity and maintain effectiveness in the face of organizational challenges.

### **Self-Esteem**

Owens and McElroy (2019) conceptualize self-esteem as an individual's overall evaluative orientation toward the self, encompassing both positive and negative self-judgments. A nuanced understanding of self-esteem requires attention to its close relationship with the self and self-concept, while recognizing their conceptual distinctions. Their perspective frames the self as both socially constructed and agentic, emphasizing that self-esteem is shaped by social interactions, role expectations, and personal evaluations of worth, acceptability, and moral value. Furthermore, self-esteem is understood to vary across domains, influenced by individuals' roles, identities, situational contexts, and personal attributes. In workplace settings, self-esteem has been linked to motivation, job satisfaction, and performance-related behaviors. Employees with higher self-esteem are more likely to perceive themselves as competent contributors, respond constructively to feedback, and engage more fully in their roles. In contrast, low self-esteem may limit initiative, increase sensitivity to stressors, and hinder performance. These dynamics are especially salient in administrative positions within public institutions, where employees frequently interact with supervisors, teachers, and stakeholders and must navigate hierarchical and procedural environments.

Despite extensive research on self-esteem and employee performance, most existing studies have focused on private-sector employees, educators, or managerial roles, with limited attention given to non-teaching administrative personnel in public education systems. Moreover, few studies have examined how self-esteem operates within standardized performance evaluation frameworks such as the Individual Performance Commitment and Review Form (IPCRF). As a result, it remains unclear whether self-esteem significantly influences the job performance of Administrative Officers II in the Philippine public school context, thereby reinforcing the relevance of the present study.



### **Rosenberg Self-Esteem Scale**

The Rosenberg Self-Esteem Scale is one of the most widely used self-report instruments for assessing global self-esteem. It consists of ten items designed to measure an individual's overall sense of self-worth by capturing both positive and negative evaluations of the self. Dzwonkowska et al. (2008) stated that the scale is widely regarded as unidimensional and employs a four-point Likert response format ranging from strongly agree to strongly disagree. Its extensive validation across diverse populations and cultural contexts supports its reliability and applicability in organizational and educational research. Given its focus on global self-worth, the Rosenberg Self-Esteem Scale is particularly suitable for examining self-esteem among Administrative Officer II employees, whose performance may be influenced by their perceived value within the school system and the broader organizational structure of the Department of Education. When used alongside measures of self-efficacy, the scale enables a more comprehensive assessment of the psychological factors underlying job performance.

In synthesis, the reviewed literature reveals a predominant focus on self-efficacy and self-esteem as predictors of performance in contexts with high autonomy and innovation, such as those examined by Cabrera & Estacio (2022) and Cherian & Jacob (2013). However, these studies often overlook bureaucratic constraints prevalent in public sector roles, where procedural compliance may override individual psychological influences, as suggested by variations in findings from standardized environments (Resurrecion, 2025). Critically, methodological limitations persist: many rely on self-reported performance measures prone to bias, and few disaggregate results by occupational type, leading to overgeneralizations from teacher-centric or private-sector samples. In the Philippine context, research is sparse and skewed toward educators, with negligible attention to non-teaching administrative personnel like Administrative Officers II (AO II), whose performance is governed by the rigid, indicator-based IPCRF system. This gap directly informs the present research problem: examining whether self-efficacy and self-esteem significantly relate to AO II performance in the Division of Aklan, thereby providing localized, empirical evidence to bridge global theories with the realities of compliance-driven public education administration.

### **Theoretical Framework**

The psychological theory of self-efficacy is grounded in the work of Bandura (1977), who recognized a fundamental mechanism that plays a significant role in human interaction. This mechanism refers to an individual's belief in their capacity to influence events and outcomes in their own life. Albert Bandura, a social psychologist and founder of this concept, believed that we build a self-system based on our social skills, cognitive skills, observational learning, and social backgrounds. This self-system is the backbone of our personality, and self-efficacy is one of the essential components. Self-efficacy, or a person's self-belief in their ability to perform specific tasks, can be related to workplace performance, burnout, the experience of stress, and role adjustments. Given its influential role on performance, it is necessary for employees to understand the role of self-efficacy in the workplace. Self-efficacy influences how employees will approach tasks and challenges in the workplace. Thus, it is important for an employee to build a strong sense of self-efficacy in order to perform well and cope with challenges in the workplace, as revealed by Khalique & Singh (2019).

### **Conceptual Framework**

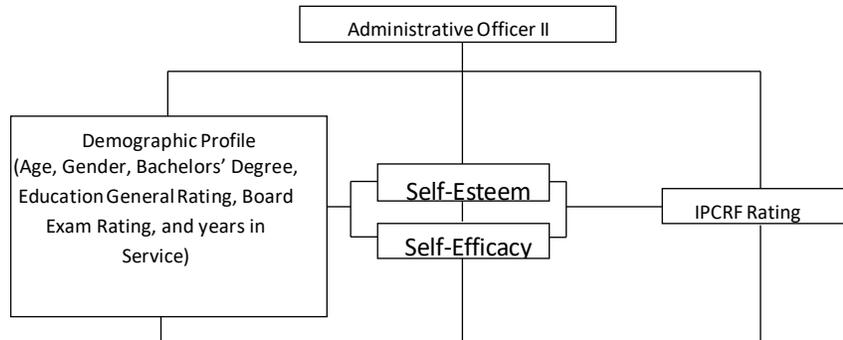
The conceptual framework presents the hypothesized relationships among demographic characteristics, psychological attributes (self-efficacy and self-esteem), and job performance of Administrative Officers II, grounded in Bandura's (1977) self-efficacy theory. Initially, self-esteem and self-efficacy were positioned as potential predictors of IPCRF-rated performance, consistent with global literature emphasizing their role in autonomous or discretionary roles. However, the empirical findings revealed no significant relationships between these psychological variables and performance outcomes. Accordingly, the framework is interpreted post-hoc as an exploratory model that highlights potential influences under conditions of greater task autonomy, while underscoring the moderating effect of highly standardized, compliance-driven administrative contexts such as those of AO II in the Philippine DepEd system where role-defined responsibilities and institutional evaluation mechanisms appear to exert stronger influence on performance than individual psychological variations.

This null relationship does not invalidate Bandura's theory but rather delineates its boundary conditions, demonstrating that in bureaucratic public-sector roles characterized by procedural rigidity and limited discretion, self-efficacy and self-esteem may function more as personal resources for well-being and coping than as direct determinants of standardized performance ratings.

Consistent with the findings of the study, the framework highlights that job performance among



Administrative Officers II may be shaped more by role-defined responsibilities and institutional evaluation mechanisms than by variations in individual psychological attributes.



### Statement of the Problem

The performance of administrative personnel is essential to the effective functioning of public schools, particularly in highly structured systems such as the Philippine Department of Education. In recent years, psychological constructs such as self-efficacy and self-esteem have been widely examined in relation to employee performance; however, existing studies have predominantly focused on teachers, learners, and corporate employees. Limited empirical attention has been given to non-teaching personnel, particularly Administrative Officers II (AO II), whose performance is evaluated through standardized tools such as the Individual Performance Commitment and Review Form (IPCRF).

Despite the increasing administrative responsibilities assigned to AO II following the creation of the position in 2020, it remains unclear whether psychological attributes such as self-efficacy and self-esteem significantly influence their performance outcomes or interact with demographic characteristics. This lack of empirical evidence creates a gap in understanding the factors that may contribute to or explain AO II performance within public school divisions. Addressing this gap is necessary to inform human resource development, performance management practices, and policy implementation within the Department of Education. Hence, this study examined the levels of self-esteem, self-efficacy, and job performance of Administrative Officers II in the Division of Aklan and investigated the relationships among these variables.

### Research Objectives

#### General Objective:

To determine the levels of self-esteem, self-efficacy, and their relationship to the performance of Administrative Officers II in the Division of Aklan

#### Specific Objectives:

1. To describe the demographic profile of Administrative Officers II in the Division of Aklan in terms of age, gender, bachelor's degree, eligibility rating, and years in service.
2. To determine the level of self-esteem of Administrative Officers II.
3. To determine the level of self-efficacy of Administrative Officers II.
4. To identify the IPCRF performance rating of Administrative Officers II in the Division of Aklan.
5. To determine whether there is a significant relationship between self-esteem and the demographic profile of Administrative Officers II.
6. To determine whether there is a significant relationship between self-efficacy and the demographic profile of Administrative Officers II.
7. To examine the relationship between the level of self-esteem and the IPCRF performance rating of Administrative Officers II.
8. To examine the relationship between the level of self-efficacy and the IPCRF performance rating of Administrative Officers II.



### Research Questions

1. What is the demographic profile of Administrative Officers II in the Division of Aklan in terms of age, gender, bachelor's degree, eligibility rating, and years in service?
2. What is the level of self-esteem of Administrative Officers II in the Division of Aklan?
3. What is the level of self-efficacy of Administrative Officers II?
4. What is the IPCRF performance rating of Administrative Officers II?
5. Is there a significant relationship between self-esteem and the demographic profile of Administrative Officers II?
6. Is there a significant relationship between self-efficacy and the demographic profile of Administrative Officers II?
7. Is there a significant relationship between the level of self-esteem and the IPCRF performance rating of Administrative Officers II?
8. Is there a significant relationship between the level of self-efficacy and the IPCRF performance rating of Administrative Officers II?

### Hypotheses

- There is no significant relationship between self-esteem and the demographic profile of Administrative Officers II in terms of age, gender, bachelors' degree, education general rating, board exam rating, and years in service.
- There is no significant relationship between self-efficacy and the demographic profile of Administrative Officers II.
- There is no significant relationship between the level of self-esteem and the IPCRF performance rating of Administrative Officers II.
- There is no significant relationship between the level of self-efficacy and the IPCRF performance rating of Administrative Officers II.

### METHODS

#### Research Design

The study employed a quantitative correlational research methodology to examine the relationship among self-esteem, self-efficacy, and the performance of Administrative Officer II employees in the Division of Aklan. A quantitative correlational research design is a non-experimental method that examines relationships between two or more variables without manipulating them, with emphasis on identifying and analyzing statistical associations, as stated by Putri et al. (2025). Furthermore, Parcon & Nabe (2025) stated that this approach aimed to assess the covariation among naturally occurring variables. Moreover, the primary purpose of correlational research was to identify predictive relationships through the use of correlation analyses or more advanced statistical procedures.

The study involved total population sampling, which included all 50 Administrative Officer II employees. Standardized instruments, namely the General Self-Efficacy Scale, the Rosenberg Self-Esteem Scale by Rosenberg (1965), and the Individual Performance Commitment and Review Form. The IPCRF is a standardized and institutionally mandated evaluation system implemented by the Department of Education, designed to ensure uniformity, accountability, and compliance in the assessment of employee performance across public schools. The collected data were analyzed using descriptive statistics, Pearson's  $r$ , and chi-square tests to determine the strength and statistical significance of the relationships among the variables.

#### Population and Sampling

The study involved the 50 regular permanent Administrative Officers II in the Division of Aklan. Also, this study utilized a non-experimental design. Nwabuko (2024) stated that non-experimental research design is a quantitative research approach that observes and analyzes variables without manipulating them, primarily used when experimentation is not feasible. Moreover, a total population sampling, which is a type of purposive sampling technique, was used since it involves examining the entire population that has a particular set of characteristics, because there are only 50 Administrative Officers II.



### **Instruments**

The study utilized three standardized instruments to collect the required data. The General Self-Efficacy Scale (GSES), developed by Jerusalem and Schwarzer, is a 10-item instrument designed to measure individuals' generalized beliefs in their ability to cope effectively with a variety of demanding situations. The scale has been widely validated across cultural contexts and has demonstrated strong internal consistency, with reported Cronbach's alpha values typically exceeding 0.80 in previous studies (Luszczynska et al., 2005).

Self-esteem was measured using the Rosenberg Self-Esteem Scale (RSES), a widely used 10-item instrument that assesses global self-worth through both positive and negative self-evaluations. The RSES has been extensively validated and has consistently demonstrated acceptable reliability coefficients across diverse populations (Rosenberg, 1965; Dzwonkowska et al., 2008).

Job performance was measured using the Individual Performance Commitment and Review Form (IPCRF), which is a standardized performance evaluation tool mandated by the Department of Education for assessing employee performance in the Philippine public school system. The IPCRF evaluates performance based on predefined indicators, outputs, and rating scales aligned with institutional standards and accountability requirements.

For the present study, the internal consistency reliability of the survey instruments was examined through a pilot test involving Administrative Officer II personnel outside the target population. The resulting Cronbach's alpha coefficient of 0.792 indicated acceptable reliability for the instruments used in the study, confirming their suitability for data collection.

The General Self-Efficacy Scale has been widely validated across diverse cultural contexts, demonstrating strong internal consistency with Cronbach's alpha coefficients typically ranging from 0.76 to 0.94 (Luszczynska et al., 2005). Similarly, the Rosenberg Self-Esteem Scale is extensively validated and exhibits acceptable reliability, with reported Cronbach's alpha values generally between 0.77 and 0.88 across various populations (Rosenberg, 1965; Dzwonkowska et al., 2008). In the present study, a pilot test with Administrative Officer II personnel outside the target population yielded a combined Cronbach's alpha of 0.792 for the two scales, confirming acceptable internal consistency for use in this context.

### **Data Collection**

Before data gathering, the proper protocol was observed in strict compliance with research guidelines (Ampo, 2025; Sanchez, 2026). Permits were secured from the Schools Division Superintendent, Public Schools District Supervisor, and School Heads of Administrative Officers II in the Division of Aklan.

The questionnaires were prepared on a Google Form. An orientation with the respondents was conducted to enlighten them about the questionnaires, Self-Efficacy Scale, and Rosenberg Self-Esteem Scale, the purpose and objectives of the study via Google Meet. They were instructed on how to respond to the questionnaires. When the respondents were done answering, the data in the Google form were retrieved, tabulated, and tallied. Then, the data were analyzed through Statistical Package for the Social Sciences (SPSS) software.

### **Treatment of Data**

The data gathered from the Google Forms responses were organized, tabulated, and statistically analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to determine the demographic profile and the levels of self-esteem and self-efficacy of Administrative Officers II. To examine the relationships between variables, the study employed Pearson's *r* for correlational analysis and Chi-square tests to determine the significance of associations between self-esteem, self-efficacy, demographic factors, and IPCRF performance ratings. These statistical tools enabled the researcher to interpret trends, measure central tendencies, assess variability, and determine whether significant relationships existed among the variables under investigation.

### **Ethical Considerations**

The personal information of the respondents and the data gathered were treated with utmost privacy, confidentiality, and anonymity of whatever information and ensured the non-disclosure of identities of those involved in the conduct of research. Also, a letter of consent to the Schools Division Superintendent together with the Public Schools District Supervisor and immediate School Heads of the Administrative Officer II was sought before proceeding to the conduct of the study.



**RESULTS AND DISCUSSION**

Table 1. Demographic profile of Administrative Officers II in the Division of Aklan in terms of Age, Gender, Bachelors' Degree, Education General Rating, Board Exam Rating, and years in service.

Demographic Profile		f	%
<b>Entire Group</b>		<b>50</b>	<b>100</b>
<b>Age</b>	20-29 years old	10	20
	30-39 years old	23	46
	40 years old and above	17	34
<b>Sex</b>	Male	11	22
	Female	39	78
<b>Bachelor's Degree</b>	Education (BSEd, BSIndEd)	4	8
	Management and Accountancy (BSA, BSBA, BSIT, BSComp.Mngt)	35	70
	Science, Engineering and other Allied (BSNursing, BSECE, BS Psychology, BSForestry)	7	14
	Communication Arts (AB MassCom, AB Journalism)	4	8
<b>Eligibility Rating</b>	80% and below	9	18
	80.01-82.00%	28	56
	82.01% and above	8	16
	No Rating	5	10
<b>Years In Service</b>	5 years and below	28	56
	6-10 years	15	30
	11 years and above	7	14

Table 1 presents the demographic profile of Administrative Officers II in the Division of Aklan in terms of age, gender, educational background, eligibility rating, and years in service. These characteristics provide a descriptive overview of the respondents and establish the contextual background of the study. Previous literature has emphasized the relevance of demographic characteristics in shaping employees' work experiences and career trajectories (Yunus et al., 2023). However, in the present study, demographic variables are examined primarily as contextual factors rather than explanatory predictors of performance or psychological attributes. Their relationship with self-esteem, self-efficacy, and job performance is analyzed separately in subsequent sections.

Table 2. Level of Self-Esteem of Administrative Officers II in the Division of Aklan

Level of Self Esteem	f	%
Moderate (2.61-3.40)	26	52
High (3.41-4.20)	23	46
Very High (4.21-5.00)	1	2
<b>Total</b>	<b>50</b>	<b>100</b>

Mean=3.40 Description= Moderate SD= 0.35

Table 2 shows that Administrative Officers II in the Division of Aklan demonstrated a moderate level of self-esteem, indicating a balanced sense of self-worth and self-regard among the respondents. Prior studies have associated self-esteem with positive workplace behaviors, including job satisfaction, commitment, and well-being (Gómez & Díaz, 2024). However, in the present study, self-esteem is interpreted descriptively and does not imply a direct influence on job performance. The role of self-esteem as a potential factor associated with performance is examined independently in subsequent analyses, allowing for a clearer distinction between psychological status and empirically tested relationships.

Table 3. Level of Self-Efficacy of Administrative Officer II in the Division of Aklan.

Level of Efficacy	f	%
Moderate (2.61-3.40)	4	8

Mean=4.078 Description= High SD= 0.514

Table 3 indicates that Administrative Officers II exhibited a high level of self-efficacy, suggesting that respondents generally perceive themselves as capable of managing work-related tasks and challenges effectively. Previous research has shown that self-efficacy is associated with motivation, persistence, and adaptive work behaviors across various organizational contexts (Feltz et al., 2008). Nevertheless, the present finding is interpreted descriptively and does not assume a direct impact on job performance. The extent to which self-efficacy is empirically related to performance outcomes is examined separately through correlational analysis in later sections of the study.



Table 4. Individual Performance Commitment and Review Form (IPCRF) of Administrative Officer II in the Division of Aklan

IPCRF	f	%
Very Satisfactory (3.50-4.49)	2	4
Outstanding (4.50-5.00)	48	96
Total	50	100

Mean=4.76 Description= Outstanding SD= 0.11

Table 4 presents the IPCRF performance ratings of Administrative Officers II, which were consistently classified as Outstanding. The IPCRF is a standardized and institutionally mandated evaluation system implemented by the Department of Education to ensure uniformity and accountability in performance assessment. Prior literature describes high performance as reflective of accuracy, timeliness, and adherence to organizational standards (Resurrecion, 2025). In the context of this study, IPCRF ratings serve as an objective measure of formal job performance rather than as an outcome directly attributed to individual psychological attributes, which are examined separately in relation to performance.

Table 5 Relationship between self-esteem and the demographic profile of Administrative Officers II in the Division of Aklan in terms of Age, Gender, Bachelors' Degree, Education General Rating, Board Exam Rating, and years in Service and performance.

Variables	$\chi^2$	p value	Interpretation
Age	2.827	0.587	Not Significant
Sex	3.848	0.146	Not Significant
Bachelor's Degree	10.567	0.103	Not Significant
Eligibility Rating	10.461	0.107	Not Significant
Years in Service	1.761	0.78	Not Significant

Table 5 shows that self-esteem is not significantly related to any of the examined demographic variables, including age, gender, educational background, eligibility rating, and years in service. Although previous studies have discussed how demographic characteristics may influence employees' experiences and attitudes (Ng et al., 2016), the findings of the present study do not support such relationships among Administrative Officers II. This suggests that self-esteem within this population is not systematically shaped by demographic factors. Given the absence of statistically significant associations, further interpretation based on demographic trends is not warranted.

Table 6. Relationship between self-efficacy and the demographic profile of Administrative Officers II in the Division of Aklan in terms of Age, Gender, Bachelor's Degree, Education General Rating, Eligibility Examination Rating, and years in Service and IPCRF Rating

Variables	$\chi^2$	p-value	Interpretation
Age	4.836	0.305	Not Significant
Sex	1.229	0.541	Not Significant
Bachelor's Degree	5.574	0.473	Not Significant
Eligibility Training	7.846	0.250	Not Significant
Years in Service	1.261	0.868	Not Significant

Table 6 indicates that self-efficacy is not significantly associated with demographic variables such as age, gender, educational attainment, eligibility rating, and years in service. While some studies have suggested that demographic characteristics may influence psychological attributes in certain contexts (Gayathri & Aithal, 2023), the present findings do not support this relationship among Administrative Officers II. This implies that self-efficacy levels in this population may be influenced more by individual experiences and organizational context than by demographic characteristics. Interpretations beyond the observed statistical outcomes are therefore avoided.

Table 7. Relationship between the level of Self-Esteem to IPCRF Rating of Administrative Officers II in the Division of Aklan

Variables	r value	p value	Interpretation
Self-Esteem* IPCRF Rating	-0.022	0.877	Not Significant

Table 7 shows that there is no significant relationship between the level of self-esteem and the IPCRF performance rating of Administrative Officers II. Although prior research has reported positive associations between



self-esteem and employee performance in various organizational settings (Sharma et al., 2017), the findings of the present study do not support this relationship. This divergence suggests that self-esteem may not translate into measurable performance differences within standardized and compliance-based evaluation systems such as the IPCRF. Consequently, self-esteem is viewed as a personal psychological attribute rather than a determinant of formal performance ratings in the present context.

*Table 8. Relationship between the level of Self-Efficacy and to IPCRF Rating of Administrative Officers II in the Division of Aklan*

Variables	r value	p value	Interpretation
Self-Efficacy* IPCRF Rating	0.08	0.579	Not Significant

Table 8 indicates that self-efficacy is not significantly related to the IPCRF performance rating of Administrative Officers II. While existing literature often links higher self-efficacy with improved employee performance (Cherian & Jacob, 2013), the present study does not replicate this association. This finding suggests that self-efficacy alone may be insufficient to explain performance outcomes in highly structured public-sector administrative roles where performance is assessed through standardized criteria. Thus, the cited literature serves as contextual reference rather than empirical confirmation of the present results.

The non-significant relationships between self-efficacy/self-esteem and IPCRF ratings align with evidence that perceived workplace bureaucracies diminish self-efficacy's positive effects on motivation and performance in structured settings (Kang et al., 2024). Thus, AO II performance appears driven more by procedural compliance and institutional mechanisms than individual psychological variations.

## Conclusions

The study concludes that Administrative Officers II in the Division of Aklan possess moderate self-esteem, high self-efficacy, and outstanding performance ratings based on their IPCRF results. However, statistical analyses revealed that self-esteem and self-efficacy do not have a significant relationship with their demographic characteristics such as age, sex, bachelor's degree, eligibility rating, and years in service nor with their job performance. This means that although the respondents demonstrate generally positive psychological attributes and consistently high performance, these psychological factors do not directly influence how they are rated in their roles. The findings suggest that the performance of Administrative Officers II is shaped more by the nature of their administrative functions and compliance-based responsibilities rather than by variations in their self-esteem or self-efficacy levels.

## Recommendations

Based on the findings of the study, several recommendations are offered to improve administrative practice and inform future research. Although self-esteem and self-efficacy did not show a significant relationship with IPCRF-rated performance, the generally moderate level of self-esteem and high level of self-efficacy among Administrative Officers II suggest opportunities for targeted professional support.

The Schools Division Office may consider implementing structured capacity-building initiatives that focus on strengthening technical and procedural competencies relevant to Administrative Officer II functions, such as records management, procurement processes, financial documentation, and performance reporting. These initiatives may be conducted through periodic skills-based workshops or in-service training programs facilitated by division-level supervisors or experienced administrative personnel.

School administrators and supervisors may also consider providing regular performance feedback and mentoring support to reinforce clarity in role expectations and institutional standards, particularly within the standardized IPCRF evaluation system. Such support may help ensure that psychological resources, such as confidence and task persistence, are effectively aligned with organizational requirements.

These findings underscore the context-specific nature of psychological influences on performance, highlighting that in highly procedural and standardized public-sector roles such as those of Administrative Officers II in the Philippine Department of Education compliance with institutional evaluation systems and role-defined responsibilities exert a stronger influence on rated performance than variations in self-esteem or self-efficacy.

Future researchers may consider exploring additional factors that could influence job performance among Administrative Officers II, including organizational climate, leadership support, workload distribution, and institutional



policies. Employing mixed-method or qualitative approaches, such as interviews or focus group discussions, may provide deeper insights into how administrative roles and evaluation systems shape performance outcomes beyond what is captured through quantitative measures alone.

## REFERENCES

- Ampo, W. M. G. (2025). Quest of a dreamer: A youth-centric analysis of Paulo Coelho's novel *The Alchemist*. *World Journal of English Language*, 15(7), 332-332. <https://doi.org/10.5430/wjel.v15n7p332>
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2), 191-215. <https://doi.org/10.1037/0033-295X.84.2.191>
- Cabrera, W., & Estacio, D. (2022). Job attitude as a factor on employees' performance. *International Journal of Economics Development Research*, 3(1), 13-35. <https://doi.org/10.37385/ijedr.v3i1.254>
- Cherian, J., & Jacob, J. (2013). Impact of self-efficacy on motivation and performance of employees. *International Journal of Business and Management*, 8(14), 80-88. <https://doi.org/10.5539/ijbm.v8n14p80>
- Department of Education. (2020). *Approval and deployment of the administrative officer II items for elementary schools* (Memorandum No. DM-PHROD-2020-00235).
- Dzwonkowska, I., Lachowicz-Tabaczek, K., & Łaguna, M. (2008). *The Rosenberg Self-Esteem Scale (SES): Polish adaptation of the method* [In Polish]. <https://cejsh.icm.edu.pl/cejsh/element/bwmeta1.element.desklight-2e39f4a6-212e-4f76-8ae8-ea6d59d47f86>
- Feltz, D. L., Short, S. E., & Sullivan, P. J. (2008). *Self-efficacy in sport: Research and strategies for working with athletes, teams, and coaches*. Human Kinetics. <https://doi.org/10.5040/9781718206625>
- Gayathri, S., & Aithal, P. S. (2023). Career competency, self-efficacy, and organizational commitment at work. *International Journal of Research and Analytical Reviews*, 10(1), 152-167. <https://doi.org/10.2139/ssrn.4400268>
- Gómez, F., & Díaz, E. (2024). Managing employee self-esteem in higher education: Impact on individuals, organizations, and society. *Management Decision*, 62(10), 3063-3084. <https://doi.org/10.1108/MD-07-2023-1183>
- Kang, J. K., Jiao, P.-D., Tay, J.-H., & Gan, S. K.-E. (2024). The relationship between perceived workplace bureaucracies, self-efficacy and job motivation over the COVID-19 pandemic. *SAGE Open*, 14(4). <https://doi.org/10.1177/21582440241293505>
- Khalique, S., & Singh, M. K. (2019). Role of self-efficacy in improving employees' performance. *International Journal of Engineering Research & Technology*, 7, Article IJERTCONV7IS12014. <https://doi.org/10.17577/IJERTCONV7IS12014>
- Lechler, R. C., & Huemann, M. (2024). Motivation of young project professionals: Their needs for autonomy, competence, relatedness, and purpose. *Project Management Journal*. Advance online publication. <https://doi.org/10.1177/87569728231195587>
- Luszczynska, A., Scholz, U., & Schwarzer, R. (2005). The general self-efficacy scale: Multicultural validation studies. *The Journal of Psychology*, 139(5), 439-457. <https://doi.org/10.3200/JRLP.139.5.439-457>



- Maddux, J. E., & Kleiman, E. M. (2016). Self-efficacy: A foundational concept for positive clinical psychology. In *Positive clinical psychology* (pp. 89–105). Wiley. <https://doi.org/10.1002/9781118468197.ch7>
- Ng, E. S., Gossett, C. W., & Winter, R. P. (2016). Millennials and public service renewal: Introduction on millennials and public service motivation. *Public Administration Quarterly*, 40(3), 412–428. <https://doi.org/10.1177/073491491604000301>
- Nwabuko, O. C. (2024). An overview of research study designs in quantitative research methodology. *American Journal of Medical and Clinical Research & Reviews*. <https://doi.org/10.58372/2835-6276.1169>
- Owens, T. J., & McElroy, G. K. (2019). Theories of self-esteem. In *The Blackwell encyclopedia of sociology*. Wiley. <https://doi.org/10.1002/9781405165518.wbeoss072.pub2>
- Parcon, J. R. D., & Nabe, N. C. (2025). Occupational stress and organizational climate as determinants of quality of work life among correction officers in Davao Penal Farm. *International Journal of Finance, Management, and Research*, 7(1). <https://doi.org/10.36948/ijfmr.2025.v07i01.37290>
- Putri, L., Rezani, M. R., & Hermina, D. (2025). Correlational research design. *Jurnal Riset Multidisiplin Edukasi*, 2(6). <https://doi.org/10.71282/jurmie.v2i6.456>
- Resurrecion, M. (2025). Organizational empowerment of government employees and its relation to their work performance. *International Journal of Research in Advanced Studies and Graduate Education*, 1(1), 83–88. <https://www.ejournals.ph/article.php?id=30566>
- Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton University Press.
- Sanchez, R. D. (2026). Preserving the honor of the Honoris Causa: Revisiting the guidelines on the conferment of honorary degrees. *International Journal of Open-access, Interdisciplinary and New Educational Discoveries of ETCOR Educational Research Center (iJOINED ETCOR)*, 5(1), 57-65. <https://doi.org/10.63498/etcor531>
- Sharma, V., Bhati, H., & Kumar, N. (2017). Self-esteem and its impact on performance. *International Journal of Psychology and Psychiatry*, 8(2), 157–167. <https://doi.org/10.15614/IJPP/2017/V8I2/157107>
- Yunus, N. M., Charlie, A. D. A., Ali, S. A. M., & Jailani, S. F. A. K. (2023). The relationship between demographic characteristics, job stress, work culture, and work-life balance with job satisfaction. *Advances in Social Sciences Research Journal*, 10(6.2), 204–214. <https://doi.org/10.14738/assrj.106.2.15012>



## Mapping the deterrence affordance of the plea-bargaining culture among selected drug cases in Biñan and Calamba

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### Abstract

**Aim:** This study aimed to assess the level of awareness of plea bargaining and the perception of its deterrent effects among Persons Deprived of Liberty (PDL) charged with drug-related offenses in Biñan and Calamba City, Philippines. It examined how awareness of plea bargaining influences perceptions of fairness, voluntariness, judicial oversight, and punishment within the criminal justice system.

**Methodology:** A quantitative, descriptive-comparative research design was employed using a structured questionnaire administered to a purposive sample of 106 PDL respondents from Biñan and Calamba City jails. Guided by Deterrence Theory, Rational Choice Theory, and Social Learning Theory, the study analyzed respondents' awareness of plea bargaining and their perceptions of the certainty, severity, and swiftness of punishment. Data were analyzed using descriptive statistics, Mann-Whitney U tests, and Spearman's rank-order correlation.

**Results:** Findings revealed a high level of awareness of plea bargaining among respondents, particularly in terms of fairness, voluntariness, judicial approval, rights protection, and enforcement. Respondents strongly agreed that plea bargaining facilitates timely, certain, and proportionate punishment. Significant differences in awareness were observed between Biñan and Calamba respondents, indicating the influence of institutional and geographic factors. A strong and statistically significant positive correlation was found between awareness of plea bargaining and perceived deterrent effects.

**Conclusion:** The study concludes that greater awareness of plea bargaining enhances PDL perceptions of its fairness, legitimacy, and deterrent function in drug-related cases. The findings underscore the importance of strengthening legal literacy and ensuring consistent implementation of plea bargaining practices across detention facilities to promote equity and informed decision-making within the criminal justice system.

**Keywords:** *plea bargaining, deterrence, legal awareness, Persons Deprived of Liberty, BJMP policy*

### INTRODUCTION

Plea bargaining has emerged as a global criminal justice mechanism aimed at addressing persistent challenges such as court congestion, prolonged pretrial detention, and limited judicial resources. Across various jurisdictions, negotiated pleas have increasingly replaced full adversarial trials, reshaping how criminal responsibility, punishment, and efficiency are balanced within justice systems. While widely adopted for pragmatic reasons, plea bargaining has also generated debate regarding its implications for deterrence, fairness, voluntariness, and the protection of accused persons' rights.

In the Philippine criminal justice system, plea bargaining has become particularly significant in drug-related cases, where delays in adjudication and jail congestion remain longstanding concerns. The Supreme Court's issuance of guidelines allowing negotiated pleas for selected offenses under Republic Act No. 9165 marked a policy shift intended to expedite case resolution and reduce overcrowding in detention facilities. However, this development has raised critical questions about whether negotiated penalties may alter offenders' perceptions of the certainty, severity, and swiftness of punishment the key elements of deterrence (Ciocchini & Lamchek, 2023). While law



enforcement and judicial institutions acknowledge the administrative benefits of plea bargaining, concerns persist that its perceived leniency may weaken the deterrent objectives of drug laws.

These issues are particularly evident at the local level in Laguna, where the cities of Biñan and Calamba continue to experience drug-related offenses alongside heavy court dockets. Local trial courts frequently utilize plea bargaining to manage case volume and promote jail decongestion. However, emerging observations suggest that some offenders may come to view plea bargaining as an expected relief mechanism rather than an exceptional legal remedy, potentially reshaping how risks and consequences associated with drug offenses are interpreted.

Despite the expanding use of plea bargaining, empirical research remains limited on how Persons Deprived of Liberty (PDL) themselves understand and perceive this legal mechanism, particularly at the detention-facility level. Existing studies have largely focused on legal doctrine, judicial discretion, prosecutorial practices, and policy outcomes, with minimal attention to the awareness, perceptions, and decision-making frameworks of accused persons. More specifically, there is a lack of localized, comparative studies examining how PDL awareness of plea bargaining relates to perceptions of fairness, voluntariness, judicial oversight, rights protection, and deterrence.

Addressing this gap, the present study examined the level of awareness of plea bargaining and perceptions of its deterrent dimension among PDL charged with drug-related offenses in Biñan and Calamba City. Awareness was assessed in terms of agreement, voluntariness, judicial approval, rights involved, and enforcement, while deterrence was examined through perceptions of certainty, severity, and swiftness of punishment. By linking legal awareness to perceived deterrent effects within jail-based contexts, this study contributes empirical evidence to deterrence scholarship and offers localized insights relevant to policy implementation, legal education, and the administration of justice within Bureau of Jail Management and Penology (BJMP) facilities.

### **Review of Related Literature and Studies**

Global scholarship shows that plea bargaining has reshaped criminal justice systems worldwide, replacing traditional trials with negotiated resolutions (Langer, 2021). Its application across jurisdictions varies, reflecting institutional, cultural, and procedural differences. In Singapore, plea negotiations occur through structured mechanisms such as the Criminal Case Management Scheme and Criminal Case Resolution program, where judicial involvement is intentionally facilitative to avoid coercion (The Law Library of Congress, 2020). Similar reforms are observed in other Asian jurisdictions: Indonesia has explored abbreviated proceedings for defendants who admit guilt to reduce case backlogs and costs (Husin & Husin, 2024; Hakim & Zulhuda, 2020), while Japan introduced a cooperation-based plea bargaining system in 2019 that grants prosecutorial benefits in exchange for aiding investigations (Kawatsu, 2021). These reforms highlight how legal cultures shape the internalization of justice mechanisms, consistent with emerging perspectives on how law and culture influence one another (Stępień & Klakla, 2022). Ghaleb's (2024) concept of "legaculturation" further explains this interplay, illustrating how legal norms become embedded in social practices and public behavior.

Deterrence literature underscores the role of certainty, celerity, and severity in shaping compliance with law; however, scholars argue that punishment severity alone does not consistently deter crime, as social, institutional, and behavioral factors also intervene (Nagin, 2013; Hydén, 2023; Hellgren & Kassin, 2022). Optimal deterrence theory reframes offending as rational behavior influenced by perceived costs and benefits, suggesting that responses to law violations depend on individual decision-making vis-à-vis state sanctions (Raskolnikov, 2021; Paternoster, 2010). At the global level, jurisdictions differ significantly in how they formalize and utilize plea bargaining, with economic, cultural, and procedural factors influencing adoption and negotiation outcomes (Paolini et al., 2023). Studies in India similarly highlight that plea bargaining addresses excessive trial delays and incarceration but remains uneven in practice due to structural and procedural limitations (Jeevalaya, 2018). Research on criminal deterrence further reveals that while police presence and socioeconomic conditions influence crime reduction, punishment severity shows inconsistent effects across contexts (Chalfin & McCrary, 2017). Complementary analyses emphasize that plea negotiation systems require strong safeguards to preserve accused persons' rights, ensuring voluntariness, informed consent, and fairness (Kisekka, 2020).

In the Philippines, plea bargaining under Republic Act 9165 continues to evolve, particularly after the 2018 Supreme Court guidelines that restricted negotiations to less severe drug offenses. While designed to expedite resolution and reduce congestion in detention facilities (Chi, 2023), the policy intersects with broader political and punitive contexts. The Duterte administration's "War on Drugs" significantly shaped how plea bargaining was used, especially as the campaign disproportionately targeted the poor and generated widespread concerns over extrajudicial killings and systemic bias (Johnson & Fernquest, 2018). Empirical studies show that legal professionals' moral judgments and class-based assumptions heavily influenced plea outcomes, often reinforcing inequalities within



the justice process (Ciocchini & Lamchek, 2023; Thompson, 2020). Further, punitive paternalism emerged as a framework that rationalized state violence while channeling defendants toward plea agreements without fully addressing structural injustices (Ciocchini, 2024). Despite these challenges, local scholarship identifies the potential of plea bargaining to facilitate rehabilitation, particularly through alternatives such as drug treatment and community-based reintegration programs (Balana & De Leon, 2024; Canoy & Villasanta, 2022). Broader policy discussions on drug enforcement in the Philippines similarly highlight the limitations of punitive approaches and call for rights-centered, evidence-based reforms (Estacio et al., 2022; Lasco & Yarcia, 2022).

**Theoretical Framework**

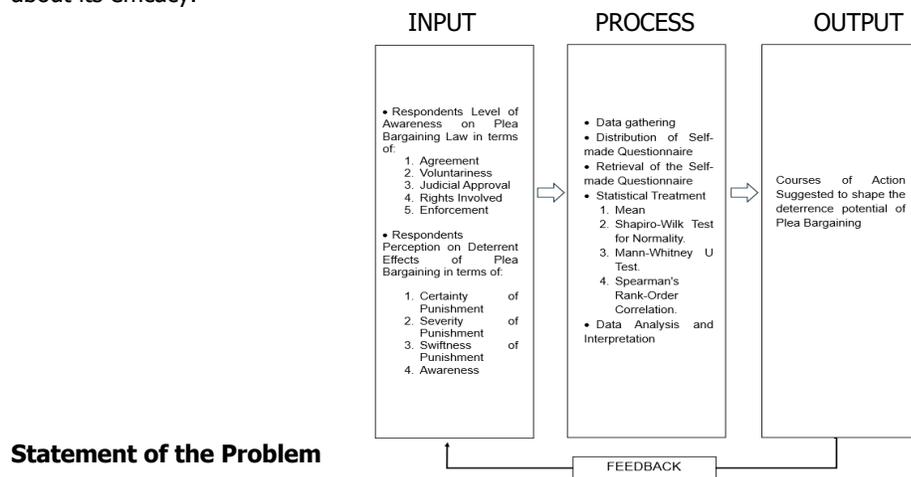
This research was grounded in Deterrence Theory, Rational Choice Theory, and Social Learning Theory, which together provided a framework for understanding both individual decision-making and social influences on persons involved in drug-related cases subject to plea bargaining. Deterrence Theory asserts that the likelihood of punishment deters criminal behavior when sanctions are perceived as certain, swift, and proportionate (Beccaria, 1764/1995; Paternoster, 2010), it guided the examination of respondents’ perceptions of the certainty, severity, and swiftness of sanctions under plea bargaining. Rational Choice Theory posits that individuals make decisions through a cost-benefit analysis (Cornish & Clarke, 1986), informing the assessment of how PDL weighed risks and benefits of entering plea agreements, particularly regarding reduced penalties and expedited case resolution. Social Learning Theory emphasizes that behaviors and attitudes are shaped through observation and social interaction (Bandura, 1977; Akers, 2009); in this study, it explained how respondents’ perceptions were influenced by observing the experiences of fellow detainees and courtroom outcomes. Collectively, these frameworks guided the selection of study variables and informed the analysis of how awareness, rational evaluation, and social learning interact to shape perceptions of plea bargaining’s deterrent effects.

**Conceptual Framework**

This research utilized the Input-Process-Output (IPO) model which was inspired by the three key theories. The input phase of the study could be identified as the respondents’ knowledge of the plea bargaining law that included six areas: agreement, voluntariness, judicial approval, rights, and enforcement, and their perceptions of the law’s deterrence in terms of certainty, severity, swiftness, and awareness. The main method of data collection was survey questionnaires.

Administering the survey, counting the responses, and performing statistical analysis to find out if there were significant differences in the awareness and perceptions of the groups were the main steps of the process. Firstly, data normality was checked using the Shapiro-Wilk test; if the normality assumption was not satisfied, non-parametric tests such as Mann-Whitney U Test and Spearman’s Rank-Order Correlation were used for comparing and relating deterrent perceptions and awareness.

The analysis of findings was part of the last phase of the research, and recommendations regarding plea bargaining were given to the authorities to boost its deterrent effect based on the knowledge of and the perception about its efficacy.



**Statement of the Problem**



Plea bargaining has become a central mechanism in resolving drug-related cases in the Philippines, particularly under A.M. No. 18-03-16-SC. Despite its increasing use, uncertainties remain regarding the extent to which Persons Deprived of Liberty (PDL) understand the plea-bargaining process and whether such awareness influences their perceptions of its deterrent value. Variations in institutional practices and access to legal information across detention facilities may further shape how PDL perceive fairness, voluntariness, judicial oversight, and the protection of rights. Moreover, perceptions regarding the certainty, severity, and swiftness of punishment associated with plea bargaining remain insufficiently documented. Limited empirical evidence comparing these factors across local contexts underscores a gap in understanding how awareness interacts with deterrence perceptions. Addressing this gap is necessary to inform policy development, strengthen legal education programs, and enhance the legitimacy and deterrent function of plea bargaining in drug-related cases.

## Research Objectives

### General Objective:

This study aims to assess the level of awareness of plea bargaining and the perception of its deterrent effects among selected drug cases in Biñan and Calamba.

### Specific Objectives:

1. To determine the level of awareness of respondents regarding the plea-bargaining law in terms of:
  - 1.1. agreement;
  - 1.2. voluntariness;
  - 1.3. judicial approval;
  - 1.4. rights involved; and
  - 1.5. enforcement.
2. To determine whether there is a significant difference in respondents' awareness of the plea-bargaining law between the two groups.
3. To assess respondents' perceptions of the deterrent effects of the plea-bargaining law in terms of:
  - 3.1. certainty of punishment;
  - 3.2. severity of punishment;
  - 3.3. swiftness of punishment; and
  - 3.4. awareness.
4. To determine whether there is a significant difference in respondents' perceptions of the deterrent effects of the plea-bargaining law between the two groups.
5. To examine the relationship between respondents' level of awareness of the plea-bargaining law and their perceived deterrent effects.
6. To propose recommendations to enhance the deterrent potential of the plea-bargaining law based on the study's findings.

## Research Questions

1. What is the level of awareness of respondents regarding the plea-bargaining law in terms of:
  - 1.1. agreement;
  - 1.2. voluntariness;
  - 1.3. judicial approval;
  - 1.4. rights involved; and
  - 1.5. enforcement?
2. Is there a significant difference in respondents' awareness of the plea-bargaining law between the two groups?
3. What are the respondents' perceptions of the deterrent effects of the plea-bargaining law in terms of:
  - 3.1. certainty of punishment;
  - 3.2. severity of punishment;
  - 3.3. swiftness of punishment; and
  - 3.4. awareness?



4. Is there a significant difference in respondents' perceptions of the deterrent effects of the plea-bargaining law between the two groups?
5. Is there a significant relationship between respondents' level of awareness of the plea-bargaining law and their perceived deterrent effects?
6. Based on the results, what recommendations may be proposed to enhance the deterrent potential of plea bargaining?

### Hypotheses

The following hypotheses were tested at the 0.05 level of significance:

- $H_0$  (Null Hypothesis):

There is no significant relationship between the respondents' level of awareness of the plea bargaining law and their perceived deterrent effects of plea bargaining in selected drug cases.

- $H_a$  (Alternative Hypothesis):

There is a significant relationship between the respondents' level of awareness of the plea bargaining law and their perceived deterrent effects of plea bargaining in selected drug cases.

### METHODS

#### Research Design

This study employed a quantitative, descriptive-comparative design. It compared the levels of awareness of plea bargaining and perceptions of its deterrent effects among two groups of Persons Deprived of Liberty (PDL): those who accepted plea bargaining and those who merely applied for it. The study was cross-sectional in nature and was conducted in May 2025, capturing respondents' knowledge and perceptions at a single point in time. This design was appropriate as it enabled the assessment of group differences without manipulating variables, thereby providing a clear depiction of respondents' knowledge and perceptions in a natural setting.

#### Population and Sampling

The study population consisted of 106 PDL charged with drug-related offenses and confined in the Biñan City Jail ( $n = 59$ ) and Calamba City Jail ( $n = 47$ ). Participants were either beneficiaries or applicants of plea bargaining under A.M. No. 18-03-16-SC (Plea Bargaining Framework for Drug Cases). Purposive sampling was employed, selecting respondents who (1) were charged with drug-related offenses and (2) had participated in plea bargaining proceedings. PDL who did not meet these criteria were excluded. A minimum sample size of 85 was determined through statistical power analysis (medium effect size  $r = 0.30$ ,  $\alpha = 0.05$ , power = 0.80). The final sample exceeded this requirement, ensuring sufficient statistical power for correlation and Mann-Whitney U tests.

#### Instruments

The study utilized a researcher-made questionnaire designed to measure the level of awareness of plea bargaining and perceptions of its deterrent effects among PDL. The instrument underwent a content validation process conducted by a subject-matter expert knowledgeable in plea bargaining and a research methodology expert. Their feedback focused on item relevance, clarity, and proper classification of constructs. All recommended revisions were incorporated, and the revised version was subsequently reviewed by the research adviser for grammatical accuracy and content appropriateness.

A pilot test was conducted to evaluate the instrument's reliability. Internal consistency was assessed using Cronbach's alpha, which yielded a coefficient of  $\alpha = 0.973$ , indicating excellent reliability. The instrument development, validation, and reliability testing were completed prior to actual data collection.

The questionnaire consisted of three sections. The first section gathered demographic and background information of the respondents. The second section assessed respondents' level of awareness of plea bargaining in terms of agreement, voluntariness, judicial approval, rights involved, and enforcement, using a four-point scale (4 – Very Aware, 3 – Aware, 2 – Less Aware, 1 – Least Aware). The third section measured respondents' perceptions of the deterrent effects of plea bargaining in terms of certainty, severity, and swiftness of punishment using a four-point Likert scale (4 – Strongly Agree, 3 – Agree, 2 – Disagree, 1 – Strongly Disagree). Weighted means were interpreted using established verbal interpretation ranges.



To ensure comprehension, the questionnaire was translated for clarity using language-assistance tools, and the final translated version was manually reviewed by the researcher to ensure semantic and contextual accuracy. No automated responses or analyses were generated through these tools.

### Data Collection

Data collection was conducted within the month of May 2025 at the Calamba City Jail and Biñan City Jail. Prior to data gathering, permission to conduct the study was secured from the BJMP Regional Office CALABARZON, followed by clearance from the respective City Jail Wardens.

Upon approval, the researcher personally administered the questionnaires to the qualified respondents. Clear instructions were provided, and the purpose of the study was explained to ensure respondent understanding and cooperation. Participants were given sufficient time to complete the questionnaire to allow accurate and thoughtful responses.

After completion, all accomplished questionnaires were collected, checked for completeness, and compiled for analysis. The gathered data were prepared for statistical processing and interpretation. Respondent confidentiality was strictly observed, and all information collected was used solely for research purposes.

### Treatment of Data

Descriptive statistics (mean scores and rankings) summarized awareness levels and perceptions. Normality was tested using the Shapiro-Wilk test. Non-parametric methods were applied when data violated normality ( $p \leq 0.05$ ). Differences between groups were assessed using the Mann-Whitney U test, and Spearman's Rank-Order Correlation examined the relationship between awareness and perceived deterrent effects. All analyses were conducted using SPSS to ensure accurate interpretation.

### Ethical Considerations

Ethical clearance was obtained from the BJMP Regional Office-CALABARZON, which facilitated coordination with the Calamba and Biñan City Jails. Participants were informed of the study's purpose, benefits, and risks, and provided written consent. Privacy and confidentiality were guaranteed, and participation was voluntary. The selection of respondents was conducted equitably, and safety measures were observed for both participants and the researcher. Study findings will be shared with relevant stakeholders to inform policy and practice improvements.

## RESULTS and DISCUSSION

**Table 1**

*Summary of Respondents' Level of Awareness on Plea Bargaining Law and Its Related Indicators*

Indicators	Overall Mean	Std. Deviation	Verbal Interpretation
Awareness on Plea Bargaining Law	3.69	0.38	Very Aware
Awareness on Voluntariness	3.60	0.41	Very Aware
Awareness on Judicial Approval	3.63	0.40	Very Aware
Awareness on Rights Involved	3.60	0.41	Very Aware
Awareness on Enforcement	3.62	0.45	Very Aware

*Legend:*

*Very aware: 3.26 – 4.00; Aware 2.51 – 3.25;*

*Less Aware: 1.76 – 2.50; Least Aware: 1.00 – 1.75*

Table 1 shows respondents' awareness of plea-bargaining law. The overall mean was 3.69 (SD = 0.38), indicating a very high level of awareness. Scores across dimensions were also high: voluntariness (M = 3.60, SD = 0.41), judicial approval (M = 3.63, SD = 0.40), rights involved (M = 3.60, SD = 0.41), and enforcement (M = 3.62, SD = 0.45).

These results indicate that respondents generally understand the plea-bargaining process, recognize their rights, and perceive judicial oversight as fair. Awareness of voluntariness suggests informed decision-making, while judicial approval scores reflect trust in court safeguards. Recognition of rights involved indicates understanding of due process and procedural protections. Minor variations highlight areas where clear communication and legal



education may enhance uniform comprehension. These findings align with Respicio (2025) and Canoy and Villasanta (2022), who emphasize the importance of consistent explanation and education to support procedural fairness.

**Table 2**

*Mann-Whitney U Test Comparing Respondents' Awareness of Plea-Bargaining Law between Calamba and Biñan*

Component	Mann-Whitney U	Z	p-value	Interpretation
Agreement	1278	-0.738	0.461	NS
Voluntariness	1139.5	-1.626	0.104	NS
Judicial Approval	1087	-1.987	0.047	S
Rights Involved	944.5	-2.922	0.003	S
Enforcement	1129.5	-1.702	0.089	NS

The Mann-Whitney U test (Table 2) compared awareness between PDL in Calamba and Biñan. Significant differences were observed for judicial approval (U = 1087, p = 0.047) and rights involved (U = 944.5, p = 0.003), while agreement, voluntariness, and enforcement showed no significant differences. Mean ranks were higher in Biñan (94.07) than Calamba (69.69).

This indicates that institutional and geographic factors may influence awareness. Higher scores in Biñan may reflect greater exposure to court processes and access to educational programs, consistent with Dawal et al. (2020) and Ciocchini and Lamchek (2023), who note that well-resourced facilities provide more consistent legal and educational programming. Despite differences, both groups displayed comparable understanding of fairness and voluntariness, suggesting core comprehension is maintained across locations.

**Table 3**

*Summary of Findings on Respondents' Perceptions of Plea-Bargaining Law*

Deterrent Effect / Awareness	Mean	Std. Deviation	Verbal Interpretation	Key Insights
Certainty of Punishment	3.63	0.47	Strongly Agree	Promotes fairness and proportionality; some regional disparities exist
Severity of Punishment	3.55	0.58	Strongly Agree	Ensures just yet lighter penalties; judicial oversight prevents leniency
Swiftness of Punishment	3.57	0.57	Strongly Agree	Process perceived as efficient process; expedites the administration of justice
Awareness	3.65	0.50	Strongly Agree	Greater awareness strengthens deterrence and trust in justice system

*Legend:*

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

Respondents' perceptions of plea-bargaining law were generally positive across all constructs. Means were: certainty of punishment (M = 3.63, SD = 0.47), severity of punishment (M = 3.55, SD = 0.58), swiftness of punishment (M = 3.57, SD = 0.57), and awareness (M = 3.65, SD = 0.50).

These results indicate that respondents perceive plea-bargaining as fair, timely, and transparent. Certainty of punishment suggests trust in proportional consequences, while severity scores reflect acceptance of judicially reviewed, potentially lighter penalties. Swiftness scores indicate that respondents perceive the process as expediting case resolution. Awareness scores suggest that greater knowledge of the law is associated with higher confidence in its fairness and application. Minor variations point to the potential benefit of consistent legal education across facilities.

**Table 4**

*Mann-Whitney U Test Comparing Respondents' Perception of Plea-Bargaining Law between Calamba and Biñan*

Component	Mann-Whitney	Z	p-value	Interpretation
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**U**

Certainty of Punishment	1374	-0.086	0.932	NS
Severity of Punishment	1383	-0.023	0.981	NS
Swiftness of Punishment	1190	-1.387	0.165	NS
Awareness	1081	-2.003	0.045	S

The Mann-Whitney U test compared perceptions between PDL in Calamba and Biñan. Only awareness differed significantly (U = 1081, z = -2.003, p = 0.045); certainty, severity, and swiftness of punishment did not differ.

This suggests that overall perceptions are similar across locations, but awareness may be influenced by geographic and institutional contexts, consistent with Zariski (2014). Access to legal information and educational programs may contribute to this difference, highlighting the need for equitable dissemination of procedural knowledge across detention facilities.

**Table 5**  
*Spearman's Rank-Order Correlation between Respondents' Awareness of Plea-Bargaining Law and Their Perceived Deterrent Effects of Plea-Bargaining Law*

**Correlations**

		<b>AWARENESS</b>		<b>PERCEPTION</b>
Spearman's rho	AWARENESS	Correlation Coefficient	1.000	.814**
		Sig. (2-tailed)	.	.000
		N	106	106
	PERCEPTION	Correlation Coefficient	.776**	1.000
		Sig. (2-tailed)	.000	.
		N	106	106

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

Spearman's rank-order correlation showed a very strong positive relationship between awareness and perceived deterrent effects (rs = 0.776, p < 0.01).

This indicates that respondents with higher knowledge of plea-bargaining tend to view it as a more effective deterrent. These findings imply that enhancing legal literacy may strengthen confidence in plea-bargaining as a fair and accountable mechanism, consistent with Edelen (2025). Transparent and accessible legal information may foster more informed perceptions of justice processes.

**Conclusions**

The study indicates that respondents generally perceive plea bargaining as a fair, voluntary, and protective legal mechanism aligned with due process. It is regarded as promoting accountability through certain, proportional, and timely sanctions, reinforcing its deterrent function in the criminal justice system. Observed differences in awareness across facilities suggest the influence of institutional resources and legal culture, while the strong positive correlation between awareness and perception underscores the role of legal literacy in promoting trust and acceptance of plea bargaining.

**Recommendations**

To enhance the perceived fairness and effectiveness of plea bargaining, detention facilities may consider implementing standardized legal and procedural literacy programs, including routine orientations, access to counsel, and paralegal support. Plea bargaining education may also be integrated into existing rehabilitation programs to promote consistent understanding among PDL. The judiciary and prosecution may enhance transparency and proportionality in plea negotiations through regular monitoring and communication. Future research may examine how legal education shapes perceptions and attitudes toward plea bargaining, providing evidence to guide policy and best practices within the justice system.



## REFERENCES

- Akers, R. L. (2009). *Social learning and social structure: A general theory of crime and deviance* (1st ed.). Routledge. <https://doi.org/10.4324/9781315129587>
- Balana, L. D., & De Leon, C. V. (2024). The lived experiences of plea-bargaining agreement grantees among selected residents of a DOH treatment and rehabilitation center. *American Journal of Human Psychology*, 2(1), 175-181. <https://doi.org/10.54536/ajhp.v2i1.3246>
- Bandura, A. (1977). *Social learning theory*. Prentice Hall. [https://openlibrary.org/books/OL4899477M/Social\\_learning\\_theory](https://openlibrary.org/books/OL4899477M/Social_learning_theory)
- Beccaria, C. (1995). *On Crimes and Punishments* (D. Young, Trans.). Hackett Publishing Company. (Original work published 1764). [https://books.google.com.ph/books?id=HwbyF8ymZawC&pg=PP1&dq=Beccaria%2C%20C.%20\(1995\).%20On%20Crimes%20and%20Punishments%20\(D.%20Young%2C%20Trans.\).%20Hackett%20Publishing%20Company.%20\(Original%20work%20%09published%201764\)&pg=PP1#v=onepage&q&f=false](https://books.google.com.ph/books?id=HwbyF8ymZawC&pg=PP1&dq=Beccaria%2C%20C.%20(1995).%20On%20Crimes%20and%20Punishments%20(D.%20Young%2C%20Trans.).%20Hackett%20Publishing%20Company.%20(Original%20work%20%09published%201764)&pg=PP1#v=onepage&q&f=false)
- Canoy, N. A., & Villasanta, A. P. V. P. (2022). Marking a quiet community: Analyzing narratives of community reentry among Filipino plea bargainers. *Journal of Constructivist Psychology*, 35(2), 734-754. <https://doi.org/10.1080/10720537.2021.1878076>
- Chalfin, A., & McCrary, J. (2017). Criminal deterrence: A review of the literature. *Journal of Economic Literature*, 55(1), 5-48. <https://doi.org/10.1257/jel.20141147>
- Chi, C. (2023, June 22). Philippine jails overcrowded by 367% — COA. Philstar.com. <https://www.philstar.com/headlines/2023/06/22/2275793/philippine-jails-overcrowded-367-coa>
- Ciocchini, P. L. (2024). The neocolonial logics underpinning the “war on drugs” in the Philippines. *Oñati Socio-Legal Series*, 14(1), 1-32. <https://doi.org/10.35295/osls.iisl.1677>
- Ciocchini, P. L., & Lamchek, J. (2023). The “war on drugs” in Philippine criminal courts: Legal professionals’ moral discourse and plea bargaining in drug-related cases. In G. B. Radics & P. Ciocchini (Eds.), *Criminal legalities and minorities in the Global South*. 209–230. Palgrave Macmillan. [https://doi.org/10.1007/978-3-031-17918-1\\_11](https://doi.org/10.1007/978-3-031-17918-1_11)
- Cornish, D. B., & Clarke, R. V. (1986). *The reasoning criminal: Rational choice perspectives on offending*. Springer-Verlag. <https://www.routledge.com/The-Reasoning-Criminal-Rational-Choice-Perspectives-on-Offending/Clarke/p/book/9781412852753>
- Dawal, K., Delmar, A., Gallardo, S. K., Deliva, B. L., Inocencio, N., & Osorio, D. A. (2020). Basic literacy program in the reformation of persons deprived of liberty in Makati City Jail [Unpublished program report].
- Edelen, S. K. (2025). *Attorney perceptions of plea bargaining* (Undergraduate thesis, Bellarmine University). [https://scholarworks.bellarmino.edu/ugrad\\_theses/164](https://scholarworks.bellarmino.edu/ugrad_theses/164)
- Estacio, L. R., Jr., Lam, H. Y., Ramiro, L. S., Silva, M. E. C., & Padilla, C. D. (2022). A critique of the “war on drugs” policy in the Philippines. *SciEnggJ*, 15(Supplement), 1-8. <https://scienggj.org/2022/2022%20Special%20Issue/1/SciEnggJ%202022%20Special%20Issue%2001-08-Estacio%20et%20al.pdf>
- Ghaleb, B. (2024). Legaculturation: Turning laws into a culture. *Journal of Progressive Law and Legal Studies*, 2(3), 171-188. <https://doi.org/10.59653/jplls.v2i03.886>



- Hakim, L., & Zulhuda, S. (2020). Plea bargaining as a solution for criminal case backlog in Indonesia. *International Journal of Psychosocial Rehabilitation*, 24(5), 1475-1492. <https://doi.org/10.37200/IJPR/V24I5/PR201692>
- Hellgren, J., & Kassir, S. (2022). The defense lawyer's plea recommendation: Disentangling the influences of perceived guilt and probability of conviction. *Psychology, Public Policy, and Law*, 28(4), 546-559. <https://doi.org/10.1037/law0000365>
- Hydén, H. (2023). The sociology of law potential: Exploring its scientific landscape. *Frontiers in Sociology*, 8, 1203799. <https://doi.org/10.3389/fsoc.2023.1203799>
- Jeevalaya, D. (2018). An overview of plea bargaining in India. Paripex – *Indian Journal of Research*, 7(9), 1–4. [https://www.worldwidejournals.com/paripex/recent\\_issues\\_pdf/2018/September/September\\_2018\\_1536143012\\_\\_87.pdf](https://www.worldwidejournals.com/paripex/recent_issues_pdf/2018/September/September_2018_1536143012__87.pdf)
- Johnson, D. T., & Fernquest, J. (2018). Governing through killing: The war on drugs in the Philippines. *Asian Journal of Law and Society*, 5(2), 359-390. <https://doi.org/10.1017/als.2018.12>
- Kawatsu, H. (2021). Plea bargaining in Japan. *Boletim IBCCRIM*, 29(344), 10-11. [https://publicacoes.ibccrim.org.br/index.php/boletim\\_1993/article/view/726](https://publicacoes.ibccrim.org.br/index.php/boletim_1993/article/view/726)
- Kisekka, N. G. (2020). Plea bargaining as a human rights question. *Cogent Social Sciences*, 6(1), 1818935. <https://doi.org/10.1080/23311886.2020.1818935>
- Langer, M. (2021). Plea bargaining, conviction without trial, and the global administration of criminal convictions. *Annual Review of Criminology*, 4, 1-35. <https://doi.org/10.1146/annurev-criminol-032317-092255>
- Lasco, G., & Yarcia, L. E. (2022). The politics of drug rehabilitation in the Philippines. *Health and Human Rights*, 24(1), 147-158. <https://www.hhrjournal.org/2022/06/08/the-politics-of-drug-rehabilitation-in-the-philippines/>
- Library of Congress, Law Library. (2020). *Plea bargaining* (LL File No. 2020-017392). The Law Library of Congress. <https://tile.loc.gov/storage-services/service/lh/lglrd/2019713412/2019713412.pdf>
- Nagin, D. S. (2013). Deterrence in the twenty-first century. *Annual Review of Economics*, 5, 83-105. <https://doi.org/10.1146/annurev-economics-072412-131310>
- Paolini, G., Kantorowicz-Reznichenko, E., & Voigt, S. (2023). Plea bargaining procedures worldwide: Drivers of introduction and use (ILE Working Paper No. 75). University of Hamburg, Institute of Law and Economics. <https://hdl.handle.net/10419/279472>
- Paternoster, R. (2010). How much do we really know about criminal deterrence? *Journal of Criminal Law and Criminology*, 100(3), 765-824. <https://scholarlycommons.law.northwestern.edu/jclc/vol100/iss3/4>
- Respicio, J. M. (2025). Understanding plea bargaining in the Philippines: Process and legal implications [Online legal commentary]. <https://www.respicio.ph/commentaries/understanding-plea-bargaining-in-the-philippines-process-and-legal-implications>
- Raskolnikov, A. (2021). Deterrence theory: Key findings and challenges. In B. van Rooij & D. D. Sokol (Eds.), *The Cambridge handbook of compliance*. 45-63. Cambridge University Press. <https://doi.org/10.1017/9781108759458.014>
- Stępień, M., & Klakla, J. B. (Eds.). (2022). Law and culture: Law and visual jurisprudence, 5. Springer. [https://doi.org/10.1007/978-3-030-81193-8\\_1](https://doi.org/10.1007/978-3-030-81193-8_1)



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Zariski, A. (2014). *Legal literacy: An introduction to legal studies*. Athabasca University Press.  
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## Nicomachean Utilitarianism: A holistic ethical system integrating Aristotelian, Kantian, and 21<sup>st</sup> Century Utilitarianism

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### Abstract

**Aim:** This study aimed to examine the theoretical convergence of deontology, virtue ethics, and utilitarianism and to develop a unified ethical framework, termed Nicomachean Utilitarianism, that integrates these major normative ethical systems. The integrative model proposes a utilitarian approach to looking at virtue ethics while acknowledging deontological thought; it illustrates that virtue can be viewed in an interactive combination of character traits, intentionality, and dependable utilitarian outcome.

**Methodology:** The study employed a theoretical–analytical research design using post-positivist content analysis of classical and contemporary philosophical texts. Comparative and exegetical analysis was conducted to identify conceptual overlaps, limitations, and points of integration among the three ethical traditions.

**Results:** The findings demonstrated that the major normative ethical systems share overlapping moral constructs that allow for systematic integration. The study established an integrated ethical model supported by a graphical representation of eudaimonia and a logical–mathematical formalism incorporating intentionality, moral worth, proportionality of phronesis, and the conditional transition between rule, act, and preference utilitarianism within a virtue-ethical paradigm.

**Conclusion:** The study concluded that deontology, virtue ethics, and utilitarianism are not strictly compartmentalized ethical systems but can be coherently integrated into a mathematically and conceptually unified framework. The proposed model offers a pragmatic, intention-sensitive, and outcome-oriented ethical system that enhances consistency and applicability in moral evaluation. It provided an advanced mathematical formulation than the felicific calculus of Bentham (1789) and Resolved R. M. Hare (1981) utilitarian inclusions and provides a more quantifiable virtue ethics that does not solely rely on tacit knowledge and phronesis.

**Keywords:** *utilitarianism, virtue ethics, deontology, Nicomachean utilitarianism, moral philosophy*

### INTRODUCTION

Three normative ethical systems in philosophy have impacted how we view morality today. Philosophers like Parfit (2017), de Maagt (2018), and Nussbaum (1986) have tried to reconcile two or more of them namely Kantian, Aristotelian, and Utilitarianism. Hare (1981) was among the first to provide an avenue where deontological principles and consequentialism can be viewed together. Since then very few papers have been done to integrate Deontology, Aristotelian Virtue Ethics, and 21st Century Utilitarianism.

In the Philippines context, the cultural values of Filipinos are all interconnected within the three normative ethical framework. For instance, they value duty, obligation, and respect (pakikisama, bayanihan and utang na loob), according to Jose et al. (2024) which are deontologically inclined values. On the other hand, Filipinos also value character traits like kindness, hospitality, and respect, including the aforementioned bayanihan (generosity) which are virtue inclined ethics (Casiño et al., 2025). Additionally Filipinos often appeal to collectivist consequential values considering the greater happiness of its family and society which is a utilitarian oriented value (Bernardo et al. 2016). This overlap implicates the complexity of ethical values that some integrated models within deontology, virtue ethics,

129



and utilitarianism can comprehensively explain. International scale studies in cross-cultural research on moral values utilizing moral foundations theory (MFT) found overlapping moralities of the three normative ethical philosophies (Wang et al., 2022).

Limitations in the two-way utilitarianism and reconciliation of other consequential traditions such as considering both act utilitarianism founded by Bentham (1789), and Hare (1981) preference utilitarianism (Driver, 2012). Negative consequentialism is also neglected in the conversation as pointed out by Mulgan (2017). Integrative theoretical-analytical models for it should account for a cohesive synthesis of some major consequentialist school of thought. This research aims to consider a new ethical system paradigm where postpositivist notions of inclusion of qualitative aspects of a moral theory and mathematical models for sequential or mixed methodological academic research designation can account for the effectivity of an ethical model as well as modern philosophers to reevaluate ethical models and refined integrative normative philosophy.

### Review of Related Literature and Studies

This section explores philosophical works on normative ethics relating to virtue ethics, deontology, utilitarianism, consequentialism within an integrated framework and comparative analysis. It explores comprehensive critical evaluation of those theory's similarity and differences. Limitations and gaps are also examined to be explored and improved upon for the initial ethical system design of the merging between the three ethical system.

#### Virtue Ethics and Consequentialism

Virtue ethicists have long debated the interpretation of the golden mean and its limitations. How Aristotle (trans. 2009) explains it in the Nicomachean ethics, are in between vice and vice deficiency, however issues of its restrictive nature and the multiple virtues problem prompted other proponents of Aristotelian ethics to include consideration of adjusting to lower virtues to another to have an overall better categorical golden mean (Cordner, 1994; Halbig, 2020). Those modifications are very indicative not just in the practical realism of the emerging century, but also close to the consequentialist approach of a utilitarian (Driver, 2012; Hooker, 2000). For that reason, an examination of this plausible relationship becomes a necessary topic of investigation. Target-Centered Virtue ethics has then given emphasis beyond inclinations to the golden mean and eudaimonia and more inclined to flexibility of the virtues based on what is at those context be reasonably infer as a target virtue to practice (Swanton, 2021)

#### Deontology and Virtue Ethics

Kantian ethics (Kant, 1785/2012) being a primary basis while act or preference utilitarian being an advanced ethical position have been explored; however, inclusion of virtue ethics' golden mean, eudaimonia, is not extensively explored that often (Hursthouse & Pettigrove, 2018). In addition, while Kantian ethics is in disagreement with pleasure, happiness, or flourishing as an end goal, which aristotelian and utilitarianism is in relative agreement with, limitations of incorporating deontology must be considered. Issues also in virtue ethics on having multiple primary virtues has been criticized (MacIntyre, 2016; Stamatikos, 2025), possible merging of the utilitarian framework can potentially make it parsimonious and making those primary virtues malleable, and secondary when consequentialist thought may be a robust disposition.

#### Utilitarianism and Deontology

The Three Theory model of Parfit (2017) has been a long standing philosophical exploration spanning more than half a decade from 2011-2017. Its exploration of contractualism rationales and utilitarian, deontological resemblance become instrumental in recognizing deontological leanings with utilitarian principles as Wolfendale (2022) argued that reason-based morals justifiable maintained integration between utilitarianism, deontology and contractualism models. Current studies like Singer (2023) uses deontologically related concepts on his preference such as supererogation, showing contemporary affinities towards moral concepts that both can attempt to accommodate. A lot of virtues can also be justified in deontology such as truthfulness, honesty, fidelity, justice (Smith, 2017). Examination of those overlapping concepts through multicultural context from Smith (2017) implicate conceptual relations to character, virtue ethical leanings. Furthermore, integrated ethical understanding of both deontology and virtue ethics have been developed by Formosa (2017) accounting for the resemblance of the two theoretical models.

#### Current Gaps in Philosophical Literatures

Considerable gaps in philosophical research is made on normative ethics are as follows: Firstly, most integrative research are dual theoretic rather than tri-theoretical. Although contemporary normative ethics has long gave focal concerns with deontology, utilitarianism, and virtue ethics, much of the contemporary literature still treats



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these theories separately or in pairwise comparison rather than as fully integrated frameworks (von der Pfordten, 2012). Secondly, current convergence prioritize conceptual but not formal integrations, current AI ethics also highlights this problem in that the paradigm of AI ethics aggregate outputs instead of cohesively mapping philosophical models that considers duties, virtues and aggregated outcomes; recent AI approaches, instead of accounting for logical mathematical architectures for normative ethical theories, it only aggregates on a computational sense (Takeshita et al., 2023). Thirdly, Virtue ethics inclusion on integrated models that is reconciliatory is scarce, it is often viewed with limited value or importance rather than an equal partner (Taggart & Zenor, 2022). Fourthly, although certain facets of normative ethics can be interpreted as involving modelling, scholars note that explicit mathematical or logical modelling remains uncommon in mainstream philosophical ethics. Normative ethical methods in literature argues that ethical theorizing has historically focused on conceptual reasoning and interpretive frameworks, and that formal models as used in scientific or analytical contexts are not predominant (Roussos, 2022).

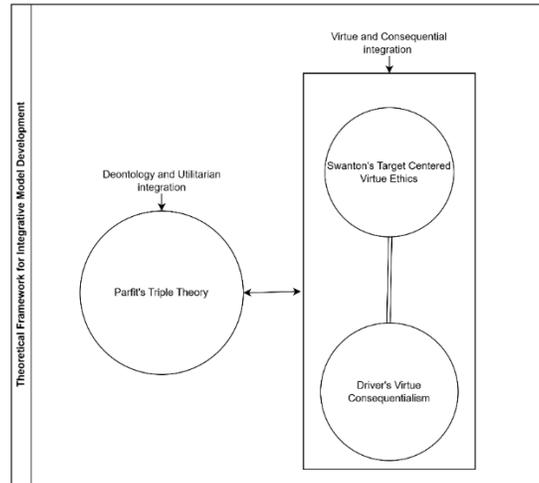
#### Synthesis and Justification for the Study

To synthesize, while research from multiple disciplines does show overlaps of those three normative ethics, they do not directly explore it and limited literature is made even in Filipino philosophical inclined studies, this study provided an in-depth analysis of it and contributed to novel ethical Filipino informed generated models for its conference. The literature explores integrated models on deontology and utilitarianism (Hursthouse & Pettigrove, 2018; Singer, 2023; Parfit, 2017; Wolfendale, 2022), relationship between virtue ethics and consequentialism (Driver, 2012, Swanton, 2021). That literature is instrumental for furthering philosophical thought and critical evaluation of the theories, nevertheless there is enough substantial reason to generate an integrated model of those three normative ethics as literature suggest that a holistic approach is more plausible than the past decades. An examination of classical text is a proper initial assessment to develop a foundational understanding. Parfit for instance, while presenting a convergence argument of ethics, it did not wrestle with considering the potential harmony of certain virtue ethics philosophies (Hursthouse & Pettigrove, 2018; Annas, 2011). Driver's virtue consequentialism proposes convergence between virtue ethics and consequentialism; however, the necessary demands of what type of consequentialism should ground it remains and it did not consider the substantial dynamic of the triple-theory, deontology, and current contractualism (Hursthouse & Pettigrove, 2018). Lastly, Target-centered virtue ethics of Swanton (2021) while influential for reframing virtue away from strict compliance to eudaimonia and the golden mean, provides that virtue may be subject to flexibility, yet its foundational implications remain agnostic to an aggregative approach in targeting specific virtues, having the same problematic criticism of both naïve Aristotelian and traditional Aristotelian ethics (Swanton, 2003/2021; Annas, 2011; Driver, 2012).

#### Theoretical Framework

Three theoretical frameworks of this study are based upon: 1) Triple-theory reconciliation by Parfit (2017), which supports contemporary practice of integrating theories, it also supports the convergence between rule utilitarianism and deontology with an inclusion of form of contractualism. 2) Driver (2012) Virtue Consequentialism Theory, which arrives at the philosophical position that the production of good consequences is what makes a trait virtuous which is in complimentary with the intended integration of the model relating to utilitarianism and virtue ethics. 3) Swanton (2021), Target-Centered Virtue Ethics which shifted its conceptualization of virtues beyond the golden mean and eudaimonia endorsing the aim of a virtue rather than inherently following the golden mean. This shows that modern virtue ethics considers plausible flexibility of the virtues.

**Figure 1.** Illustration of the dynamics for the theoretical framework



The three theoretical models will be useful in examining classical philosophical works for virtue ethics, deontology and utilitarianism. The paradigm of which the aforementioned theories influence further developments of a holistic ethical model through theoretical-analytical approach and consideration for post-positivist consequential mixed method design utilizing analysis of the contents. Relations with deontological thought with utilitarianism, the consequential aspect of virtue ethics, and justification of some classical virtues to deontological groundwork is examined with the aid of the Triple Theory, Target-Centered Virtue Ethics, and Virtue Consequentialism.

### Statement of the Problem

Despite the extensive body of philosophical literature on deontology, virtue ethics, and utilitarianism, these normative ethical systems have largely been examined in isolation or through limited two-theory integrations. Contemporary attempts at ethical reconciliation, including those by Parfit (2017) and Swanton (2021), Driver (2012) acknowledge conceptual overlaps among ethical traditions but do not provide a fully integrated, theoretically aligned framework that systematically incorporates eudaimonia, virtue, intentionality, and moral outcomes within a formal logical or mathematical structure. As a result, ethical theory remains fragmented, particularly when applied to complex moral evaluations that require consistency, proportionality, and analytical rigor. This gap highlights the need for a comprehensive ethical model that unifies the three major normative ethical systems into a cohesive framework capable of addressing both theoretical coherence and practical applicability in modern moral philosophy.

### Research Objectives

This study aimed to examine the theoretical alignment of the three major normative ethical systems—deontology, virtue ethics, and utilitarianism—and to develop an integrated ethical framework. Specifically, the study sought to:

1. To integrate the three normative ethical theories into a cohesive logical–mathematical framework.
2. To develop a graphical model representing the core virtue ethics concept of eudaimonia within the integrated ethical system.
3. To formulate ethical conditionals that incorporate intentionality and merit-based criteria in moral evaluation.
4. To construct a formal mathematical notational expression for the proposed integrated ethical system.

### Research Questions

1. How can the three major normative ethical theories be integrated using a logical–mathematical approach?
2. What graphical model can be developed to represent eudaimonia within the proposed integrated ethical system?
3. In what ways can ethical conditionals incorporating intentionality and merit-based criteria be formulated within the integrated framework?
4. What mathematical notational expression can be constructed to represent the proposed integrated ethical system?



**Research Design**

The study used a theoretical-analytical research design, analyzing through post-positivist content analysis. Data is gathered through classical philosophical works of Kant (1785/2012) on the metaphysics of morals, Aristotle (trans. 2009) ethics, Bentham (1789) regarding principles and moral legislation, Mill (1863) Utilitarianism, Hare (1981) works on moral thinking, and Smart & Williams (1973) regarding systems of utilitarian ethics for negative consequentialism.

Post-positivist content analysis is used for our theoretical-analytical design because it covers an in-depth analysis of the contents, patterns, and themes of the text in a qualitative and quantitative manner (Krippendorff, 2019). When analyzed creation of an integrated model with mathematical formalism will be established through the theoretical-analytical methodology using also the rigor of qualitative content analysis as suggested by Elo and Kyngäs (2008) raising the importance of the qualitative aspect for the post-positivist approach.

**Data Collection Procedure**

The data collection procedure uses literary and archival works for modern integrative support. Classical texts for virtue ethics, Kantian/deontology, utilitarianism, and negative consequentialism was use to do content comparative analysis. Accordingly utilization of robust scenario analysis considering percentage changes equitable for primary and secondary concepts tackled by the classical literature used was prompted to make a more robust and sound content analysis.

**Table 1.** Concept and Terms Use for Content Analysis Use

Concept	Related Terms
Duty	Duty, obligation, moral law, deontic, categorical imperative, must, ought
Consequences	Consequence, result, utility, pleasure, pain, harm, benefit, maximize, minimize
Virtue	Virtue, character, excellence, eudaimonia, moral development, habit, disposition
Rule or Universalizability	Universal, rule, principle, law, general, consistency
Preference	Preference, choice, want, desire, consent, autonomy (sometimes), individual)
Intentionality or Good Will	intention, motive, good will, aim, purpose, deliberate
Autonomy	Autonomy, freedom, liberty, self-rule, rational agent, independence

Prompt to be use to reproduce: Perform a post-positivist content analysis of the following primary ethical texts: Kant’s Groundwork of the Metaphysics of Kant (1785/2012), Aristotle (trans. 2009) Nicomachean Ethics, An Introduction to the Principles of Morals and Legislation by Bentham (1789), Utilitarianism of Mill (1863), Moral Thinking Hare (1981), and Smart & Williams Utilitarianism: For and Smart & Williams (1973). Identify and quantify the thematic presence of key normative ethical concepts—Duty, Consequences, Virtue, Rule/Universalizability, Preference, Intentionality/Good Will, and Autonomy—using approximate semantic recognition, not strict keyword counts. Code the thematic presence of the following concepts: Duty, Consequences, Virtue, Rule/Universalizability, Preference, Intentionality/Good Will, and Autonomy. Treat each philosopher’s defining concept as the reference point (100%) and report raw frequencies with corresponding percentages reflecting relative conceptual centrality within each theory. Allow concepts to overlap across theories and ensure that no framework is treated as conceptually exclusive unless explicitly rejected by the philosopher. Present results in a frequency distribution table, followed by a brief discussion



identifying dominant conceptual alignments (e.g., deontology with duty, virtue ethics with virtue, utilitarianism with consequences), indirect associations, and negligible relationships, supported by representative canonical quotations. Then conduct a secondary, penalized coding to reduce frequencies for concepts that are indirect, instrumental, or subordinated to a theory's primary framework, and present these results in a second table. Finally, interpret how deontology, virtue ethics, classical utilitarianism, and refined utilitarianism (Mill and Hare) exhibit non-zero but asymmetrical conceptual relationships across all constructs, noting similarities between Mill and Hare, the conceptual limitations of Bentham's act utilitarianism, and the broader implication that normative ethical theories occupy a graded spectrum of conceptual association rather than discrete categorical isolation.

The concepts and related terms within the table above is the pattern recognition analysis would correspond. Using transformer-based architectural models for Large Language Modelling (LLM) from Vaswani et al. (2017), integrated within a language model machine through PyTorch and TensorFlow making it possible to analyze semantic and heuristic terms in a considerably accurate manner. Ethical concepts regarding the three normative ethics like duty, consequence, rule or universality, preference, intentionality, and autonomy.

**Treatment of Data**

Descriptive statistics such as frequency and within-text and cross-text relative percentages per particular concepts was used following the content analysis. PyTorch and TensorFlow regarding Vaswani et al. (2017), for pattern recognition assists for the approximate tally of the conceptual relations. Content analysis therefore was done concurrently with quantitative and qualitative methodology. From that generating new models based on comparative analysis of the contents and philosophical inclinations will be utilized for an ethical system that considers the findings of the thematized and quantized data.

**Ethics in Research**

This research adheres to the utmost ethical standards in academic inquiry. Since it involves the analysis of open access classical and modern philosophical texts, no human participants were involved, and thus issues of consent or confidentiality do not apply. The study maintains academic integrity by making sure to cite all primary and secondary sources, avoiding plagiarism, and ensuring proper delegation of ideas. Furthermore, the use of a large language model (LLM) for content analysis was guided by transparency and reproducibility principles.

**Results and Discussion**

**Table 2.** Frequency Distribution Table of The Content Analysis

Concept	Kant	Aristotle	Bentham	Mill	Hare	Smart & Williams
<b>Duty</b>	150 (100%)	40 (27%)	5 (3%)	20 (13%)	25 (17%)	10 (7%)
<b>Consequences</b>	15 (11%)	50 (36%)	180 (100%)	90 (50%)	70 (39%)	140 (78%)
<b>Virtue</b>	25 (13%)	200 (100%)	5 (3%)	15 (8%)	15 (8%)	5 (3%)
<b>Rule</b>	120 (100%)	30 (25%)	30 (25%)	50 (42%)	60 (50%)	25 (21%)
<b>Preference</b>	10 (20%)	20 (40%)	10 (20%)	10 (20%)	50 (100%)	10 (20%)
<b>Intentionality</b>	100 (87%)	15 (13%)	2 (2%)	10 (9%)	10 (9%)	15 (13%)
<b>Autonomy</b>	90 (100%)	25 (28%)	15 (17%)	35 (39%)	40 (44%)	20 (22%)

The frequency distribution table of the content analysis shows the content analytic relationship of all the normative ethical theories on the column. Naturally most associated concepts like consequence to Bentham, Mill, Hare, and Smart & Williams are high (f 70, 39% - f 180, 100%), Deontology on duty, rule, intentionality and autonomy (f 100, 87% - f 150, 100%), and Aristotelian ethics on virtue (f 200, 100%).

"The will is therefore not merely subject to the law but subject in such a way that it must be considered also as the author of the law of which it regards itself as subject." (Groundwork, 4:431)

"Happiness is an activity of soul in accordance with virtue." (NE I.7, 1098a16)



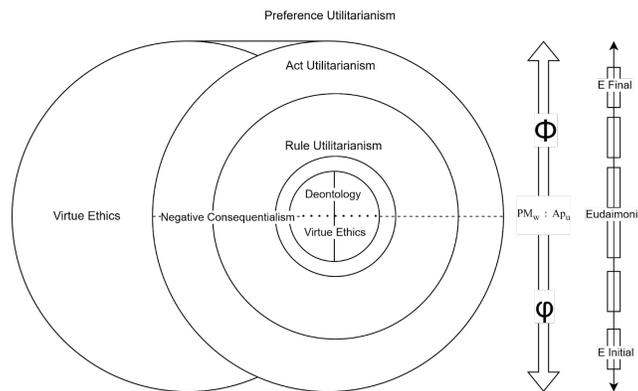
"It is the greatest happiness of the greatest number that is the measure of right and wrong." (Principles, Ch. 1)

**Table 3.** Robust Scenario Analysis Considering for Secondary Concept Through Penalized Secondary Coding

Concept	Kant	Aristotle	Bentham	Mill	Hare	Smart & Williams
Duty	150 (100%)	24 (12%)	3 (2%)	12 (8%)	15 (10%)	6 (4%)
Consequences	9 (6%)	30 (18%)	180 (100%)	54 (30%)	42 (24%)	140 (100%)
Virtue	15 (10%)	200 (100%)	3 (2%)	9 (5%)	9 (5%)	3 (2%)
Rule	120 (80%)	18 (9%)	18 (10%)	50 (28%)	60 (34%)	15 (11%)
Preference	6 (4%)	12 (6%)	6 (3%)	6 (3%)	50 (100%)	6 (4%)
Intentionality	60 (40%)	9 (5%)	1 (1%)	6 (3%)	6 (3%)	9 (6%)
Autonomy	90 (60%)	15 (8%)	9 (5%)	21 (12%)	24 (14%)	12 (9%)

The findings however show that on a content analysis basis using approximation pattern recognition, none of the theories are fully associated with the concepts. While some are negligent associations, the quantitative data shows that the ethical theory follows a non zero spectrum of conceptual relationship. Negative consequentialism in the content analysis indicates a preliminary utilitarian consideration and more robust than the act utilitarianism of Bentham (1789). Aristotelian ethics are indirectly tied to all the constructs besides its main conceptual distinction being virtue. Bentham's utilitarianism as well as all other utilitarian ethics, are high in the consequence, however in terms of other constructs, it has no thematically present relationship with duty, virtue, and intention, something that the system was criticized for lacking in most literature. Mill and Hare's utilitarianism however, are the most similar with each other having the only difference is the preference or agency concept. Negative consequentialism has an indirect presence to all the philosophical concepts except virtue which makes it an incomplete consequentialist theory in terms of conceptual robustness. The initial conceptual analysis shows that deontology and virtue ethics have an indirect to strong relationship to all the concepts, while classical refined utilitarianism like Mill and Hare mirrors that relationship.

**Figure 2.** Initial Nicomachean Utilitarian Integrated Model Illustration for a Holistic Ethical System



Virtue ethics provide a noticeable relationship with all the concepts, while deontology in other argumentative versions also have indirect relationships making it a conditional related philosophy for rule utilitarianism, Mill's higher order utilitarianism, and other variations. From this, it is reasonable to make virtue ethics and utilitarianism as a primary paradigm for a model with deontology having a secondary initial relationship, negative consequentialism would appear in all modalities indirectly because of its theoretical implications of at least minimizing harm.

The dash lines represent the relationship of negative consequentialism with all the ethical systems, in the integrated model primary virtues would be based on intentionality and utilitarian dependability, being a constant virtue therefore examination of the FDT implicates that while the initial conceptual content analysis show negligent relationship on virtues the nature of the negative consequentialist heavily relates to eudaimonia in a sense of



minimization of harm. Pointed lines like how negative consequentialism passes through deontology is meant to represent its low but sufficient acknowledgement of its influence with the ethical theory. Two-way lines indicate the two-way utilitarian category with consideration to preference utilitarianism including merit metrics on moral worth and power, and pronesis with golden mean transformations further explained on proceeding texts.

Recognition of the difference of rule utilitarianism and other forms of deontological justification was also included and some virtues justification through deontology noted by the pure y-axis straight line to show the similarity and differences of both of them. Act and preference utilitarianism are in that order due to the level of complexity of the preference criteria as opposed to classic pleasure calculus. Literary and academic support of some of this integrated model is shown on the proceeding paragraphs from the tables as well as mathematical formalism to make virtue ethics a measurable theory that is logically grounded. Lastly, relations with the growth of eudaimonia to practicing the ethical model is considered a dash of the two-way arrow representing the imperfect relationship between eudaimonia and doing virtues.

**Mathematical Formula for Nicomachean Utilitarian**

$$M_w = \sum \int_{t=0}^{\infty} F(Y * X) = \begin{cases} X_1, x^{+i} = 1 \\ X_2, x^{-i} = 2i^y \\ X_3, x^{0i} = 0 \\ y_1, y^{+Q} = i^0 \\ y_2, y^{-Q} = i^{\pm 2} \end{cases}$$

**Table 4.** Expository Matrix for The Nicomachean Utilitarian Formula

Symbol	Interpretation	Classical Normative Tradition	Integrative Support
1. X	The intention of doing an action, the mentality of the person	Deontology, Virtue Ethics	Stamatikos (2025)
2. Y	The Outcome of the action	Consequentialism, Utilitarianism	Suikkanen (2024), Singer (2023)
3. i	The Type of The Intention <i>Positive = 1</i> <i>Negative = 2<sup>y</sup></i> <i>No intentions or undecided = 0</i>	Deontic	Archer (2020)
4. Q	Is a rational number	Atheoretical	Parfit (2017)

The Imaginary number “i” is used here primarily for bad outcomes and intentions. In basic arithmetic, the multiplication of 2 negative numbers results in a positive outcome. Using conditions where bad or good outcomes are based on good or bad intentions (i<sup>0</sup>, i<sup>±2</sup>). While it somehow makes sense that “i” is used as intentions in combination with outcomes is an abstract valuation rather than just outcomes, it is used primarily to not confuse the use of operations to create an output that has a positive score when it should be negative (Archer, 2020).

The use of rational numbers is done so that a continuous scale of measurement for an outcome can be practiced or calculated. In this form of utilitarianism, outcomes with intentions are primarily the determinant of a moral worth; this incorporates the moral character (personhood) of a person, its “virtue” (X), and its capacity to uphold such virtue, determined by the outcome (Suikkanen, 2024; Singer, 2023). A virtuous man (X1, x<sup>+i</sup>) tasks is to do a virtuous deed successfully (Y<sup>+</sup>). This then determines his moral worth (X\*Y). The difference between consequentialist theories before this is that we also examined if a man is virtuous in that what he intends to do, what his character is, upholds the nature of goodness because they are a virtuous person (Aristotle, trans. 2009; Campodonico & Navarini, 2020), and so, this influences our judgment of the person based on the outcome of intentions (Stamatikos, 2025; Slote, 2001; Kristjánsson, 2018; Parfit, 2017).



$$PM_w \propto Ap_u$$

$$PM_w = kAp_u$$

**Table 5.** Expository Matrix for Proportionality of Moral Worth and Act, Preference Utilitarianism

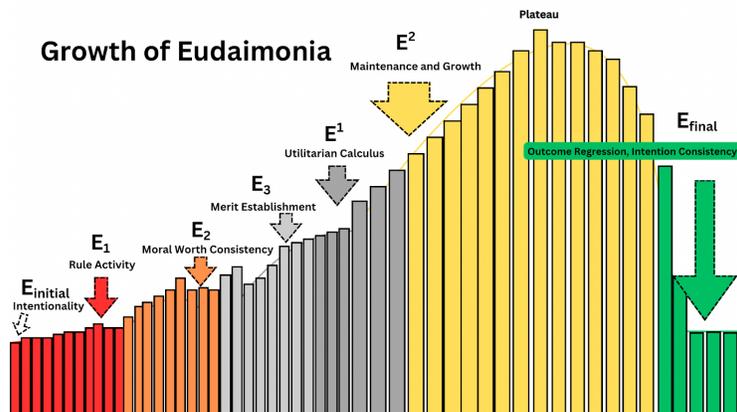
Symbol	Interpretation	Classical Normative Tradition	Integrative Support
1. P	Power	Virtue ethics	Swanton (2021)
2. $M_w$	Moral Worth	Virtue ethics	
3. $Ap_u$	Act and Preference Utilitarian	Utilitarianism	Kristjánsson (2018)

Therefore one must not commit to actions he/she cannot do, exercise actions of which he/she is not competent. The information or knowledge is not sufficient and does not have practical wisdom on (Aristotle, trans. 2009; Kristjánsson, 2018). An evaluation of their competence, merit, knowledge, phronesis, and power must be taken into account (Parfit, 2017; Hare, 1981; Singer, 2023). If one is still not in a position to act utilitarian in all accounts. And so the frequency of doing act and preference utilitarian actions is dependent upon power and moral worth for that reason proportionality equation and k weights are added.

A sort of Two-Level Utilitarianism, therefore, it ought to be acknowledged. The difference, however, in how acting and following are obtained here is through considering the moral character of a person as well as their merit to have a license to do so. Something that the current Two-Level utilitarian model of R.M. Hare has not exactly been considered (Hare, 1981; Singer, 2023). Mere critical evaluation of the circumstances is not enough, one must also be capable of doing so and be in a state where its calculus of moral worth suggests they have enough confidence to even execute the act utilitarian principles (Hooker, 2000). Additionally R.M. Hare, though an influential figure that led me to stress myself just to establish an ethics of my own, has left a deceptive bedrock to morals, in that they are not true statements but rather a prescription of how to act. The utilitarianism I am upholding is not one which approves of this metaethical claims as it approves the realism of morality, and at the same time, that there are essences in which morals, the character of a moral man is based upon (Swanton, 2021; Kristjánsson, 2018).

**Growth of Eudaimonia**

**Figure 3.** Nicomachean Utilitarianism’s Graphical Model of Eudaimonia



**Intentionality**  $X = E_{initial}$ . There are levels of Eudaimonia (Aristotle, trans. 2009; Kristjánsson 2018; Fowers, 2015) and in the case of this philosophy, it starts with the evaluation of X.  $i^T$  can of course not have it  $x\bar{o}i$  or  $i^T$  can have the opposite of it  $x^-i$  but it starts with purity of intention  $x^{+i}$  (Lombardi, 2025; Snow, 2015). This makes it possible to attain a sense of a flourishing of ones own moral character, the motivation to do good (Parfit, 2017; Williams et al., 2024).



**Rule Activity**  $Y(Ru) = E_1$ . So to achieve this as a Nicomachean Utilitarian, we will adhere to the rules that maximizes the happiness of the people (Mill, 1863), generally first ( $Y = Ru$ ), especially when one is still not in a socio-economic, political, intellectual status enough to not adhere to the rules (Sampaio da Silva, 2018; Ardel & Kingsbury, 2024).

**Moral Worth Consistency**  $rY(Ru) = E^2$ . Therefore, strive to do good consistently in a way that our intentions to do so are still at the side of the good and not to any immoral motivations (Aristotle, trans. 2009; (Sampaio da Silva, 2018; Kim et al., 2024). In this way our moral worth is becoming a basis for us to see whether we can consider breaking some rules in favor of the greater good. ( $r =$  reliability or consistency) as also supported by Hursthouse & Pettigrove (2018).

**Merit Establishment**  $P(Ru) = E^3$ . In doing good consistently, we enhance our capacity to reason logically, strategically, it also strive to become more knowledgeable, attain certain awards or at least recognition of our service that makes us influential. We strive to achieve a more sustainable, as well as powerful standing to our peers and others, and we build connections both in the realm of the weak, strong, and intelligible (Ardelt & Kingsbury, 2024) so that we can be confident of our moral judgement to do something more abstract and complicated ( $Y = Apu$ ) which is noted by Williams et al., (2024).

**Utilitarian Calculus**  $Y(Au) = E^4$ . When people are confident of their own capability to reason, influence, have practical wisdom, gather information. If the current situation is sufficient enough little by little we act more in such a way that maximizes the happiness of the greater good ( $Y$  to  $Au$ ) rather than adhering to the set of rules that are made to generally maximize it (Parfit, 2017; Hooker, 2000; Swanton, 2021).

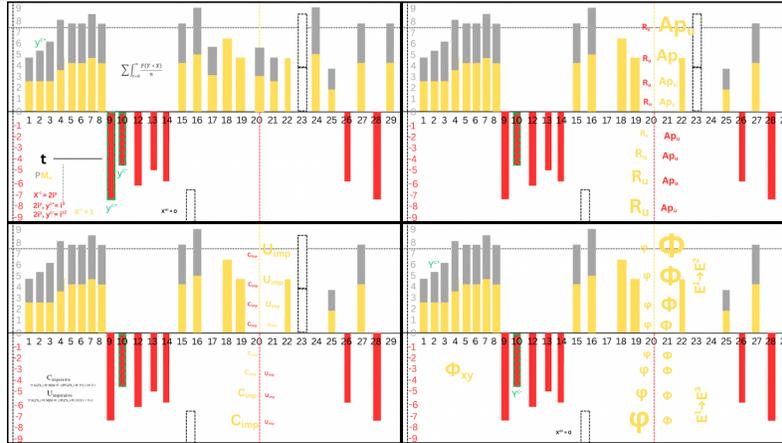
**Maintenance and Growth**  $\bar{x}(PMu : Apu) = E^5$ . We make sure that our decisions based on good intentions often lead to a good outcome and proportion our merit (Sinnott-Armstrong, 2019) to act on the premise of a classical utilitarian and preference in its intention-based hedonistic utilitarian calculus as much as we can (Parfit, 2017; Swanton, 2021; Ardel & Kingsbury, 2024).

**Outcome Regression, Intention Consistency**  $Lim Y, r^{x+i} = E_{final}$ . When one is no longer capable due to any obstruction of being caused or circumvented by an external force or internal ailments, such as inability due to age, cognitive decay, physical abnormality, mental illnesses, medical diseases, accidents, and injuries (Lombardi, 2025). Then so long as his capability to have intentions still decides to side with the good, to be pure of heart, then he has achieved the finality of moral fulfillment, of eudaimonia.

### Virtues and The Golden Mean

While in classical Nicomachean Ethics, they have some conception of virtue with regards to the golden mean for instance, honesty is a virtue, its vice is pathological lying, and its vice deficient is excessive truth telling (Aristotle, trans. 2009; Hursthouse & Pettigrove, 2018). What this model argued however is that there are 2 main virtues: Intentionality ( $X$ ) and Utilitarian Dependability ( $Y$ ). Therefore, the sub-virtues can be Wisdom and Competence. For when it has wisdom it knows to act in a way that produces a pleasurable outcome and when it has competence, it can execute that act successfully. Another is Kindness and Empathy as one must act in such a way that produces a pleasurable outcome while still having kindness and empathy to those people that may have been necessary to use as means to an end. In this way while they have acted upon people as if they are meant to an end, they still see them in good conscience in an ideal world as ends in themselves (Kant, 1785/2012; MacIntyre, 1981). We just don't simply live in the world of the ideal and thus we ought to create an ideal world that is grounded in reality. Essentially the sub-virtues are the classical Aristotelian conception of virtues regarding the golden mean while constant virtues are in line with utilitarian conception and deontic appeal of intentionality (Parfit, 2017; Hooker, 2000).

**Figure 4.** Sample Cartesian Plane of Nicomachean Utilitarianism From Normal, Rule-Act, Deontological-Utilitarian, and Golden Mean Transformations



The vice and vice deficiency of intentionality are evil intentions and unnecessary moralizing. While the vice and vice deficiency of dependability is undependable and a utility monster (Meyer, 2023; Campodonico & Navarini 2020; Nozick, 1974). It is important to note that the trait of dependability is framed in a way that one is dependable to have the desirable pleasurable outcome to the common good, and the trait of having the proper intention is a virtue. It can be argued that these two virtues together make it absolute, and so it has only one frame of reference: To have good intentions and be dependable in a utilitarian manner; as such, any other actions must then be changed by having the virtue of intentions and utilitarian dependability (Parfit, 2017).

What Aristotle (trans. 2009) has perhaps failed to do is he did not make the Golden Mean as flexible, no formal re-calibration that demonstrated mathematically, in that its frame of reference is only aligning it to the median of the two (especially in naive/strict virtue ethics), the median and the mean can sometimes be the same indeed, but there has to be a frame of reference in which our conception of the mean should be shifted (Nussbaum, 1986; MacIntyre, 1981). This is what deviates my philosophy to the philosophy of Aristotle (trans. 2009). This is of course the reason for Nicomachean Utilitarianism. Since, out of all utilitarian theories this is the most closest it has ever been in both deontological thought and aristotelian combined with logical formalism, this research opted to justifiably call it Nicomachean Utilitarianism to uphold the golden mean of virtues, this research intended to do a similar path, not of virtues, but of moral philosophies (Hare, 1981; de Maagt, 2018 ; Mill, 1863; Bentham, 1789).

$$\Phi = X(Y(Apu))$$

Here, the Golden Mean is what the intention of the outcome requires. The centrality of the trait is influenced by its ability to produce a pleasurable outcome with good intentions. Therefore, this philosophy means relativity. One has to therefore produce an outcome without losing the intention to do good as these are two constants in Nicomachean Utilitarianism. Intentions and collective pleasure-based outcomes is the reference of all other virtues and so a virtuous man must practice the balance of the two.

Let us consider numerically quantifying honesty to be 5, it's vice as 10 and 1, this is a numeric illustration only to expound upon the mechanics. Same with humility as 5 vice and vice deficiency as 1 and 10. Our intention is to do good (X = 1) and our desired outcome is a good outcome but the desired outcome is considered as a vice (10, 1). The outcome is therefore good (10). But if one were to not do so one knows that they would kill their friends (-10), there would be less pleasure in service of their appetite to kill. If it is then multiplied the outcome and the virtues that we would administer, Naïve Aristotelian Virtue Ethics Golden Mean would have resulted in a negative, and Nicomachean a positive.

$$F(\Phi) = XAu = (1)(10+1) = 11$$

If we then consider the Golden Mean of a naïve aristotelian  $\phi = 1/2$  this is what we will get:

$$F(\phi) = 1/2 + 1/2 = 5+5 = 10$$



The fraction (1/2) represents the proportional contributions of each virtue from a 1-10 scale. The Naïve Aristotelian Golden Mean is not successful in having a virtuous outcome. This is because its frame of reference remained rigid and did not account for the necessary mean required for the situation. While the Nicomachean Utilitarian Mean with a virtuous intention in its own way produced a virtuous outcome.

The necessary shift of the Golden Mean is the difference between the good intention of the outcome that requires it and the Naïve Aristotelian Golden Mean. In this case there is two:

$$\Phi - \phi = X_{Ap_u} - 1/2 \text{ of } 10$$

$$\text{Mean Transformation: } (\phi_1, \phi_2) \rightarrow (\phi_1', \phi_2')$$

$$X_{Ap_u} - \phi_1 = 1(10) - 5 = 5$$

$$X_{Ap_u} - \phi_2 = 1(1) - 5 = -4$$

$$\text{Mean Transformation: } (\phi_1, \phi_2) \rightarrow (\phi_1+5, \phi_2 - 4)$$

What if it went into a similar situation? The brutal honesty is still the one that will get it the outcome but it would not work if one is not 75% more humble. But in the best of all possible worlds, the result of the outcome is just 20% better because other than that there is no way to stop those groups of friends. Since it requires a shift from the frame of reference, how much does the classical golden mean ought to shift?

$$X_{Au} - \phi = (1)10 - 5 = +5$$

$$X_{Au} - \phi = (1)2.5 - 5 = -2.5$$

X is necessary because if X is a bad intention then according to Mu formula  $X = 2iy$  and if Y is a good outcome then  $y-Q = i\pm 2$  our assessment of the person's morality is bad multiplicity. As intentions have weight in this moral theory.

$$M = \sum PM_w \propto \sum_{\phi_{xy}E(i)_{1 \rightarrow 3}}^{\phi_{xy}E(f)_{1 \rightarrow 3}} R_u^{C_{imp}} \xrightarrow{\text{Two-way}_u} AP_u^{U_{imp}}$$

#### Mathematical Notation Expression for Nicomachean Utilitarianism

In the upper and lower parts of the second summation notation, it functions as how summation notation works yet it just describes the transformations using the Nicomachean virtue ethics paradigm describing the lower part as initial and the upper part which indicates the stages of eudaimonia ( $E_{initial}$  to  $E_{final}$ ). This final equation is meant to represent all the previous mathematical formalism that was invented earlier and it is meant to complement the Nicomachean Framework given in figure 2 and figure 3. The  $\phi$  transformation already encapsulates the moral worth expression and the two-way labeled arrow represents the shift from rule utilitarian close to categorical imperative principles to Act and Preference Utilitarian decisive actions.

#### Conclusion

The findings showed a relative relationship with ethnic normative ethical theories as well as differences. Content analysis showed that virtue ethics and deontology relate to most of the ethical concepts such as duty, consequences, preference, autonomy, virtue, rule, and intentionality. Integration of virtue ethics and utilitarianism as a primary ethical model for a novel ethical system was derived from literature reviews given in the introduction, initial conceptual content analysis, frequency distribution table of the content analysis using 6 classical philosophical works on deontology, virtue ethics, and utilitarianism. Constant virtues such as intentionality and utilitarian dependability while the classic primary virtues in virtue ethics turn into a secondary, relative virtue influenced by the transformation of the golden mean.



A graphical model of eudaimonia according to the integrated ethical model was established showing phases regarding the growth of eudaimonia. The graphical model starting from intentionality then rule activity, moral worth consistency, merit establishment, utilitarian calculus, maintenance and growth, to finally outcome regression, intention consistency following a lifespan approach.

Conditionals for limitations of relationship with deontology and rule utilitarianism was logically established. While merit-based criteria use phronesis, power, and moral worth mathematical formulations to identify levels of competence in doing act and preference utilitarian actions and roles more often. This make the integrative model cohesive and robust, accounting for limitations and theoretical strength following classical interpretative textual consideration with 21st-century philosophical positions. Mathematical notation expression was also made to illustrate the relationship of the ideological connections from the integrative ethical model.

### Recommendations

Given that the framework is fresh, recommendations of improving and further analyzing possible areas of research to better legitimize the philosophy and be integrated into other scientific disciplines, social science disciplines.

Rigorous content analysis using manual comparative qualitative analysis can support the conceptual findings of this research as use of statistical software while might help in convenience, it does not tell the full story but gives sufficient robustness.

Further research regarding moral development that can be tied to their inclinations of having close Nicomachean Utilitarian leanings so percentiles, z or t distributions, and norming can be made as a more objective measure of permissibility from Rule to Act/Preference Utilitarianism. It can be done by either categorical (history, anthropology, psychology studies) or hard mixed-method research for a more dimensional approach.

Optimal Threshold for maximization and minimization. While the ideal is to go towards actual maximization and minimization the practice of getting there should include maintenance and sustainability of producing above average results rather than burning out just at getting there. So a certain threshold for outcomes ( $k_a$  for max,  $k_b$  for min) may be proposed.

The transformative aggregation of Y is positive or Negative but person P has negative X may be reevaluated.  $X = 2iy$  indicates that its moral character results is 2 times as horrendous when intention is bad. If  $|2|$  is too much it can be reduced but preferably not to the level of which it is just the polar just opposite of X positive as it would not stress the importance of X positive.

Consider integrating the philosophy to Humanistic Psychology Approaches, Positive Psychology Research by using mixed method designs that provides possible support for the philosophical construct. Development of Psychometric Test that measures Nicomachean Utilitarianism concepts (Intentionality, Utilitarian Dependability, Primary and Sub-virtues) as traits or style for categorization which can later be used by educational, advocacy driven organizations.

### REFERENCES

- Annas, J. (2011). *Intelligent virtue*. Oxford University Press.  
<https://doi.org/10.1093/acprof:oso/9780199228782.001.0001>
- Ardelt, M., & Kingsbury, J. (2024). Wisdom, virtues, and well-being: An empirical test of Aristotle's theory of flourishing. *Topoi*, 43, 879–893. <https://doi.org/10.1007/s11245-023-10002-x>
- Archer, A. (2020). Supererogation. In *The Routledge encyclopedia of philosophy*. Routledge.  
<https://doi.org/10.4324/9780415249126-L101-1>
- Aristotle. (2009). *Nicomachean ethics* (W. D. Ross, Trans.; Rev. ed.). Oxford University Press. (Original work published ca. 350 BCE) <https://global.oup.com/academic/product/the-nicomachean-ethics-9780199213610?cc=ph&lang=en&>
- Bernardo, A. B. I., Salanga, M. C., Tjipto, S., Hutapea, B., Yeung, S. S., & Khan, A. (2016). Contrasting lay theories of polyculturalism and multiculturalism: Associations with essentialist beliefs of race in six Asian cultural groups. *Cross-Cultural Research*, 50(3), 231–250. <https://doi.org/10.1177/1069397116641895>



- Bentham, J. (1789). *An introduction to the principles of morals and legislation*. Dover Publications.  
<https://philpapers.org/rec/BENITT#:~:text=Morals%20and%20Legislation-,Jeremy%20Bentham,by%20J.%20H.%20Burns%20&%20H.%20L.%20A.%20Hart.>
- Campodonico, A., & Navarini, C. (2020). Virtue Ethics and Moral Psychology: Editorial Note. *Ethical Theory and Moral Practice*, 23(2), 273–276. <https://doi.org/10.1007/s10677-020-10096-x>
- Cordner, C. (1994). Aristotelian virtue and its limitations. *Philosophy*, 69(269), 291–316.  
<https://doi.org/10.1017/S0031819100047057>
- Casiño, R. M. Z., Serrano, L., & Granada, M. I. (2025). Revisiting the Filipino value utang na loob: Contextual perceptions, implications, and inputs to sustaining Filipino psychology discussions. *International Journal of Education and Humanities*, 5(2), 309–324. <https://doi.org/10.58557/ijeh.v5i2.311>
- Driver, J. (2012). *Consequentialism*. Routledge.  
<https://www.routledge.com/Consequentialism/Driver/p/book/9780415772587>
- de Maagt, S. (2018). Korsgaard's other argument for interpersonal morality: The argument from the sufficiency of agency. *Ethical Theory and Moral Practice*, 21, 887–902. <https://doi.org/10.1007/s10677-018-9925-3>
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107–115.  
<https://doi.org/10.1111/j.1365-2648.2007.04569.x>
- Fowers, B. J. (2015). The promise of a flourishing theoretical psychology. *Journal of Theoretical and Philosophical Psychology*, 35(3), 145–159. <https://doi.org/10.1037/a0038646>
- Formosa, P. (2017). Achievement dignity, virtue, and autonomy: How to live up to your status dignity. In *Kantian ethics, dignity and perfection* (pp. 163–205). Cambridge University Press.  
<https://www.cambridge.org/core/books/kantian-ethics-dignity-and-perfection/ECOD197403A643694C0586D1775EB619>
- Halbig, C. (2020). Virtue vs. virtue ethics. *Zeitschrift für Ethik und Moralphilosophie*, 3(2), 301–313.  
<https://doi.org/10.1007/s42048-020-00078-0>
- Hare, R. M. (1981). *Moral thinking: Its levels, method, and point*. Oxford University Press.  
<https://archive.org/details/moralthinkingits0000hare>
- Hooker, B. (2000). *Ideal code, real world: A rule-consequentialist theory of morality*. Oxford University Press.  
[https://www.academia.edu/1889297/Ideal\\_Code\\_Real\\_World\\_A\\_Rule\\_Consequentialist\\_Theory\\_of\\_Morality](https://www.academia.edu/1889297/Ideal_Code_Real_World_A_Rule_Consequentialist_Theory_of_Morality)
- Hursthouse, R., & Pettigrove, G. (2018). Virtue ethics. In E. N. Zalta (Ed.), *The Stanford Encyclopedia of Philosophy* (Fall 2018 Edition). <https://plato.stanford.edu/archives/win2018/entries/ethics-virtue/>
- Jose, C. G., Lucy, R., Parker, A. M., Clere, J., Montecillo, L., & Cole, A. M. (2024). Pakikisama: Filipino patient perspectives on health care access and utilization. *Journal of the American Board of Family Medicine*, 37(2), 242–250. <https://doi.org/10.3122/jabfm.2023.230165R2>
- Kant, I. (1785). *Groundwork of the metaphysics of morals* (M. Gregor & J. Timmermann, Eds. & Trans.). Cambridge University Press, 2012.  
[https://assets.cambridge.org/97811070/08519/frontmatter/9781107008519\\_frontmatter.pdf](https://assets.cambridge.org/97811070/08519/frontmatter/9781107008519_frontmatter.pdf)
- Kim, J. H., Chun, J., Kim, J., Ju, H. J., Kim, B. J., Jeong, J., & Lee, D. H. (2024). Emotion regulation from a virtue perspective. *BMC Psychology*, 12(1), Article 11. <https://doi.org/10.1186/s40359-023-01490-y>



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- Krippendorff, K. (2019). *Content analysis*. SAGE Publications, Inc., <https://doi.org/10.4135/9781071878781>
- Kristjánsson, K. (2018). Virtue from the perspective of psychology. In *The Oxford handbook of virtue*. Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199385195.013.26>
- Lombardi, J. (2025). *Intentional action, impactful risk-taking* [Graduate student portfolio]. University of Montana. [https://scholarworks.umt.edu/grad\\_portfolios/447](https://scholarworks.umt.edu/grad_portfolios/447)
- MacIntyre, A. (1981). *After virtue* (2nd ed.). University of Notre Dame Press. [https://philpapers.org/rec/MACAVA?utm\\_source](https://philpapers.org/rec/MACAVA?utm_source)
- MacIntyre, A. (2016). *Ethics in the conflicts of modernity: An essay on desire, practical reasoning, and narrative*. Cambridge University Press. <https://doi.org/10.1017/9781316816967>
- Meyer, J. (2023). *Ethics and us: A review of the moral psychology field* [Undergraduate honors thesis]. DePauw University. <https://scholarship.depauw.edu/studentresearch/214>
- Mill, J. S. (1863). *Utilitarianism* (2nd ed.). Parker, Son, and Bourn. <https://archive.org/details/a592840000milluoft/page/n3/mode/2up>
- Mulgan, T. (2017). Answering to future people: Responsibility for climate change in a breaking world. *Journal of Applied Philosophy*, 34(2), 532–548. <https://doi.org/10.1111/japp.12222>
- Nozick, R. (1974). *Anarchy, state, and utopia*. Basic Books. <https://antilogicalism.com/wp-content/uploads/2018/04/anarchy-state-utopia.pdf>
- Nussbaum, M. C. (1986). *The fragility of goodness: Luck and ethics in Greek tragedy and philosophy*. Cambridge University Press. <https://toleratedindividuality.wordpress.com/wp-content/uploads/2015/10/the-fragility-of-goodness-luck-and-ethics-in-greek-tragedy-and-philosophy.pdf>
- Parfit, D. (2017). *On what matters: Volume three*. Oxford University Press. <https://doi.org/10.1017/S0953820820000011>
- Roussos, J. (2022). Modelling in normative ethics. *Ethical Theory and Moral Practice*, 25(5), 865–889. <https://doi.org/10.1007/s10677-022-10326-4>
- Sampaio da Silva, R. (2018). Moral motivation and judgment in virtue ethics. *Philonsorbonne*, 12, 107–123. <https://doi.org/10.4000/philonsorbonne.993>
- Singer, P. (2023). *Ethics in the real world: 90 essays on things that matter* (Updated and expanded ed.). Princeton University Press. <https://doi.org/10.1515/9780691237886>
- Sinnott-Armstrong, W. (2019). Consequentialism. In E. N. Zalta (Ed.), *Stanford Encyclopedia of Philosophy*. Stanford: Metaphysics Research Lab, Stanford University. <https://plato.stanford.edu/entries/consequentialism>
- Smart, J. J. C., & Williams, B. (1973). *Utilitarianism: For or against*. Oxford University Press. <https://www.cambridge.org/ph/universitypress/subjects/philosophy/political-philosophy/utilitarianism-and-against?format=PB&isbn=9780521098229>
- Smith, N. R. (2017). Right action as virtuous action. *Australasian Journal of Philosophy*, 96(2), 241–254. <https://doi.org/10.1080/00048402.2017.1352611>



- Snow, N. (2015). Generativity and flourishing. *Journal of Moral Education*, 44(3), 263–277. <https://doi.org/10.1080/03057240.2015.1043876>
- Suikkanen, J. (2024). Act and rule consequentialism: A synthesis. *Moral Philosophy and Politics*. Advance online publication. <https://doi.org/10.1515/mopp-2023-0075>
- Stamatikos, A. (2025). *Virtue as a means to an end in the ethics of Alasdair MacIntyre, Philippa Foot, and Rosalind Hursthouse*. <https://philarchive.org/rec/STAVAA-3>
- Swanton, C. (2003). *Virtue Ethics: A Pluralistic View*. Oxford University Press. <https://doi.org/10.1093/0199253889.001.0001>
- Swanton, C. (2021). *Target-centered virtue ethics: Practical wisdom and flourishing*. Oxford University Press. <https://global.oup.com/academic/product/target-centred-virtue-ethics-9780198861676?cc=ph&lang=en>
- Slote, M. (2001). *Morals from motives*. Oxford University Press. <https://doi.org/10.1093/0195138376.001.0001>
- Taggart, G., & Zenor, J. (2022). Evaluation as a moral practice: The case of virtue ethics. *Evaluation and Program Planning*, 94, 102140. <https://doi.org/10.1016/j.evalprogplan.2022.102140>
- Takeshita, M., Rzepka, R., & Araki, K. (2023). Towards theory-based moral AI [Preprint]. *arXiv*. <https://doi.org/10.48550/arXiv.2306.11432>
- Vaswani, A., Shazeer, N., Parmar, N., Uszkoreit, J., Jones, L., Gomez, A. N., Kaiser, Ł., & Polosukhin, I. (2017). Attention is all you need. *Advances in Neural Information Processing Systems*, 30, 5998–6008. [https://proceedings.neurips.cc/paper\\_files/paper/2017/file/3f5ee243547dee91fbd053c1c4a845aa-Paper.pdf](https://proceedings.neurips.cc/paper_files/paper/2017/file/3f5ee243547dee91fbd053c1c4a845aa-Paper.pdf)
- von der Pfordten, D. (2012). Five elements of normative ethics. *Ethical Theory and Moral Practice*, 15, 449–471. <https://doi.org/10.1007/s10677-011-9299-2>
- Wang, Q., Hou, H., & Li, Z. (2022). Participative leadership: A literature review and prospects for future research. *Frontiers in Psychology*, 13, Article 924357. <https://doi.org/10.3389/fpsyg.2022.924357>
- Williams, E. G., Ratchford, J. L., Pawl, T., et al. (2024). Transcendent moral motivation and virtue development. *International Journal of Applied Positive Psychology*, 9, 1745–1772. <https://doi.org/10.1007/s41042-024-00190-1>
- Wolfendale, P. (2022). The weight of forever. *The Philosopher*. <https://www.thephilosopher1923.org/post/the-weight-of-forever>



## Assessing attitudes and perceived usefulness of Artificial Intelligence in Science learning

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### Abstract

**Aim:** This study aimed to assess junior high school students' attitudes toward artificial intelligence (AI) and their perceived usefulness of AI in science learning. Specifically, it sought to identify the most commonly used AI tools in science learning, determine students' attitudes toward AI, evaluate their perceived usefulness of AI, examine students' academic performance in science, and analyze the relationships among these variables.

**Methodology:** The study employed a descriptive–correlational research design involving 246 junior high school students from Dupax Del Sur National High School. Data were collected using a self-developed survey questionnaire that was reviewed and validated by four expert science teachers. Statistical analyses included frequency and percentage, mean and standard deviation, and Pearson's *r* to determine relationships among variables.

**Results:** Findings revealed that ChatGPT and Cici were the most commonly used AI tools in science learning. Students demonstrated a generally neutral attitude toward AI, while their perceived usefulness of AI in science learning was rated as useful. Students' academic performance in science was at a Very Satisfactory level. A significant relationship was found between students' attitudes toward AI and their perceived usefulness of AI in science learning. Moreover, students' attitudes toward AI showed a very weak but statistically significant negative relationship with academic performance, while perceived usefulness was not significantly related to academic performance.

**Conclusion:** The study concludes that more positive attitudes toward AI are associated with higher perceived usefulness; however, positive attitudes alone may lead to overreliance on AI when not properly guided. Awareness of AI's benefits is insufficient to improve academic performance without structured and responsible use. These findings underscore the need for guided, ethical, and pedagogically sound AI training programs to support effective integration of AI in science learning.

**Keywords:** *students' attitudes; perceived usefulness; artificial intelligence (AI); academic performance; science learning*

### INTRODUCTION

The transformation of today's world is remarkable, and sophisticated inventions particularly artificial intelligence (AI) have significantly made daily life easier. Its applications extend across medicine, business, agriculture, and especially education, where it has gained increasing attention for its potential to enhance learning (Stryker & Kavlakoglu, 2024).

In the Philippine context, the Department of Education (DepEd) has acknowledged the potential of AI to enhance educational quality. Current policy directions encourage teacher education institutions to integrate AI-related content and instructional activities to ensure equitable access to digital learning opportunities (Serdenia et al., 2025). In line with this initiative, DepEd recognizes the transformative potential of AI and has established the Education Center for AI Research (E-CAIR) to promote AI-driven educational innovations. Although challenges such as disparities in digital infrastructure persist, the Philippine education system shows promising progress in AI integration to enhance teaching and learning practices (DepEd, 2025).

In the field of science education, AI has emerged as a valuable tool that supports both instruction and student learning. It offers numerous benefits in science classrooms, such as improving the learning environment, generating quizzes, assessing student outputs, and predicting academic performance (Jia et al., 2023). The Chatbots and



simulations also help students understand complex scientific concepts by providing interactive and personalized learning opportunities (Almasri, 2024; Kim, 2021; Mangubat et al., 2025).

The integration of AI in education highlights the importance of evaluating students' attitudes toward its use, as these attitudes are influenced by their level of exposure, prior experiences, and the perceived relevance of AI tools in their studies. Equipping students with the knowledge and skills necessary to use AI tools effectively can help foster more positive attitudes toward AI (Milicevic et al., 2024; Sultana et al., 2025). Students' perceptions of AI likewise play a key role in enhancing learning and deepening their understanding of academic concepts (Pande et al., 2023). Another notable study conducted by Cervantes and Navarro (2025), students perceive AI tools as helpful and user-friendly and demonstrate a strong willingness to continue using them in their academic work, they also hold positive attitudes toward generative AI, recognizing its potential to enhance learning experiences. Similarly, Gonzales and Nabua (2025) found a significant association between students' perceptions of AI integration and academic performance, suggesting that positive attitudes toward AI may contribute to improved learning outcomes. These findings are consistent with research indicating that students in STEM fields tend to exhibit more favorable attitudes toward AI, which are reflected in stronger academic performance in science-related subjects (Hajam & Gahir, 2024; Kan'an, 2025). Moreover, ChatGPT has emerged as the most widely used AI tool, reflecting students' preference for applications that support writing and content development. Although students report that such tools are easy to use, they emphasize that effective AI utilization still requires active engagement and critical thinking (Cervantes & Navarro, 2025).

The Technology Acceptance Model (TAM) provides a solid theoretical foundation for understanding why students develop certain attitudes toward AI and how perceived usefulness influences their acceptance of AI-driven learning tools. According to TAM, students who view AI as useful and who feel positively toward it are more likely to use it effectively in their science learning. This results in better understanding, improved study habits, enhanced engagement, and ultimately, higher academic performance (Davis, 1989).

The significance of this study lies in its contribution to addressing gaps in understanding of junior high school students' attitudes toward AI, their perceived usefulness of AI in science learning, and the relationship of these factors to academic performance, particularly in public secondary schools. Although the literature on AI in education has expanded, including emerging Philippine-based studies, much of the existing research has focused on teachers, college students, or STEM-focused learners at the secondary level, with limited attention given to junior high school students. Furthermore, few studies in the Philippine context have examined the combined influence of students' attitudes toward AI and their perceived usefulness of AI on science achievement. This research gap is especially pronounced in rural and provincial settings, such as Dupax del Sur National High School, where access to AI tools, levels of exposure, and contextual conditions may differ substantially from those in urban schools. These limitations underscore the need for the present study. By applying the TAM, this study examines students' attitudes toward AI, perceived usefulness of AI in science learning, and how these factors relate to academic performance in science. Through examining these relationships, the study aims to generate ethical, reflective, and evidence-based insights that can inform the responsible integration of AI in education, support the development of targeted training programs, and ultimately contribute to improved science learning outcomes.

Therefore, this study aims to identify the most commonly used AI tools in science learning; assess students' attitudes toward the use of AI; evaluate the perceived usefulness of AI in science learning; and examine students' academic performance in science. In addition, the study investigates the relationship between students' attitudes toward AI and their perceived usefulness of AI, as well as how these factors are associated with their academic performance.

### **Review of Related Literature and Studies**

The transformation of the modern world has been marked by remarkable technological advancements, particularly in artificial intelligence (AI). AI enabled machines to simulate human learning, comprehension, problem-solving, decision-making, creativity, and autonomy (Stryker & Kavlakoglu, 2024).

In the Philippines, the Department of Education (DepEd) recognizes the transformative potential of AI and has established the Education Center for AI Research to support AI-driven innovations in teaching and learning (DepEd, 2025). Globally, AI integration in education has gained significant attention due to its ability to personalize learning through adaptive platforms, real-time feedback, and simulations. These tools have been shown to enhance student engagement and comprehension, particularly in science education (Almusaed et al., 2023). Similarly, Almasri (2024) found that AI fosters active participation, strengthens understanding of scientific concepts, and boosts student motivation. Also, educators and administrators recognize AI as a powerful tool that can enhance instruction, simplify administrative work, and improve research productivity. While they acknowledge AI's potential to support learning and



offer practical applications, they remain cautious of its limitations, particularly its inability to fully capture real-life experiences. Although teachers generally hold positive views toward AI, concerns about cheating, data fabrication, reduced creativity, and declining critical thinking skills persist (Giray et al., 2024).

The AI tools such as chatbots, simulations, and interactive platforms support science learning by accommodating individual needs, addressing cognitive challenges, and promoting personalized instructional practices (Mangubat et al., 2025). Studies also show that ChatGPT, Quillbot, and Grammarly are among the most frequently used tools, indicating students' preference for applications that support writing and content refinement (Cervantes & Navarro, 2025). Supporting this, Vieriu and Petrea (2025) revealed that 95.6% of students use AI for academic purposes, including tools like ChatGPT, Siri, and Google Assistant, which provide personalized learning opportunities and greater access to educational resources.

Furthermore, students generally hold positive attitudes toward AI in education. Herawati et al. (2024) found that many perceive AI as a tool that enhances learning experiences and broadens access to information. Attitudes toward AI are shaped by affective, cognitive, and behavioral components. Cervantes and Navarro (2025) further reported that students view AI tools as highly useful and easy to use, showing strong intent to continue utilizing them in their academic tasks. Additionally, students recognize AI's benefits in improving learning quality and providing continuous feedback, contributing to positive perceptions of AI-supported learning (Idroes et al., 2023). These positive attitudes often encourage ethical and responsible use of AI, as highlighted by Bianan et al. (2025). Another study by Gonzalez and Nabua (2025) indicated a correlation between students' attitudes toward AI integration and their academic performance, suggesting that favorable perceptions may positively influence learning outcomes. This aligns with the Technology Acceptance Model (TAM), which explains that perceived usefulness and positive attitudes increase the likelihood of effective AI use in learning. When students view AI as beneficial, they tend to develop better understanding, stronger engagement, and improved academic performance (Davis, 1989).

Despite these advantages, the integration of AI also presents challenges. Concerns include data privacy, ethical risks, excessive dependence on AI, reduced critical thinking, and the potential for inaccurate or biased information (Krvavica et al., 2025). Students acknowledge AI's efficiency but question its impact on learning quality and academic integrity, emphasizing the importance of responsible and balanced AI use in education (Fošner, 2024). Consequently, establishing a clear ethical framework is necessary to maximize AI's benefits while minimizing its risks. Addressing issues related to accuracy, cognitive engagement, and ethical practices is essential for effective and responsible AI adoption in learning environments (Vieriu & Petrea, 2025).

In the Philippine context, research on AI in education is expanding; however, most studies focus on higher education and senior high school settings. Limited research has explored AI use among junior high school students, especially in relation to science learning. Although some studies highlight AI's role in enhancing critical thinking and science process skills, insufficient attention has been given to its specific impact on science learning at the junior high school level (Rodrigo, 2024). To address these gaps, the present study seeks to identify the most commonly used AI tools in science learning, examine students' attitudes toward AI, determine the perceived usefulness of AI in science education, and assess the academic performance of junior high school students at Dupax Del Sur National High School. Understanding students' perspectives can provide valuable insights for developing a training program that promotes responsible AI use, ensures equitable access, and enhances science learning outcomes.

### Conceptual Framework

The Technology Acceptance Model (TAM), developed by Davis (1989), is a well-established theoretical framework in information systems research that explains how users come to accept and adopt new technologies. The actual technology use is primarily determined by an individual's behavioral intention, which in turn is influenced by key cognitive and affective factors. As intention to use a technology strengthens, the likelihood of its adoption correspondingly increases (Scherer et al., 2019).

Within the TAM framework, attitudes toward AI reflect students' overall willingness to integrate AI into their learning activities and their perceptions of its educational value (Al-Rahmi et al., 2021). TAM highlights attitude as a critical determinant of technology acceptance, emphasizing that favorable attitudes significantly increase the probability of adoption. Students who hold positive attitudes toward AI may perceive it as a supportive tool that enhances learning efficiency and conceptual understanding, whereas those with negative attitudes may view it as a threat to autonomy or academic integrity (Alejandro et al., 2024). Another central construct of TAM is perceived usefulness, defined as the degree to which an individual believes that using a particular technology will enhance task performance, productivity, or goal attainment (Davis, 1989). Perceived usefulness has consistently been identified as one of the strongest predictors of technology acceptance. In the context of AI-assisted learning, Wang et al. (2021) demonstrated that



students who perceived AI-powered personalized learning tools as useful were more likely to regard them as valuable components of their educational experience and to accept their integration into instructional practices.

The relationship between attitude toward AI and perceived usefulness of AI, Du et al. (2025) found that perceived usefulness positively influences users' attitudes, indicating that when students recognize tangible benefits from a system, they are more likely to develop favorable dispositions toward its use. Similarly, Vieriu and Petrea (2025) reported that students believe AI contribute positively to their academic performance in assessments, projects, and overall grades. Gonzales and Nabua (2025) likewise identified a significant association between students' attitudes toward AI integration and academic performance, suggesting that positive perceptions of AI may translate into improved learning outcomes.

The TAM informed variable selection by identifying students' attitudes toward AI and perceived usefulness of AI as the primary independent variables relevant to technology acceptance in science learning. These constructs were selected based on TAM's premise that positive attitudes and strong perceptions of usefulness increase the likelihood of technology adoption and effective utilization in educational settings. The survey questionnaire were also constructed based on TAM-based instruments and use the context of AI use in science education. The attitude scale measured students' positive or negative evaluations of AI integration in science learning, while the perceived usefulness scale assessed students' beliefs regarding the extent to which AI enhances their understanding of scientific concepts, learning efficiency, and academic performance. Additionally, TAM shaped data analysis and interpretation by serving as the analytical lens through which the relationships among attitudes toward AI, perceived usefulness, and academic performance were examined.

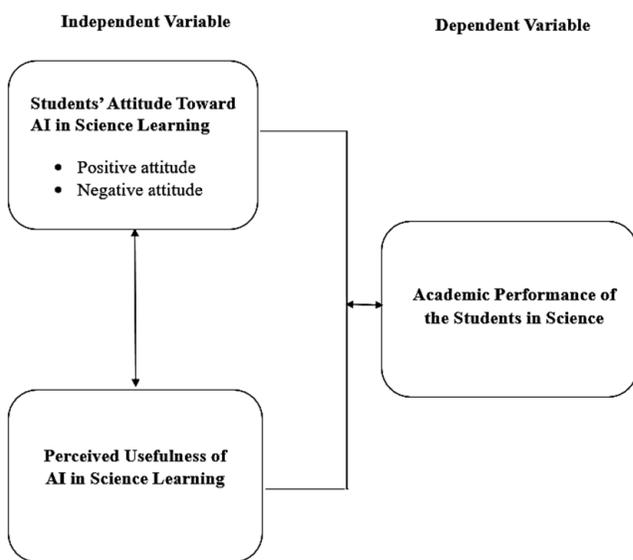


Figure 1. Conceptual framework of the study showing the relationship of the Independent and Dependent variables.

Figure 1 presents the conceptual framework of the study, which includes the independent variables students' attitudes toward AI in science learning (positive or negative) and perceived usefulness of AI in science learning and their potential influence on the dependent variable, academic performance of Junior High School students, as measured by their transmuted grades for the second quarter.

**Statement of the Problem**

Artificial intelligence (AI) has become increasingly integrated into science education, providing students with easy access to digital tools that support learning, information processing, and academic tasks. While many students recognize the efficiency and usefulness of AI, existing studies have also raised concerns related to data privacy, ethical issues, excessive reliance on AI that may weaken critical thinking skills, the potential for inaccurate or biased information, and threats to academic integrity. Despite the growing body of research on AI in education, most empirical



studies have focused on higher education and senior high school contexts, with limited attention given to junior high school learners, particularly in Philippine public schools.

This lack of localized and level-specific evidence presents a gap in understanding how junior high school students perceive AI, how useful they consider it in science learning, and how these perceptions relate to their academic performance. Without such understanding, schools may struggle to design appropriate interventions that promote responsible and ethical AI use. Addressing this gap is necessary to guide educators and policymakers in developing evidence-based training programs that support the effective, ethical, and meaningful integration of AI in junior high school science learning.

## Research Objectives

### General Objective

To assess students' attitudes toward artificial intelligence (AI) and their perceived usefulness of AI in science learning among junior high school students at Dupax Del Sur National High School, as a basis for proposing a training program that promotes the responsible use of AI in science learning.

### Specific Objectives

1. To identify the most commonly used AI tools in science learning.
2. To determine the level of students' attitudes toward the use of AI in science learning.
3. To evaluate the level of students' perceived usefulness of AI in science learning.
4. To examine the level of students' academic performance in science.
5. To determine the relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning.
6. To determine the relationship between students' attitudes toward AI, their perceived usefulness of AI, and their academic performance in science.

## Research Questions

1. What are the most commonly used AI tools in science learning?
2. What is the level of students' attitudes toward the use of AI in science learning?
3. What is the level of students' perceived usefulness of AI in science learning?
4. What is the level of students' academic performance in science?
5. Is there a significant relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning?
6. Is there a significant relationship between students' attitudes toward AI, their perceived usefulness of AI, and their academic performance in science?

## Hypotheses

The following hypotheses were tested at the 0.05 level of significance:

### Hypothesis 1

- $H_{01}$ : There is no significant relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning.
- $H_{a1}$ : There is a significant relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning.

### Hypothesis 2

- $H_{02}$ : There is no significant relationship between students' attitudes toward AI, their perceived usefulness of AI, and their academic performance in science.
- $H_{a2}$ : There is a significant relationship between students' attitudes toward AI, their perceived usefulness of AI, and their academic performance in science.

## METHODS

### Research Design

This study employed a descriptive–correlational research design. This quantitative approach was utilized to examine the relationships among variables without manipulating them. Using this design, the researchers were able to observe and analyze how two or more variables interact within their natural settings (Barooh, 2025). The primary

149



purpose of correlational research is to determine the nature and strength of relationships among variables and to identify patterns that may be used to predict potential outcomes based on existing data. Accordingly, this research design was deemed appropriate for examining the relationships between students' attitudes toward AI, and their perceived usefulness of AI, as well as how these variables relate to students' academic performance in science.

### Population and Sampling

The participants in this study were junior high school students enrolled at Dupax del Sur National High School. They were deliberately selected as participants based on the criterion that they were originally enrolled at the school and were not transferees. From a total population of 415 students, a sample of 246 respondents was selected using simple random sampling. This sampling technique ensures that each member of the population has an equal and independent chance of being included in the study, thereby reducing selection bias and enhancing the representativeness of the sample (Thomas, 2023).

The study was conducted at Dupax del Sur National High School, a public secondary school situated in a rural setting. This context provides a relevant and meaningful environment for examining students' attitudes toward AI and their perceived usefulness of AI in science learning, as rural schools often encounter distinct challenges and opportunities related to technology access and integration. Focusing on this setting allows the study to capture authentic student experiences with AI in science learning.

### Instruments

The study employed a self-developed survey questionnaire anchored in the TAM (Davis, 1989). The instrument consisted of three sections: (1) demographic information, including age, sex, grade level, and second-quarter science performance; (2) commonly used AI tools in science learning; and (3) students' attitudes toward AI and perceived usefulness of AI in science learning, comprising 20 TAM-based items contextualized for science education.

Items in Sections II and III were rated using a five-point Likert scale ranging from *Strongly Agree* to *Strongly Disagree*. Content validity was established through expert review conducted by four junior high school science teachers with at least ten years of teaching experience and demonstrated expertise in science instruction and educational technology. A pilot test involving 30 students from another school was conducted, and reliability analysis using Cronbach's alpha yielded coefficients of 0.81 for the attitude scale and 0.88 for the perceived usefulness scale. These results indicate satisfactory internal consistency and confirm the instrument's suitability for the study.

### Data Collection

Following the finalization of the research instrument, data collection was conducted using Google Forms as the primary survey platform. The study was conducted at Dupax del Sur National High School after securing formal permission from the school administration. Once approval was granted, the survey questionnaire was administered to the randomly selected Junior High School students.

The data collection was conducted during the second quarter of School Year 2024–2025. Participants were provided with sufficient time to complete the questionnaire to ensure thoughtful and accurate responses. Upon completion of data collection, all responses were systematically reviewed for completeness and consistency. The verified data were then organized, coded, and prepared for statistical analysis.

### Treatment of Data

The collected data were coded using Microsoft Excel and analyzed with the SPSS. Descriptive statistics, including frequencies and percentages, were used to identify the AI tools most commonly used by students in science learning. Means and standard deviations were computed to determine the levels of students' attitudes toward AI and their perceived usefulness of AI in science learning. Pearson's product-moment correlation coefficient ( $r$ ) was employed to determine the relationships between students' attitudes toward AI, perceived usefulness of AI, and academic performance in science. The results were presented in tables and figures to support clear interpretation of the findings.

### Ethical Considerations

Ethical standards were strictly observed throughout the conduct of the study, particularly during the data collection process. The researchers ensured full compliance with the Data Privacy Act of 2012, thereby safeguarding the confidentiality, privacy, and security of all information collected from the student participants. Prior to data collection, permission was obtained from the school administration, and informed consent forms were distributed to all selected respondents. The purpose of the study, along with the rights of the participants, was clearly explained. Participants were informed that their involvement was entirely voluntary and that they could withdraw from the study



at any time without penalty. To protect participants' identities, all responses were treated as anonymous and confidential. Collected data were securely stored and made accessible only to the research team, ensuring that ethical principles of respect, confidentiality, and responsible data management were consistently upheld.

## RESULTS and DISCUSSION

This section presents the tables showing the commonly used AI tools in science learning, the level of students' attitudes toward AI, their perceived usefulness of AI in science learning, and students' academic performance in science. It also examines the relationships between students' attitudes toward AI and perceived usefulness of AI, as well as how these variables relate to students' academic performance in science.

### Profile of the Respondents on AI Tools Used in Science Learning

The table below presents the most commonly used AI tools used in science learning among the Junior High School students.

Table 1. Frequency and Percentage of AI Tools Used in Science Learning

AI Tools	Frequency	Percentage (%)
ChatGPT	143	36.11
Cici	104	26.26
Meta AI	70	17.68
Google Gemini	64	16.16
Others	15	3.80
<b>Total</b>	<b>396</b>	<b>100 %</b>

These results suggest that students tend to favor AI tools that offer conversational interfaces and immediate feedback, as these features may enhance conceptual understanding and support independent learning in science. The predominance of ChatGPT indicates a preference for platforms that facilitate explanations, problem-solving, and content clarification, thereby making science learning more accessible and engaging. The total frequency exceeded the number of respondents because students were permitted to select more than one AI tool used in science learning.

Furthermore, these findings are consistent with the studies of Cervantes and Navarro (2025) and Vieriu and Petrea (2025), which emphasize the widespread popularity of ChatGPT in educational settings. Their studies highlight that ChatGPT's capacity to deliver personalized learning experiences and expand access to educational resources significantly contributes to its frequent use among learners.

### Profile of the Respondents on the Level of Attitudes Toward the Use of AI in Science Learning

The table below presents the level of students' attitudes toward the use of AI in science learning.

Table 2. Level of Students' Attitudes Toward the Use of AI in Science Learning

Students' Attitudes Toward the Use of AI in Science Learning	Mean	Standard Deviation	Qualitative Description
1. I think using AI tools in my science subject makes my learning effective and meaningful.	3.70	0.77	Positive Attitude
2. I am concerned about ethical issues, data privacy, and transparency when using AI tools for my science schoolwork.	2.21	0.61	Negative Attitude
3. I find AI makes learning science easier by giving suggestions, feedback, and lessons that match my own pace and needs.	3.75	0.77	Positive Attitude
4. I believe AI cannot completely replace important aspects of science learning, such as hands-on experiments, creativity, and deep understanding.	2.29	1.02	Negative Attitude
5. I feel more motivated and interested in science when AI tools are part of my learning experience.	3.31	0.86	Neutral Attitude
6. I am concerned that relying on AI in science learning might decrease my effort to think critically or solve problems independently.	2.09	0.71	Negative Attitude



7.I experience more engagement and motivation in science when I use AI tools.	3.29	0.89	Neutral Attitude
8.I worry that AI tools could give inaccurate, biased, or misleading information in science.	2.09	0.69	Negative Attitude
9.I benefit from AI tools because they provide explanations, extra resources, or guided assistance when I study science.	3.78	0.75	Positive Attitude
10.I feel uneasy relying on AI because it might lower my confidence in using my own reasoning or doing original work.	2.15	0.69	Negative Attitude
<b>Overall Mean</b>	<b>2.29</b>	<b>0.35</b>	<b>Neutral Attitude</b>

<i>Scale</i>	<i>Range</i>	<i>Qualitative Description</i>
5	4.21-5.00	Very Positive Attitude
4	3.41- 4.20	Positive Attitude
3	2.61-3.40	Neutral Attitude
2	1.81-2.60	Negative Attitude
1	1.00-1.80	Very Negative Attitude

The findings indicate that students perceive AI as a supportive learning tool that enhances their understanding of science, particularly through explanations, personalized feedback, and access to supplementary learning resources. However, the overall neutral attitude observed in the quantitative results suggests that students are not fully convinced of the reliability of AI technologies. While they acknowledge several benefits of AI in science learning, they concurrently express reservations regarding its use. This may reflect limited experience or exposure to AI tools, as well as insufficient knowledge of how to effectively integrate these technologies into science learning.

A neutral attitude further implies that students are open to using AI but remain critical and selective in its application, underscoring the need for appropriate guidance, ethical awareness, and the responsible integration of AI in science education (Bianan et al., 2025). Concerns related to ethical issues, data privacy, overdependence, diminished critical thinking, and the potential for biased or inaccurate information are consistent with the findings of Kravica et al. (2025), who reported similar apprehensions among learners. Although students recognize the efficiency of AI, their cautious stance aligns with Fošner's (2024) assertion that learners often question the implications of AI for learning quality and academic integrity. Consequently, the present findings support the recommendation of Vieriu and Petrea (2025) to establish clear ethical guidelines and responsible AI practices to ensure that AI enhances learning without undermining cognitive engagement or ethical standards.

**Profile of the Respondents on the Level of their Perceived Usefulness of AI in Science Learning**

The table below presents the level of students' perceived usefulness of AI in science learning.  
Table 3. Level of Students' Perceived Usefulness of AI in Science Learning

<b>Students' Perceived Usefulness of AI in Science Learning</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Qualitative Description</b>
1.AI supports my understanding of difficult science topics by offering personalized feedback and customized learning materials.	3.70	0.81	Useful
2.AI tools help me work more efficiently, saving time when completing assignments and research tasks.	3.78	0.75	Useful
3.AI improves my academic performance by giving additional learning resources that support my science studies.	3.39	0.90	Moderately Useful
4.AI makes accessing relevant information and learning materials more accessible based on my academic needs.	3.54	0.75	Useful



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5. AI provides immediate feedback that helps me improve my understanding of science topics.	3.68	0.78	Useful
6. AI helps me study more effectively by organizing information in a clear and understandable way.	3.60	0.82	Useful
7. AI tools make learning science quicker and more efficient compared to traditional methods.	3.30	0.92	Moderately Useful
8. AI tools keep me motivated and engaged while learning science.	3.37	0.89	Moderately Useful
9. AI improves my confidence in science learning by providing reliable information, clear communication, and real-time assistance.	3.49	0.82	Useful
10. AI supports my ongoing skill development and keeps me updated with the latest knowledge in science.	3.60	0.78	Useful
<b>Overall Mean</b>	<b>3.54</b>	<b>0.57</b>	<b>Useful</b>

<b>Scale</b>	<b>Range</b>	<b>Qualitative Description</b>
5	4.21-5.00	Very Useful
4	3.41- 4.20	Useful
3	2.61-3.40	Moderately Useful
2	1.81-2.60	Slightly Useful
1	1.00-1.80	Not Useful

The findings suggest that students view AI as a practical and helpful tool that supports efficiency, understanding, and access to learning resources in science. In particular, AI's strongest value lies in saving time, providing immediate feedback, and helping students understand complex scientific topics. Nevertheless, the relatively lower ratings related to motivation and academic performance imply that AI alone may not be sufficient to fully engage students or significantly boost achievement. This underscores the importance of integrating AI thoughtfully into science instruction.

These results are reliable with studies showing that AI tools such as chatbots, simulations, and interactive platforms support science learning by accommodating individual needs, addressing cognitive challenges, and promoting personalized instructional practices (Mangubat et al., 2025). Similarly, Almasri (2024) reported that AI fosters active participation, strengthens understanding of scientific concepts, and increases student motivation. And those students who perceived AI-powered personalized learning tools as more useful were more likely to accept and value them as integral resources in their educational experience (Wang et al., 2021).

**Profile of the Respondents on Academic Performance in Science**

The table below presents the academic performance of students in the science subject.

Table 4. Level of Students' Academic Performance in Science

<b>Performance Level</b>	<b>Frequency</b>	<b>Percentage %</b>
Outstanding	110	44.7
Very Satisfactory	69	28.0
Satisfactory	42	17.1
Fairly Satisfactory	25	10.2
Did not meet expectations	0	0
<b>Total</b>	<b>246</b>	<b>100%</b>

<b>Grade</b>	<b>Qualitative Description</b>
90-100	Outstanding
85-89	Very Satisfactory



80-84  
75-79  
60-74

Satisfactory  
Fairly Satisfactory  
Did not meet expectations

The findings denote that students are generally performing well in science, with most achieving Outstanding performance. This suggests that the current teaching strategies, learning resources, and support systems are largely effective in helping students meet and even exceed academic expectations. Still, the presence of students in the Satisfactory and Fairly Satisfactory categories indicates the need for continued academic support. In particular, providing additional learning opportunities, such as introducing AI tools that can help explain complex science concepts, may further enhance students' understanding and performance. Although the absence of students who did not meet expectations reflects a positive learning environment, continuous monitoring and targeted interventions remain important to ensure that all students are supported in reaching higher levels of academic achievement in science.

These findings further suggest that innovative instructional tools, including AI, have the potential to support and enhance science learning outcomes. However, as noted by Rodrigo (2024), while several studies emphasize AI's role in improving critical thinking and science process skills, limited attention has been given to its specific impact on science learning at the junior high school level. The present results therefore highlight the importance of guiding students in the effective integration of AI into their science learning. By aligning classroom instruction with appropriate AI-supported strategies, educators may better address the diverse needs of students across performance levels and maximize the potential of AI to improve academic achievement in science.

**Relationship between Students' Attitudes Toward AI and their Perceived Usefulness of AI in Science Learning**

The table below presents the correlation between students' attitudes toward AI and their perceived usefulness of AI in science learning.

Table 5. Relationship Between Students' Attitudes Toward AI and Their Perceived Usefulness of AI in Science Learning

Perceived Usefulness of AI in Science Learning			
	Pearson's r	p-value Sig.(2-tailed)	Remark
Attitudes toward AI in Science Learning	0.524	<.001	Significant

The findings imply that students' attitudes toward AI play an important role in shaping how useful they believe AI is for their science learning. When students are open, comfortable, and positive about AI, they are more likely to view it as a helpful learning tool rather than a threat. Consequently, this highlights the importance of creating positive and supportive experiences with AI in science learning.

These findings are consistent with the TAM, which explains that users' attitudes and perceived usefulness significantly influence their acceptance and use of technology. According to Du et al. (2025), perceived usefulness has a positive effect on users' attitudes, suggesting that individuals who view a system as beneficial are more likely to develop favorable attitudes toward it. In this context, the moderate positive relationship found in the present study supports TAM's assertion that students who perceive AI as useful are more inclined to hold positive attitudes toward its use in learning science.

**Relationship Between Students' Attitudes Toward AI and Their Perceived Usefulness of AI in Relation to Academic Performance in Science**

Table 6. Relationship Between Students' Attitudes Toward AI and Their Perceived Usefulness of AI in Relation to Their Academic Performance in Science

Academic Performance in Science			
	Pearson's r	p-value Sig. (2-tailed)	Remarks
Attitudes toward AI in Science Learning	-.139	.029	Significant
Perceived Usefulness of AI in Science Learning	-.052	.414	Not Significant

The findings revealed a very weak yet statistically significant negative relationship between students' attitudes toward AI and their academic performance ( $r = -.139$ ). This result suggests that although students may be open to



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or enthusiastic about using AI, such attitudes are not necessarily associated with improved learning outcomes in science. This finding is consistent with the study of Gonzalez and Nabua (2025), who reported that students' attitudes toward AI integration are related to academic performance but emphasized that favorable perceptions alone do not automatically guarantee academic gains. In the present study, the negative direction of the relationship may reflect patterns of AI use in which positive attitudes are not accompanied by sufficient instructional guidance, potentially corresponding with reduced cognitive engagement in science learning.

Similarly, the non-significant relationship between perceived usefulness of AI and academic performance indicates that recognizing AI as useful does not necessarily correspond with better academic outcomes. This finding is consistent with Cervantes and Navarro (2025), who observed that although students often perceive AI tools as useful and easy to use, such perceptions are more closely associated with their intention to continue using AI rather than with measurable academic achievement. This pattern suggests that perceived usefulness may be associated with usage behavior without necessarily being linked to performance unless AI is effectively integrated into learning practices.

Furthermore, these results are consistent with the observations of Fošner (2024), who noted that students acknowledge the efficiency of AI while simultaneously questioning its implications for learning quality and academic integrity. Such concerns may help explain why perceived usefulness alone was not significantly related to academic performance in this study. In the absence of clear pedagogical guidance, students may engage with AI primarily for convenience rather than for deeper conceptual understanding, thereby limiting its educational value. In this regard, Vieriu and Petrea (2025) emphasized the importance of ethical frameworks, accuracy, and cognitive engagement in maximizing the educational value of AI in learning environments. The present findings are consistent with this perspective, indicating that students' attitudes and perceived usefulness of AI may need to be complemented by structured, ethical, and pedagogically grounded implementation to be meaningfully associated with academic performance.

Moreover, the results resonate with Rodrigo (2024), who highlighted that despite growing interest in AI's role in developing critical thinking and science process skills, limited research has examined its specific association with junior high school science learning. The weak relationships observed in this study suggest that the potential educational benefits of AI at this level may remain underutilized, possibly due to insufficient student knowledge and guidance regarding its appropriate use. While some studies report that students perceive AI as beneficial for examinations, projects, and overall grades (Vieriu & Petrea, 2025), the present findings emphasize that meaningful academic improvement is more closely associated with how effectively and responsibly AI is integrated into science learning rather than with attitudes or perceived usefulness alone.

## Conclusions

This study examined students' attitudes toward AI and their perceived usefulness of AI in science learning. The results indicate that the most commonly used AI tools were ChatGPT, Cici, and Meta AI. This reflects students' preference for tools that provide conversational interfaces and immediate feedback, which may support understanding and independent learning. Overall, students' attitudes toward AI were neutral, indicating cautious acceptance. While students recognized AI as a supportive tool that aids comprehension through explanations, personalized feedback, and access to additional learning resources, they also expressed uncertainty regarding its reliability. This finding underscores the need for appropriate guidance, ethical awareness, and responsible integration of AI in science education.

Students' perceived usefulness of AI in science learning was rated as useful, particularly in terms of improving efficiency, enhancing understanding, and expanding access to learning resources. However, its perceived contribution to motivation and academic performance was limited, highlighting the importance of carefully integrating AI into science instruction. In terms of academic performance, students generally achieved an Outstanding performance, suggesting that existing teaching strategies, learning resources, and support systems are effective. Nevertheless, the presence of students in the Satisfactory and Fairly Satisfactory categories points to the need for continued academic support, including additional learning opportunities such as AI-assisted explanations of complex scientific concepts.

The analysis revealed a statistically significant relationship between students' attitudes toward AI and their perceived usefulness of AI in science learning. This finding indicates that students who hold more positive and comfortable attitudes toward AI tend to perceive it as more useful in their science learning. Such a relationship emphasizes the importance of fostering supportive and well-structured experiences with AI in the classroom.

Furthermore, students' attitudes toward AI showed a small but statistically significant relationship with academic performance. This weak association suggests that positive attitudes toward AI are not necessarily linked to higher academic achievement and may, in some cases, be associated with patterns of use that limit sustained engagement with learning materials. In contrast, perceived usefulness of AI was not significantly related to academic

155



performance, indicating that awareness of AI's potential benefits alone may be insufficient without guided and responsible use. The differing patterns observed between attitudes, perceived usefulness, and academic performance highlight the need for targeted training and instructional strategies that promote ethical, purposeful, and effective use of AI to support meaningful improvements in science learning outcomes.

### Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed to support the effective, ethical, and pedagogically sound use of AI in junior high school science learning. Given students' generally neutral attitudes and concerns regarding the reliability of AI tools, structured instructional guidance is necessary to clarify how AI can meaningfully support conceptual understanding, problem-solving, and inquiry-based learning while preserving students' active engagement with scientific content. Rather than functioning as optional or supplementary resources, AI tools may yield greater educational value when deliberately embedded within instructional designs, such as through AI-supported explanations, formative feedback, and reflective questioning aligned with clearly defined learning objectives.

Furthermore, attention to ethical and responsible AI use is likewise essential, particularly in addressing issues related to accuracy, academic integrity, and potential overreliance. Learning activities that promote critical evaluation, verification of AI-generated information, and awareness of data privacy concerns may help cultivate responsible and discerning use of AI in science contexts. Although overall academic performance was rated as Outstanding, the presence of students performing at lower levels underscores the need for continued academic support. In this regard, AI-assisted tools may contribute to differentiated instruction by providing targeted feedback, additional practice, or simplified explanations for learners who require further assistance with complex scientific concepts. Moreover, as students' attitudes toward AI were significantly associated with perceived usefulness, classroom experiences that encourage informed, balanced, and reflective perspectives on AI may help strengthen its meaningful adoption in science learning. Lastly, future research may explore additional factors influencing the relationship between AI use and academic performance, including frequency and type of AI-supported tasks, teacher facilitation, and students' digital literacy, with experimental approaches offering deeper insight into the effective integration of AI in junior high school science education.

### REFERENCES

- Al-Rahmi, W. M., Yahaya, N., Alamri, M. M., Alyoussef, I. Y., Al-Rahmi, A. M., & Kamin, Y. B. (2021). Integrating innovation diffusion theory with the technology acceptance model: Supporting students' attitude towards using a massive open online courses (MOOCs) system. *Interactive Learning Environments*, 29(8), 1380–1392. <https://eric.ed.gov/?id=EJ1324188>
- Alejandro, I. M. V., Sanchez, J. M. P., Sumalinog, G. G., Mananay, J. A., Goles, C. E., & Fernandez, C. B. (2024). Pre-service teachers' technology acceptance of artificial intelligence (AI) applications in education. *STEM Education*, 4(4), 445–465. <https://doi.org/10.3934/steme.2024024>
- Almasri, F. (2024). Exploring the impact of artificial intelligence in teaching and learning of science: A systematic review of empirical research. *Research in Science Education*, 54, 977–997. <https://doi.org/10.1007/s11165-024-10176-3>
- Almusaed, A., Almssad, A., Yitmen, I., & Homod, R. Z. (2023). Enhancing student engagement: Harnessing AIED's power in hybrid education—A review analysis. *Education Sciences*, 13(7), 632. <https://doi.org/10.3390/educsci13070632>
- Barooah, I. (2025). Descriptive correlational research design: Best practices and examples. *Merren*. <https://merren.io/descriptive-correlational-research/>
- Bianan, N. M., Eufrazio, F. M. G., Gareza, A. G., Panes, R. D., & Cabatac, R. T. (2025). Exploring attitude and responsible use of AI among university students. *United International Journal for Research & Technology*, 6(7). <https://doi.org/10.13140/RG.2.2.24677.92649>
- Cervantes, J., & Navarro, E. (2025). Business students' perceptions of AI in higher education: An analysis using the technology acceptance model. *Journal of Interdisciplinary Perspectives*, 3(6), 6–12. <https://doi.org/10.69569/jip.2025.194>



Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340. <https://doi.org/10.2307/249008>

Department of Education. (2025). DepEd launches AI center for education. <https://www.deped.gov.ph/2025/02/20/deped-launches-ai-center-for-education/>

Du, T. T., Dung, D. T. B., Ly, H. T. B., Huong, N. T. K., Triet, A. M., & Xuan, N. T. (2025). Students' perceptions of artificial intelligence in academic writing: A case at a university in Vietnam. *Eurasian Journal of Applied Linguistics*, 11(2), 122–134. <https://doi.org/10.32601/ejal.11210>

Fošner, A. (2024). University students' attitudes and perceptions towards AI tools: Implications for sustainable educational practices. *Sustainability*, 16(19), 8668. <https://doi.org/10.3390/su16198668>

Giray, L., De Silos, P. Y., Adornado, A., Buelo, R. J. V., Galas, E., Reyes-Chua, E., Santiago, C., & Ulanday, M. L. (2024). Use and impact of artificial intelligence in Philippine higher education: Reflections from instructors and administrators. *Internet Reference Services Quarterly*, 28(3). <https://doi.org/10.1080/10875301.2024.2352746>

Gonzales, D. K. P., & Nabua, E. B. (2025). Learners' perception of AI utilization in education and their conceptual understanding in Grade 11 life science. *International Journal of Research and Innovation in Social Science*. <https://doi.org/10.47772/IJRISS.2025.903SEU0040>

Hajam, K. B., & Gahir, S. (2024). Unveiling the attitudes of university students toward artificial intelligence. *Journal of Educational Technology Systems*, 52(3), 335–345. <https://doi.org/10.1177/00472395231225920>

Herawati, A. A., Yusuf, S., Ilfiandra, Taufik, A., & Habibi, A. S. Y. (2024). Exploring the role of artificial intelligence in education: Students' preferences and perceptions. *Al-Ishlah: Jurnal Pendidikan*, 16(2), 1029–1040. <https://doi.org/10.35445/alishlah.v16i2.4784>

Idroes, G. M., Noviandry, T. R., Maulana, A., Irvanizam, I., Jalil, Z., Lenisoni, L., Lala, A., Abas, A. H., Tallei, T. E., & Idroes, R. (2023). Student perspectives on the role of artificial intelligence in education: A survey-based analysis. *Journal of Educational Management and Learning*, 1(1). <https://doi.org/10.60084/jeml.v1i1.58>

Jia, F., Sun, D., & Looi, C. (2023). Artificial intelligence in science education (2013–2023): Research trends in ten years. *Journal of Science Education and Technology*, 33(1), 94–117. <https://doi.org/10.1007/s10956-023-10077-6>

Kan'an, D. A. F. (2025). Exploring students' attitudes toward integrating artificial intelligence (AI) in STEM learning. *Middle Eastern Journal of Educational Psychology Studies*, 5(3), 368–389. <https://doi.org/10.56961/mejeps.v5i3.1084>

Kim, H. S. (2021). Is it beneficial to use AI chatbots to improve learners' speaking performance? *Journal of Asia TEFL*, 18(1), 161–178. <https://doi.org/10.18823/asiatefl.2021.18.1.10.161>

Krvavica, A., Papić, A., & Micunovic, M. (2025). Students' attitudes towards the opportunities and challenges of generative artificial intelligence in the academic environment. *TEM Journal*, 14(2), 1520–1530. <https://doi.org/10.18421/TEM142-51>

Mangubat, M., Manait, K., Marianito, L. J., & Embang, S. (2025). Learning gaps in science education through AI: Scale development among junior high school students in a laboratory high school. *Journal of Interdisciplinary Perspectives*, 3(10), 255–267. <https://doi.org/10.69569/jip.2025.606>

Milicevic, N., Kalas, B., Djokic, N., Malcic, B., & Djokic, I. (2024). Students' intention toward artificial intelligence in the context of digital transformation. *Sustainability*, 16(9), 3554. <https://doi.org/10.3390/su16093554>

National Privacy Commission. (2012). Republic Act 10173: Data Privacy Act of 2012. <https://privacy.gov.ph/data-privacy-act/>



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Pande, K., Sonawane, S., Jadhav, V., & Mali, M. (2023). Artificial intelligence: Exploring the attitude of secondary students. *Journal of e-Learning and Knowledge Society*, 19 (3), 43–48. <https://doi.org/10.20368/1971-8829/1135865>

Rodrigo, M. M. T. (2024). Using artificial intelligence to support basic education teachers in under-resourced contexts. *University of the Philippines Center for Integrative and Development Studies*. [https://cids.up.edu.ph/wp-content/uploads/2024/12/Rodrigo\\_UPCIDS\\_Using-Artificial-Intelligence-to-Support-Basic-Education-Teachers-in-Under-resourced-Contexts.pdf](https://cids.up.edu.ph/wp-content/uploads/2024/12/Rodrigo_UPCIDS_Using-Artificial-Intelligence-to-Support-Basic-Education-Teachers-in-Under-resourced-Contexts.pdf)

Serdenia, J. R., Dumagay, A. H., Balasa, K., Capacio, E., & Lauzon, L. (2025). Attitude, acceptability, and perceived effectiveness of artificial intelligence in education: A quantitative cross-sectional study among future teachers. *LatIA*, 3-313. <https://www.researchgate.net/publication/393690129>

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers & Education*, 128, 13–35. <https://doi.org/10.1016/j.compedu.2018.09.009>

Stryker, C., & Kavlakoglu, E. (2024). What is artificial intelligence (AI)? *IBM*. <https://www.ibm.com/topics/artificial-intelligence>

Sultana, A., Abdul Latheef, N., Siby, N., & Ahmad, Z. (2025). Exploring students' attitudes toward artificial intelligence (AI): Psychometric validation of AI-attitude scale. *SAGE Open*, 15 (4). <https://doi.org/10.1177/21582440251378375>

Thomas, L. (2023). Simple random sampling: Definition, steps & examples. <https://www.scribbr.com/methodology/simple-random-sampling/>

Vieriu, A. M., & Petrea, G. (2025). The impact of artificial intelligence (AI) on students' academic development. *Education Sciences*, 15 (3), 343. <https://doi.org/10.3390/educsci15030343>

Wang, Y., Liu, C., & Tu, Y.-F. (2021). Factors affecting the adoption of AI-based applications in higher education. *Educational Technology & Society*, 24(3), 116–129. <https://eric.ed.gov/?id=EJ1306390>



## Assessment on the capability of criminology educators handling Forensic Science subjects in the First District of Northern Samar

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### Abstract

**Aim:** This study aimed to assess the capability of criminology educators handling forensic science subjects in the First District of Northern Samar, focusing on their professional status, instructional capability, and challenges encountered in delivering forensic science instruction.

**Methodology:** The study employed a convergent mixed-methods research design. Quantitative data were gathered through a descriptive–correlational survey administered to fourth-year Bachelor of Science in Criminology students, while qualitative data were obtained through structured interviews with criminology educators handling forensic science subjects. Data were analyzed using frequency and percentage distribution, weighted mean, Pearson product–moment correlation, independent–samples t-test, and thematic analysis.

**Results:** Findings revealed that criminology educators demonstrated adequate pedagogical competence but only a moderate level of technical proficiency in forensic laboratory applications and industry-related experience. Significant relationships were found between educators’ forensic specialization and training and their instructional capability, while years of teaching experience showed no significant association. Major challenges identified included limited access to specialized forensic training, inadequate laboratory facilities, and insufficient institutional support.

**Conclusion:** The study concludes that while criminology educators possess foundational teaching competencies, gaps remain in technical and practical forensic expertise. Addressing these gaps through structured faculty development, specialized forensic training, and enhanced institutional support is essential to improving the quality and effectiveness of forensic science instruction and ensuring the professional readiness of criminology graduates.

**Keywords:** *criminology educators; forensic science education; instructional capability; faculty development; forensic training*

### INTRODUCTION

Forensic science education plays a critical role in preparing competent investigators, criminal justice practitioners, and forensic specialists capable of addressing the growing complexity of contemporary crime. Global advancements in forensic technologies, including DNA analysis, digital forensics, and crime scene reconstruction, have raised expectations for criminology programs and educators. These developments require not only sound pedagogical competence but also specialized technical knowledge, laboratory proficiency, and practical field experience (Houck, 2015).

International literature emphasizes that effective forensic science instruction should be interdisciplinary, practice-oriented, and aligned with the operational needs of law enforcement and judicial systems (Morgan & Levin, 2022). However, most existing studies have concentrated on curriculum design, student learning outcomes, and policy compliance. Although challenges such as inadequate laboratory facilities, limited professional development opportunities, and weak institutional support have been widely documented particularly in resource-limited settings there has been limited empirical examination of educator capability as a central determinant of instructional effectiveness (Chin et al., 2022).

Global developments in forensic science education have increased instructional demands worldwide. In the Philippine context, these global expectations intersect with national policy requirements and institutional realities,

159



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which are further intensified in provincial settings such as the First District of Northern Samar (Taduran, 2025). Despite the mandate of Commission on Higher Education Memorandum Order No. 5, Series of 2018, which requires the integration of theoretical and applied forensic competencies, implementation remains constrained by limited access to laboratories, specialized training, and continuing professional development opportunities.

These challenges are more pronounced in provincial areas such as the First District of Northern Samar, where institutions face inadequate laboratory facilities, limited collaboration with forensic practitioners, and minimal institutional support for faculty capability enhancement. Consequently, forensic science instruction in these settings remains largely lecture-based, restricting experiential learning opportunities that are essential to competency-based forensic education.

Despite the growing body of literature on forensic science education, there remains a lack of empirical studies that directly examine the capability of criminology educators handling forensic science subjects, particularly in provincial and resource-limited higher education institutions. Existing research has largely focused on curriculum implementation and student outcomes, leaving the combined influence of educators' pedagogical competence, technical proficiency, and contextual constraints insufficiently explored.

Addressing this gap, the present study provides an empirical assessment of the capability of criminology educators handling forensic science subjects in the First District of Northern Samar. The study contributes theoretically by extending pedagogical content knowledge, experiential learning, and competency-based education frameworks to the context of forensic science instruction. Practically, it offers evidence-based inputs for the design of targeted faculty development and capability enhancement programs. At the policy level, the findings provide empirical support for higher education institutions and regulatory bodies in strengthening faculty qualification standards, professional development initiatives, and resource allocation for forensic science education.

### **Review of Related Literature and Studies**

Forensic science education is an evolving discipline that requires educators to demonstrate both specialized subject expertise and robust pedagogical competence to meet the demands of contemporary criminal investigation. Recent literature has consistently underscored the importance of continuous professional development—through specialized training, workshops, and certification programs in ensuring that educators remain current with rapidly advancing forensic methodologies and technologies (Gul, 2025; Nilendu, 2024). While professional organizations such as the American Academy of Forensic Sciences offer structured development opportunities, empirical studies have revealed uneven access to these programs due to funding limitations, weak institutional support, and pronounced regional disparities (Houck, 2015). These findings suggest that professional development opportunities alone are insufficient unless supported by institutional mechanisms that facilitate sustained faculty participation.

Pedagogical preparedness has been repeatedly identified as a critical determinant of instructional quality in forensic science education. Studies have demonstrated that educators with formal pedagogical training employ more effective instructional strategies, including inquiry-based learning, case simulations, virtual laboratories, and competency-based approaches, all of which are essential for developing students' analytical and scientific reasoning skills. In contrast, educators lacking pedagogical preparation tend to rely heavily on lecture-based instruction, limiting opportunities for applied learning. Comparative findings further indicate that pedagogically prepared educators exert a measurable influence on student engagement, academic performance, and readiness for forensic practice (Nilendu, 2024), thereby highlighting pedagogy as a key variable rather than a peripheral concern in forensic education.

Curriculum relevance and alignment with professional standards constitute another recurring theme in the literature. Contemporary studies advocate for interdisciplinary curricula that integrate criminology, forensic science, digital technologies, ethics, and law enforcement practice to reflect the multifaceted nature of forensic work (Nilendu, 2024). Collaborative partnerships between academic institutions and forensic laboratories have been shown to enhance experiential learning and curricular responsiveness. However, contrasting evidence indicates that outdated curricula and limited faculty competence in emerging forensic tools continue to undermine instructional effectiveness, particularly in developing and regional contexts. This disparity points to a disconnect between recommended curricular frameworks and actual instructional capacity at the faculty level.

Student learning outcomes in forensic science have been closely linked to experiential and simulation-based instructional strategies. Empirical research has shown that mock crime scene investigations, virtual simulations, and blended learning approaches significantly improve students' critical thinking, problem-solving abilities, and professional preparedness (Li et al., 2025). Conversely, studies have also identified stress, inadequate academic support, and limited laboratory exposure as persistent barriers to learning, particularly in institutions with constrained



resources. These contrasting findings suggest that instructional innovations are most effective when supported by adequate institutional and faculty capacity.

Technological and laboratory resources further mediate the effectiveness of forensic science instruction. The integration of digital forensic platforms, virtual laboratories, and emerging technologies such as virtual reality and artificial intelligence has been associated with enhanced student engagement and skill acquisition (Barrot, 2023). Nevertheless, numerous studies have reported persistent challenges related to outdated equipment, insufficient funding, and limited faculty competence in digital forensic technologies. This imbalance reinforces the notion that technological advancement in curricula does not automatically translate into instructional effectiveness without corresponding educator capability.

Institutional support and policy frameworks have been identified as decisive factors in sustaining quality forensic science education. National policies and institutional guidelines shape faculty qualification standards, curriculum implementation, and laboratory investment. Evidence indicates that institutions with structured faculty development programs and strong policy support demonstrate higher levels of educator effectiveness and improved student outcomes (CHED, 2018). In contrast, institutions lacking coherent support structures exhibit fragmented implementation of forensic education standards.

Collectively, the literature affirms that effective forensic science education depends on the interaction of qualified educators, sound pedagogical practices, relevant curricula, adequate technological resources, and supportive institutional policies. However, existing studies have primarily examined these components in isolation, with limited empirical attention given to educator capability as an integrated construct particularly within localized and regional contexts. Notably, there remains a scarcity of empirical research assessing the capability of criminology educators handling forensic science subjects in provincial settings. This gap underscores the significance of examining educator qualifications, pedagogical competence, and instructional constraints within the First District of Northern Samar, providing empirical evidence to inform targeted faculty development initiatives, curriculum enhancement, and institutional policy interventions.

## Theoretical Framework

This study is anchored on Shulman's Pedagogical Content Knowledge (PCK) theory (Shulman, 1987), which asserts that effective teaching requires the integration of subject-matter expertise and pedagogical competence. In forensic science education, criminology educators must possess adequate forensic knowledge and the ability to present complex scientific concepts through appropriate instructional strategies. Educators' qualifications, teaching experience, specialization, and participation in professional training reflect their level of PCK and directly influence instructional effectiveness.

The framework is further supported by Kolb's Experiential Learning Theory (Kolb, 1984), which emphasizes learning through direct experience. Given the applied nature of forensic science, effective instruction relies on hands-on activities such as crime scene simulations, evidence analysis, and laboratory exercises. Experiential teaching strategies enhance students' analytical and problem-solving skills essential to forensic practice.

Additionally, the Competency-Based Education (CBE) framework (Grus et al., 2016) informs the assessment of educators' capabilities by focusing on demonstrable skills and performance. CBE underscores the importance of measurable teaching competencies, certifications, and continuous professional development to ensure alignment with current forensic standards.

Together, these frameworks provide a theoretical basis for evaluating the capability of criminology educators handling forensic science subjects by examining the integration of content knowledge, pedagogical practice, experiential instruction, and demonstrated competence.

## Conceptual Framework

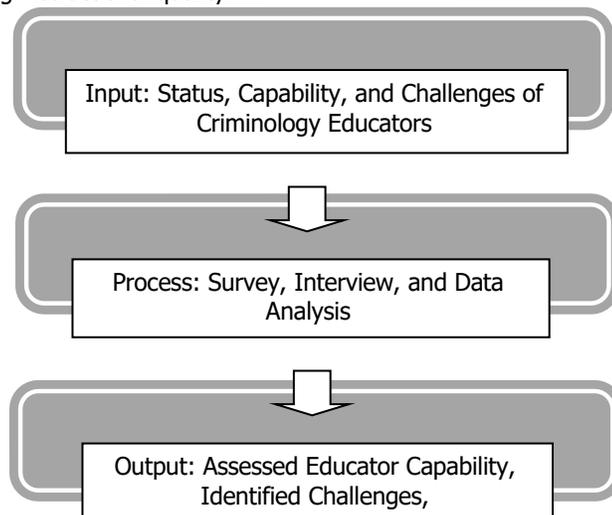
The conceptual framework of the study illustrates the relationship between the status, capability, and challenges of criminology educators and their effectiveness in handling forensic science subjects. It is composed of three major components:

- 1. Input:** Refers to the profile and existing conditions of criminology educators prior to assessment, including their academic qualifications, field of specialization, teaching experience, level of forensic science capability, and challenges encountered in delivering forensic science instruction.
- 2. Process:** Refers to the systematic assessment of educators through quantitative and qualitative methods, including surveys and interviews. Data gathered are analyzed using statistical and thematic



techniques to determine educators' instructional capability, identify recurring challenges, and examine patterns influencing forensic science teaching effectiveness.

- 3. Output/Outcome:** Refers to the assessed level of criminology educators' capability in handling forensic science subjects, the identified instructional challenges, and the formulation of evidence-based recommendations, including a proposed Forensic Science Faculty Development and Capability Program aimed at improving instructional quality.



The framework demonstrates a cause-and-effect relationship, showing that the systematic assessment of educator status and instructional challenges leads to informed interventions that enhance forensic science teaching effectiveness. It situates the study within the broader context of educational capability development, emphasizing continuous assessment and targeted faculty development as mechanisms for improving forensic science education.

### Statement of the Problem

Despite the inclusion of forensic science subjects in criminology programs, challenges persisted in ensuring effective instruction, particularly in regional higher education institutions. In the First District of Northern Samar, variations in educators' academic preparation, forensic specialization, and access to professional training affected the quality of forensic science instruction. Limited laboratory resources and inadequate institutional support further constrained the delivery of practical, updated, and industry-aligned forensic education, potentially compromising graduate preparedness for professional practice. At its core, the problem centers on the varying levels of pedagogical, technical, and professional preparedness of criminology educators in delivering forensic science subjects amid institutional and resource constraints.

These conditions underscored the need to assess the capability of criminology educators handling forensic science subjects. Accordingly, the study evaluated educators' professional status and instructional capability, examined the relationship between their academic and professional profile and teaching capability, and identified challenges encountered in forensic science instruction. The findings served as the basis for proposing a Forensic Science Faculty Development and Capability Program to enhance instructional effectiveness.

### Research Objectives

#### General Objective:

To assess the capability of criminology educators handling forensic science subjects in the First District of Northern Samar.

#### Specific Objectives:

- To identify the status of criminology educators handling forensic science subjects in terms of years of teaching experience, subjects taught, area of specialization, and trainings or seminars attended.



2. To evaluate the capability of criminology educators in handling forensic science subjects with respect to teaching competency and pedagogical skills, technical proficiency in forensic laboratory applications, industry and field experience, curriculum and instructional alignment, and assessment and evaluation methods.
3. To determine the significant relationship between the academic and professional profile of criminology educators and their capability in handling forensic science subjects.
4. To determine the significant difference in the capability of criminology educators when grouped according to selected profile variables.
5. To identify the challenges faced by criminology educators in handling forensic science subjects in terms of personal aspects, institutional support, and laboratory facilities and equipment.
6. To propose a Forensic Science Faculty Development and Capability Program to enhance educators' knowledge and skills in handling forensic science subjects.

### Research Questions

1. What is the status of criminology educators handling forensic science subjects in terms of years of teaching experience, subjects taught, area of specialization, and trainings or seminars attended?
2. How capable are criminology educators in handling forensic science subjects with respect to teaching competency and pedagogical skills, technical proficiency in forensic laboratory applications, industry and field experience, curriculum and instructional alignment, and assessment and evaluation methods?
3. What is the relationship between the academic and professional profile of criminology educators and their capability in handling forensic science subjects?
4. Is there a significant difference in the capability of criminology educators when grouped according to selected profile variables?
5. What challenges do criminology educators encounter in handling forensic science subjects in terms of personal aspects, institutional support, and laboratory facilities and equipment?
6. How can a Forensic Science Faculty Development and Capability Program be designed to enhance educators' knowledge and skills in handling forensic science subjects?

### Research Hypotheses

Based on the objectives of the study and the nature of the data analysis, the following null hypotheses ( $H_0$ ) were formulated and tested at the 0.05 level of significance.

#### **Hypothesis Set 1: Relationship Between Profile and Capability**

**$H_{01}$ :** There is no significant relationship between the academic and professional profile of criminology educators (years of teaching experience, area of specialization, subjects taught, and trainings or seminars attended) and their capability in handling forensic science subjects.

**$H_{11}$  (Alternative Hypothesis):** There is a significant relationship between the academic and professional profile of criminology educators and their capability in handling forensic science subjects.

#### **Hypothesis Set 2: Differences in Capability When Grouped by Profile Variables**

**$H_{02}$ :** There is no significant difference in the capability of criminology educators in handling forensic science subjects when grouped according to selected profile variables.

**$H_{12}$  (Alternative Hypothesis):** There is a significant difference in the capability of criminology educators in handling forensic science subjects when grouped according to selected profile variables.

### Methodology

#### Research Design

This study employed a convergent mixed-methods design, in which quantitative and qualitative data were collected during the same phase of the research process, analyzed independently, and then systematically integrated. The quantitative strand utilized a descriptive–correlational design to examine criminology educators' professional status and instructional capability, as well as the relationships between their academic and professional profiles and teaching performance. The qualitative strand employed semi-structured interviews to examine educators' instructional practices, professional experiences, and challenges encountered in handling forensic science subjects.



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Convergence occurred at the interpretation stage, where quantitative results and qualitative themes were compared, corroborated, and integrated to generate a comprehensive understanding of educator capability. Areas of convergence, complementarity, and divergence between numerical trends and narrative accounts were identified to strengthen the validity of the findings. This integrated approach enabled the triangulation of results and provided both empirical measurement and contextual explanation, thereby informing the formulation of the proposed Forensic Science Faculty Development and Capability Program (Creswell, 2014).

### Population and Sampling

The study population comprised criminology educators teaching forensic science subjects and fourth-year Bachelor of Science in Criminology students enrolled in these courses in the First District of Northern Samar during the academic year.

All educators handling forensic science subjects in the district (N = 12) were included through total enumeration due to the small population size. For the student respondents, a total of 260 fourth-year criminology students were selected using stratified sampling to ensure proportional representation from all schools offering the criminology program in the district.

This sampling strategy ensured that the perspectives of both educators and students were adequately captured for a comprehensive assessment of forensic science instruction.

### Instruments

The study employed researcher-made instruments to collect both quantitative and qualitative data.

1. Survey Questionnaire: A structured survey questionnaire was developed to assess the capability of criminology educators in handling forensic science subjects. The instrument consisted of five domains, namely: teaching competency, technical proficiency, industry and field experience, curriculum alignment, and assessment practices. It also included sections describing educators' professional status and the challenges encountered in delivering forensic science instruction. The questionnaire comprised fifteen [15] items, measured using a four-point capability scale: 4 – Highly Capable, 3 – Moderately Capable, 2 – Capable, and 1 – Not Capable. Content validation was conducted by three experts in criminology education and forensic science instruction, all of whom were holders of Doctor of Philosophy in Criminology degrees and experienced forensic science educators. Their evaluations ensured the clarity, relevance, and alignment of the instrument with established forensic education standards. The questionnaire was pilot-tested among five [5] criminology educators who were not included in the final sample. Reliability analysis using Cronbach's alpha yielded an overall coefficient of .90, indicating acceptable internal consistency of the instrument.
2. Semi-Structured Interview Guide: A semi-structured interview guide was developed to gather qualitative data regarding criminology educators' instructional practices, professional experiences, challenges encountered, and perceived needs in teaching forensic science subjects. The guide consisted of fourteen [14] open-ended questions, designed to elicit in-depth and reflective responses. The interview guide underwent content validation by the same panel of experts PhD in Criminology holders and forensic science educators to ensure conceptual adequacy and relevance. It was pilot-tested to confirm clarity, sequencing, and appropriateness prior to actual data collection.

### Data Collection

The data collection was conducted in selected higher education institutions offering criminology programs in the First District of Northern Samar, Philippines, during the April to May 2025, in accordance with the convergent mixed-methods design of the study.

For the quantitative phase, the validated survey questionnaires were administered to 260 fourth-year criminology students to assess the capability of educators handling forensic science subjects. The questionnaires were distributed personally within classroom settings and retrieved immediately after completion to ensure respondent understanding and to maximize the response rate.

For the qualitative phase, semi-structured interviews were conducted with criminology educators teaching forensic science subjects in the same institutions. Interviews were scheduled at mutually convenient times and were guided by a structured interview protocol that allowed probing and clarification of responses related to instructional practices, professional experiences, and challenges in teaching forensic science subjects. With the participants' consent, responses were documented through written notes and audio recordings.



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### Treatment of Data

**Quantitative Data:** Survey responses were encoded and analyzed using descriptive and inferential statistical techniques. Frequency counts and percentage distributions were used to describe the respondents' academic and professional profiles. Weighted mean scores were computed to determine the levels of educator capability and the extent of instructional challenges encountered. Inferential analysis employed the Pearson Product-Moment Correlation Coefficient (Pearson  $r$ ) to examine the relationship between educators' academic and professional profiles and their instructional capability in forensic science subjects. Additionally, independent-samples t-tests were conducted to determine statistically significant differences in capability levels across groups classified according to selected profile variables.

**Qualitative Data:** Interview data were analyzed using thematic analysis following a systematic and iterative process. Audio recordings were transcribed verbatim, after which initial coding was conducted to identify significant statements related to instructional practices, professional experiences, and teaching challenges. Similar codes were grouped into categories, from which overarching themes were generated. These themes were reviewed and refined to ensure internal coherence and clear distinction, allowing for the identification of key factors influencing the effectiveness of forensic science instruction.

**Integration of Quantitative and Qualitative Data:** Integration occurred during the interpretation phase through triangulation of findings from both data strands. Quantitative results were compared with qualitative themes to identify areas of convergence, complementarity, and divergence. Numerical trends in educator capability and instructional challenges were substantiated and contextualized using narrative accounts from interviews. This integrative analysis provided a comprehensive understanding of criminology educators' capability in handling forensic science subjects and served as the empirical basis for formulating the proposed Forensic Science Faculty Development and Capability Program.

### Ethical Considerations

The study adhered to strict ethical standards:

- **Ethical Approval and Permissions:** Secured from school administrators and program heads in the First District of Northern Samar.
- **Informed Consent:** Participants were briefed on the study's purpose, procedures, and voluntary nature before participation.
- **Confidentiality:** Personal information and responses were kept private and used solely for academic purposes.
- **Anonymity:** Names of respondents and institutions were not disclosed in the report.
- **Right to Withdraw:** Participants could withdraw from the study at any time without penalty.
- **Data Protection:** All collected data were securely stored and accessible only to the researcher.

These measures ensured participants' rights, dignity, and privacy were respected while maintaining the study's integrity.

### Results and Discussion

#### Status of Criminology Educators

Analysis of the educators' profiles revealed that the majority had one to five years of teaching experience and handled both core criminology and forensic science subjects. Most educators held a bachelor's degree in criminology, while only a small proportion had completed advanced degrees or obtained formal specialization in forensic science. Participation in institutional and regional seminars was common; however, engagement in specialized forensic training was limited.

These results indicated that while educators had accumulated sufficient classroom exposure, their academic preparation and technical specialization in forensic science were limited. The lack of advanced forensic training likely constrained instructional depth and laboratory competence, particularly in highly technical subject areas. This finding aligned with previous studies emphasizing that forensic science instruction requires discipline-specific expertise beyond general criminology training (Nilendu, 2024).



Weighted mean analysis (Table 1) showed that the overall capability of educators was rated as Moderately Capable. Higher mean scores were obtained in teaching competency and pedagogical skills, indicating relative strength in lesson planning, content delivery, and assessment strategies. In contrast, technical proficiency, particularly in laboratory procedures and the use of forensic equipment, obtained lower ratings. Industry or field experience was likewise limited.

This pattern reflected a workforce that was pedagogically competent but technically underprepared. The findings suggested a mismatch between instructional skills and applied forensic competence, reinforcing the argument that effective forensic education requires the integration of pedagogical expertise with hands-on technical capability (Shukla, 2021).

**Table 1. Capability Ratings of Educators**

Capability Domain	Weighted Mean	Interpretation
Teaching Competency	4.2	Capable
Pedagogical Skills	4.0	Capable
Technical Proficiency	3.2	Moderately Capable
Industry/Field Experience	3.1	Moderately Capable
Overall Capability	3.6	Moderately Capable

### Differences in Capability

Independent-samples t-test results (Table 2) revealed a statistically significant difference in educator capability based **on forensic specialization and training**, with educators who had undergone specialized training obtaining higher capability scores. In contrast, years of teaching experience did not yield a significant difference.

These results indicated that specialized forensic preparation, rather than length of teaching service, was a stronger determinant of instructional capability. Teaching tenure alone did not compensate for the absence of forensic-specific training, underscoring the importance of targeted professional development in strengthening forensic instruction.

**Table 2. Differences in Capability Based on Profile Variables**

Variable	t-value	p-value	Interpretation
Specialization & Training	3.45	.002*	Significant
Years of Teaching	0.89	.376	Not Significant

\*Significant at  $p < .05$

### Relationship Between Educators' Profile and Capability

Pearson correlation analysis revealed a significant positive relationship between educators' area of specialization and forensic trainings attended and their overall capability in teaching forensic science subjects. Conversely, years of teaching experience and number of subjects handled did not demonstrate significant correlations with capability levels.

These findings reinforced the notion that forensic teaching competence was driven by discipline-specific preparation and practical exposure, rather than by general teaching experience. The results highlighted the critical role of advanced training and specialization in addressing existing capability gaps in forensic science education (Wickenheiser et al., 2023)

### Challenges in Teaching Forensic Science

Qualitative thematic analysis identified three major categories of challenges, as illustrated in Figure 1: personal, institutional, and laboratory-related challenges.

Personal challenges included limited technical skills and reduced confidence in conducting laboratory demonstrations and practical exercises. Institutional challenges involved insufficient administrative support, limited access to specialized forensic training, and the absence of structured faculty development programs. Laboratory-related challenges were characterized by inadequate, outdated, or malfunctioning forensic equipment, which restricted hands-on instruction.



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These interrelated challenges explained the moderate capability ratings obtained in the quantitative findings and underscored the structural constraints affecting laboratory-based forensic instruction. The results were consistent with previous studies highlighting the impact of institutional and resource limitations on the quality of forensic education (Baniqued & Bautista, 2024).

### Integration of Quantitative and Qualitative Findings

Integration of quantitative and qualitative findings revealed strong convergence between statistical trends and educators' lived experiences. Moderate overall capability levels, significant associations with specialization and training, and recurring qualitative themes related to limited technical preparation, inadequate facilities, and insufficient institutional support collectively provided a coherent explanation of instructional capability gaps.

The findings demonstrate that educators possess strong pedagogical foundations. However, constraints related to technical proficiency, laboratory access, and institutional support persist and affect instructional effectiveness and student readiness (Pacadaljen, 2024).

### Conclusion

Based on the findings, it was concluded that criminology educators handling forensic science subjects generally demonstrated adequate pedagogical competence, while their technical proficiency and industry-related application skills remained at a moderate level. Although many educators had completed graduate-level academic units, the limited completion of advanced degrees and low participation in specialized forensic training constrained their capacity to deliver highly technical and laboratory-intensive instruction.

The results further indicated that years of teaching experience did not have a significant relationship with educators' overall capability in handling forensic science subjects. Similarly, academic attainment, field of specialization, and number of subjects taught were not statistically significant predictors of instructional capability. These findings suggest that general teaching tenure and academic credentials alone were insufficient indicators of competence in forensic science instruction, which requires discipline-specific preparation and applied technical exposure.

Additionally, discrepancies observed between educators' self-assessments and students' evaluations highlighted variability in perceived instructional capability, underscoring the complexity of assessing teaching effectiveness in forensic science. Persistent personal, institutional, and laboratory-related challenges such as limited technical confidence, inadequate facilities, and insufficient institutional support for forensic specialization were found to constrain effective instructional delivery and laboratory-based learning.

Taken together, these conclusions demonstrated that while pedagogical foundations among criminology educators were generally sound, gaps remained in technical capability, practical exposure, and institutional support mechanisms. The findings provided an empirical basis for understanding the current state of forensic science instruction in the study context and highlighted structural and competency-related factors influencing educator capability.

### Recommendations

Based on the findings and conclusions of the study, the following recommendations are offered for consideration by relevant stakeholders in criminology and forensic science education.

First, the Commission on Higher Education (CHED) and Higher Education Institutions (HEIs) may consider encouraging the completion of advanced degrees among criminology educators handling forensic science subjects. This could be supported through mechanisms such as scholarship opportunities, faculty study leaves, and research incentives, which may help strengthen educators' academic preparation and readiness to teach technically demanding forensic courses.

Second, to address the identified gaps in technical proficiency, HEIs may explore the establishment of collaborative linkages with the Philippine National Police (PNP) Crime Laboratory and the National Bureau of Investigation (NBI) Forensic Division. Such partnerships could facilitate access to specialized training and certification opportunities in areas such as ballistics, dactyloscopy, forensic chemistry, toxicology, and digital forensics, thereby enhancing educators' practical exposure and alignment with industry standards.

Third, to support continuous professional growth, the Commission on Higher Education (CHED) and the Professional Criminologists Association of the Philippines (PCAP) may consider developing continuing professional development programs that integrate pedagogical enrichment with laboratory-based and skill-oriented learning



experiences. These initiatives may assist educators in maintaining current teaching practices while gradually strengthening their technical competencies.

Fourth, in light of the observed differences between student and faculty perceptions of instructional capability, university administrators and institutional quality assurance offices may implement or strengthen mechanisms such as periodic performance evaluations, classroom observations, and mentoring arrangements. These processes may promote reflective teaching practices and support ongoing instructional improvement.

Finally, to enhance the quality of practical instruction, Higher Education Institutions (HEIs), in coordination with Local Government Units (LGUs), may explore opportunities for investing in shared or upgraded forensic laboratory facilities. In addition, the Commission on Higher Education (CHED), the Department of Science and Technology (DOST), and partner institutions may consider institutionalizing a faculty development and capability enhancement initiative that integrates technical training, laboratory immersion, research engagement, and collaboration with law enforcement agencies. Collectively, these efforts may contribute to the strengthening of educators' capabilities and the alignment of forensic science instruction with contemporary professional and industry expectations.

## REFERENCES

- Baniqued, W. B., & Bautista, R. G. (2024). Teachers' preparedness on pedagogical practices in K-12 science education: Foundations for crafting an effective science program. *American Journal of Educational Research, 12*(8), 291-297. <https://doi.org/10.12691/education-12-8-1>
- Barrot, J. S. (2023). *Using ChatGPT for second language writing: Pitfalls and potentials. Assessing Writing, 57*, Article 100745. <https://doi.org/10.1016/j.asw.2023.100745>
- Chin, J. M.-C., Ching, G. S., del Castillo, F., Wen, T.-H., Huang, Y.-C., del Castillo, C. D., Gungon, J. L., & Trajera, S. M. (2022). Perspectives on the barriers to and needs of teachers' professional development in the Philippines during COVID-19. *Sustainability, 14*(1), 470. <https://doi.org/10.3390/su14010470>
- Commission on Higher Education. (2018). *Policies, standards, and guidelines for the Bachelor of Science in Criminology program* (CHED Memorandum Order No. 5, Series of 2018). Commission on Higher Education. <https://ched.gov.ph/wp-content/uploads/2018/05/CMO-No.-05-s.-2018-PSG-for-BS-Criminology.pdf>
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). SAGE Publications. <https://doi.org/10.5539/elt.v12n5p40>
- Grus, C. L., Falender, C., Fouad, N. A., & Lavelle, A. K. (2016). A culture of competence: A survey of implementation of competency-based education and assessment. *Training and Education in Professional Psychology, 10*(4), 198-205. <https://doi.org/10.1037/tep0000126>
- Gul, S. (2025). Forensic science education: An emerging field to develop skills for identifying crimes. *Ammanif Bulletin of Social Sciences, 2*(1), 13-21. <https://doi.org/10.56770/aboss2025213>
- Houck, M. M. (Ed.). (2015). *Professional issues in forensic science*. Academic Press.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall.
- Li, J., Hou, C., Yang, D., Xue, P., Song, Y., Cao, B., & Li, H. (2025). Enhancing forensic clinical competence through scenario-based simulation: A comparative study of educational outcomes in Chinese medical students. *PLoS ONE, 20*(11), e0336273. <https://doi.org/10.1371/journal.pone.0336273>



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- Morgan, R. M., & Levin, E. A. (2022). A crisis for the future of forensic science: Lessons from systemic challenges and implications for education. *Forensic Science International: Synergy*, 4, Article 100123. <https://doi.org/10.1016/j.fsisyn.2019.09.002>
- Nilendu, D. (2024). Enhancing forensic education: Exploring the importance and implementation of an evidence-based education system. *Egyptian Journal of Forensic Sciences*, 14(6), Article 52. <https://doi.org/10.1186/s41935-023-00375-w>
- Pacadaljen, L. M. (2024). *Hurdling obstructions on instructional management of science teachers in schools with challenging laboratory resources. Environment and Social Psychology*, 9(10). <https://doi.org/10.59429/esp.v9i10.3027>
- Shukla, R. K. (2021). *A new systematic approach of teaching and learning of forensic science for interdisciplinary students: A step towards renovating the forensic education system. Forensic Science International: Synergy*, 3, 100146. <https://doi.org/10.1016/j.fsisyn.2021.100146>
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–22. <https://doi.org/10.17763/haer.57.1.j463w79r56455411>
- Taduran, R. J. O. (2025, July 10). *The road ahead for forensic science education in the Philippines*. Agham Road. <https://aghamroad.org/the-road-ahead-for-forensic-science-education-in-the-philippines>
- Wickenheiser, R., Cadau, A., Muro, C., Whitfield, S., McGinnis, C., Murray, L., France, M., Niles, L., Barron, D., & Valentin, L. (2023). *The forensic educational outreach initiative – Bridging the gap between education and workplace. Forensic Science International: Synergy*, 8, 100448. <https://doi.org/10.1016/j.fsisyn.2023.100448>