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IIRSM **Divine Word College of San Jose Special Issue**

2025 Volume 13, Issue Number 8

- The moderating effect of demographic profile on students' capacity and willingness to invest in the Philippine Stock Market
  Robles, Ernesto Jr. M.; Echivarre, Jeremy B.; Galay-Limos, Jenny A.

- The rise of nomophobia and its effect on the learning behavior of senior high school students
  Valero, Alvin Joseph M.; Galay-Limos, Jenny A.

- Work ethics and performance of Generation Z employees in the Local Government Unit of San Jose, Occidental Mindoro
  Orsos, Emelyn M.; Peditin-Bocobo, Christine Mary M.; Amarila, Pauline T.; Galay-Limos, Jenny A.

- Teachers' integration of current events and students' interest in learning Araling Panlipunan
  Bermudo, Jomer Vincent D.; Galay-Limos, Jenny A.

- Teaching strategies in mathematics and numeracy skills development of elementary pupils in Caluya District
  Solino, Karen D.; Galay-Limos, Jenny A.

International Journal of Research Studies in Management
2025 Volume 13 Number 8, 1-14

Quantitative content analysis of graduate theses of Divine Word College of San Jose

Jarabata, Chona T.
Divine Word College of San Jose, Philippines (chontj2015@gmail.com)
Javines Jr., Felino B.
Divine Word College of San Jose, Philippines (dwcsjk12@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

The quantitative content analysis of master's theses from 2020 to 2024 aimed to gain insights into the current state of research at Divine Word College of San Jose, encompassing a review of both published and unpublished research papers. Bibliographic coding for each thesis was performed based on the variable entries. Patterns in the descriptive characteristics, thesis length, and predictors of research results were analyzed to identify research gaps. Descriptive-correlational design identified the research norms of the theses produced. Cross-tabulations, frequencies, percentages, and means described the characteristics and lengths of the theses. At the same time, regression analysis assessed the predictive value of these characteristics and lengths for the research results. Findings revealed that mixed method, sequential exploratory and descriptive-correlational designs, thematic analysis, and structural equation modeling were typically used; conclusions were predicted strongly by the conceptual framework and statistical treatment, hypothesis test results by the research method used, and research output by research locale to a moderate extent. Also, the predominant research outputs focused on action/development plans. Research at the local level accounted for a moderate share of the research output. Aside from the action/development plan, future researchers may also consider theory development. Future studies on quantitative content analysis may be initiated and focused on the theses completed by MBA students from 1995 onwards. Moreover, adoption of the IMRaD format in preparation for journal publication of the theses is recommended.

Keywords: content analysis, bibliographic coding, quantitative research method, IMRaD format, graduate theses

Quantitative content analysis of graduate theses of Divine Word College of San Jose

1. Introduction

An analysis of research papers in the graduate school is an interesting and challenging endeavor in the academic field. Examining master's theses provides insight into the current state of research across various fields of study. The analysis covers the review of published and unpublished research papers. Quantitative content analysis is considered by Coe & Scacco (2017) as a research method in which textual and visual features of materials are systematically categorized and recorded for purposes of analysis. This is done by assigning numerical values to salient characteristics of the data, enabling statistical analysis and the identification of patterns and trends. The first documented quantitative analyses of printed manuscripts go back to the 18th century in Sweden, according to Krippendorff (2013), in the publication analysis of the Songs of Zion. Then, in the 20th century, there was an increase in the production of newsprint, followed by a demand for quantitative analysis of newspapers. A development of the computer text analysis came decades later, and content analysts employed computers in their work. Due to the growing accessibility of text in digital form, computational content analysis was developed. As defined by Lavarreda (2024), computational text analysis refers to digital approaches and tools used to explore the articulation of meaning embedded in written text. In recent years, electronic full-text databases have become available online. Furthermore, content analysis can be carried out quantitatively or qualitatively (Rose et al., 2015; Williams, 2025; Wilson, 2011). In the academic field of political communication, for instance, content analysis has been defined as the systematic, objective, and quantitative analysis of message characteristics (Neuendorf & Kumar, 2016). However, the differentiation between qualitative and quantitative analyses is sometimes challenged. Since quantitative content analysis tends to follow the scientific method, which emphasizes objectivity, reliability (Krippendorff, 2006; Coe & Scacco, 2017), validity (Rourke & Anderson, 2004), and generalizability, systematic issues arise.

Quantitative and qualitative approaches to content analysis tend to overlap, as Krippendorff (2013) underpins; hence, there can be no generalizable conclusion as to which approach is better. Despite these issues, researchers have conducted quantitative content analyses over the past decade. Results were beneficial, as they helped identify common research deficiencies and served as a starting point for improving practices and policies (Randolph et al., 2012). Considered as a research method, content analysis is used to identify patterns in recorded communication. In conducting content analysis, a systematic collection of data from a set of texts, written, oral, or visual, is undertaken (Luo, 2023). While quantitative analysis in a business context helps evaluate the performance and efficiency of operations (Saharawat, 2023), it can be applied across fields such as finance, research, and chemistry. In fact, content analyses have actually been explored across various domains, namely: media (Riffe et al., 2014); journalism (Klein, 2023); consumer research (Vespestad & Clancy, 2021); economics (Oleinik, 2021); jobs (Li & Li, 2021); library science (Singh & Saini, 2020); nursing (Bengtsson, 2016); blended learning (Drysdale et al., 2013); health (Cho et al., 2010); communication and language (Hart, 2014; Baker & King, 2016); distance education (Davies et al., 2010); social science (Bammidi, 2008); and psychology (Leavy, 2014).

Integral to content analysis, as summarized by Coe & Scacco (2017), involves following a set of instructions on which features to look for, which requires attention to segmenting the texts for analysis, appropriate data collection, consistency in coding, and the use of a coding scheme representative of the specified phenomena. Key steps in quantitative content analysis were outlined in the study by Rose et al. (2015), including a research question, conceptualization and hypothesis formulation, sampling and unitizing, coding scheme development, data collection, coding, reliability testing and analysis, and findings and conclusions. Because of this, the authors contend that it can be treated as a research design in its own right rather than merely a method of analysis. A review of trends in research among students completing a thesis found that most studies were descriptive and used self-report surveys (Davies et al., 2010). However, it also revealed a lack of graduate student research focused on

developing theory. Based on records of the college library of the Divine Word College of San Jose (DWCSJ), the graduate school students had produced 339 published and unpublished theses from the start of its operation until 2024. However, no content analysis of these theses has been undertaken to date. None of the studies was focused on the collective body of published/unpublished research in the graduate school. Thus, this study aimed to provide insights into the school's current research state, specifically in the field of education, by identifying trends in problem formulation, methodological approaches, conceptual frameworks, research methods and designs, statistical data analysis, hypothesis test results, and research outputs.

Research Objectives - While other studies focused on qualitative content analysis, this study diverged to analyze the contents of the DWCSJ theses quantitatively, focusing on descriptive characteristics, length, and predictors of research results. Specifically, the study aimed to: (1) determine the descriptive characteristics of DWCSJ theses considering thesis type, year of completion, subject descriptors, research locale, conceptual framework, research method, research design, sampling technique, number of participants/respondents, research instrument, and statistical treatment; (2) determine the length of the thesis by the number of pages, considering the whole manuscript, preliminary section, review of related literature, chapters I-V, and references; (3) characterizes the research results in terms of hypothesis test, conclusion, and research output (4) determine if the research results predicted by the thesis's descriptive characteristics and length of the thesis.

Significance of the Study - The objective of this study is to analyze the quantitative content of the DWCSJ theses. The study finds a potential impact, first, on graduate students, who can gain a better grasp of the existing research culture. Thus, it will provide them with a better way not only to identify research trends but also to identify the common characteristics of research papers undertaken. Next, this is for thesis writers; it can help them improve their research writing practices to meet research writing expectations. Third, the graduate school can implement a journal-writing format to facilitate future researchers' journal publishing.

Scope and Delimitation of the Study - The study primarily aims to investigate the typical characteristics of research papers done by the DWCSJ graduate students. It focuses on the 17 theses completed by students of the Master of Arts in Education (MAEd) and the Master of Arts major in Science Education (MASEd) of Divine Word College of San Jose during 2020-2024. While this study is limited to two programs in the graduate school of DWCSJ, it will serve as the first step for a province-wide and region-wide quantitative analysis of graduate theses in other programs.

2. Methodology

This descriptive study primarily identified the research patterns of the theses produced in the DWCSJ graduate school. It used a correlational design to examine whether the descriptive characteristics and length of the theses could predict the research results. The correlational design provides scores and explains the relationship among variables (Wubante, 2020). Unlike the experimental design, there is no attempt to control or manipulate the variables; instead, they are related using correlation statistics. Complete enumeration of the theses completed during the school years 2020-2021 through 2023-2024 was considered. This totaled 17 master's theses by graduate students in the MAEd and MASEd programs. The studies were conducted at the Divine Word College of San Jose (DWCSJ). In lieu of a survey instrument, the researcher sought access to the data from the printed theses stored in the DWCSJ Graduate School library. Permission to have access to a copy of the thesis was sought from the school's librarian. After receiving permission, the researcher examined the patterns used in the manuscripts. A bibliographic coding for each thesis was done based on the variable entries, namely: thesis type, year of completion, subject descriptors, research locale, conceptual framework, research method and design, sampling technique, number of participants/respondents, research instrument and statistical treatment, hypothesis test result, conclusion, research output, and length of thesis based on the number of pages of the manuscript. Bibliographic coding serves as a guide to the structure, coding practices, and input standards used in bibliographic records in the database (King et al., 2011). Sorting and classifying the theses were done based on their salient characteristics.

The quantitative method was employed to examine the patterns existing in the thesis and the relationship among the variables under study. Cross tabulations, frequencies, percentages, and means were used to describe the characteristics of the theses and the theses' length. Regression analysis was applied to assess the predictive value of the descriptive characteristics and their lengths on the research outcomes. Moreover, compliance with existing graduate studies guidelines was ensured by properly crediting and acknowledging the authors of references in studies and online sources. The conduct of the study ensured that there was no biased presentation of research findings nor any misleading information.

3. Results and Discussions

Table 1

Cross-tabulation of Thesis Type and Completion Year

Thesis Type * Year of Completion Cross-tabulation							
		Year of Completion					Total
		2020	2021	2022	2023	2024	
Thesis Type	MAED	1	0	2	2	3	8
	MASE	3	1	2	1	2	9
Total		4	1	4	3	5	17

Table 1 shows the cross-tabulation of thesis type and completion year. The theses were written by 8 Master of Arts in Education (MAEd) and 9 Master of Arts in Science Education students. The theses covered in the study were completed during 2020-2024, with the highest number in 2024, followed by 2020, 2022, and 2023. Only one thesis was completed during the 2021 pandemic period. While thesis types range from argumentative to explanatory, as noted by Surdzial (2019), this study adopts the analytical type and focuses on the content analysis of students' theses in graduate programs. Thus, the analysis focuses on examining the parts, identifying the features to look for, evaluating, and then presenting the ideas and content to the readers.

Table 2

Distribution by Subject Descriptor

Subject Descriptor	Frequency	Percent
Science Pedagogy—Spiral Progression	1	5.9
Science-Learning Competencies	1	5.9
Teaching-Distance Learning	3	17.6
Teaching-Academic Performance	1	5.9
Teaching-Job Satisfaction	1	5.9
Management of Learning-School Performance	1	5.9
Mathematics Learning-Spiral Progression	1	5.9
Teaching Style-Learning Achievement	1	5.9
Science—Species Diversity	3	17.6
Environmental Literacy	2	11.8
Teaching-Gamification Strategy	1	5.9
Learning Camp	1	5.9
Total	**17**	**100.0**

Note: Percentages are based on the total number of subjects within the thesis type.

Table 2 presents the distribution by subject descriptor. Also known as subject headings, subject descriptors categorize and index research materials, providing a consistent way to describe the topic of a study. Simultaneous descriptors of research design were discussed in the databases of The National University Library (2025), Berkeley Library (2024), and in Andrade's (2022) article highlighting that descriptors do not necessarily have to be mutually exclusive, as studies can be described as prospective or retrospective, as cross-sectional or longitudinal, as randomized or nonrandomized, as open label or blinded, and as uncontrolled or controlled. In examining the content, one aim is to identify the extent to which the subject areas studied in the thesis are present. These were quantified into measurable units for statistical analysis. Diverse subject descriptors were generated across all types of theses and years completed. The most frequently occurring subject descriptors focused on teaching—distance learning and science—species diversity—had an equal frequency of 3 (17.6%), followed by environmental literacy

with 2 (11.8%). The rest delved into teaching and learning, science pedagogy, and spiral progression in mathematics and science. This result aligns with Cam's (2022) findings, which revealed teaching methods as the most frequently assigned descriptors in the studies analyzed in ERIC publications, based on data mining. In the field of teaching and learning, according to Fleming (2009) as cited in Subagja & Rubini (2023), it uses both horizontal and vertical dimensions to highlight similarities and differences in expectations and outcomes across subjects.

Table 3

Distribution by Descriptive Characteristics (n=17)

Descriptive Characteristics (Research Locale)	Frequency (n=17)	Percent (100)
San Jose	8	47.1
Magsaysay	3	17.6
Rizal	3	17.6
Sablayan	2	11.8
Calamba	1	5.9
Conceptual Framework		
IV-DV	13	76.5
Input-Process-Output	3	17.6
Simulacrum	1	5.9
Research Method		
Qualitative	1	5.9
Quantitative	6	35.3
Mixed	10	58.8
Research Design		
Experimental	3	17.6
Exploratory Sequential	7	41.2
Descriptive-Correlational	6	35.3
Phenomenology	1	5.9
Sampling Technique		
Simple Random	4	23.5
Systematic	2	11.8
Stratified Random	2	11.8
Purposive	5	29.4
Complete Enumeration	4	23.5
Number of Participants (Mean=12.2)		
10 - 14	4	23.5
15 - 19	5	29.4
20 - 24	1	5.9
25 - 30	2	11.8
Not applicable	5	29.4
Number of Respondents (Mean=189.1)		
30 - 129	6	35.3
130 - 229	2	11.8
230 - 329	1	5.9
330 and above	4	23.5
Not applicable	4	23.5
Research Instrument		
Researcher-Made Questionnaire	3	17.6
Diversity Survey	1	5.9
Reconnaissance Survey	1	5.9
Observation Checklist	1	5.9
Ecological Survey	1	5.9
Interview Guide & Researcher-Constructed Questionnaire	9	52.9
Validation Checklist & FGD	1	5.9
Descriptive Characteristics		
Statistical Treatment		
Thematic Analysis & Regression Analysis	2	11.8
Thematic Analysis & SEM	6	35.3
Paired Samples t-test	3	17.6
Regression Analysis	1	5.9
Diversity Index & ANOVA	1	5.9
Diversity Index & Paired Samples t-test	2	11.8
Thematic Analysis	1	5.9
Structural Equation Modeling (SEM)	1	5.9

Table 3 shows the distribution by descriptive characteristics. Selecting the appropriate locale is essential to the success of a research project, as it can affect both the methodology and the applicability of the findings. Moreover, selecting a research locale involves several considerations, such as research objectives, the availability of research participants and respondents, population characteristics, and the feasibility of conducting the study in that specific setting. Regarding the study's location, the majority of the research locales are from different areas, with four from the towns of Occidental Mindoro province. Since one of the researchers teaches outside Mindoro, the setting is in Calamba City, Laguna. Some of the popularly used locales in research, as disclosed in 25+ Research Locale Samples (Examples.com, 2024), include educational institutions, communities, workplaces, public places, healthcare facilities, and online environments. The importance of describing the research locale, as detailed by Fonseca (2023), includes contextualization of the research, identifying the potential confounding factors that may have influenced the results, increasing replicability, facilitating generalization of the study results to other populations, and enhancing transparency and credibility through a broad picture of the study.

As a guide for defining research questions, the conceptual framework is presented as a diagram depicting the relationships among variables and presumes relationships among the concepts in the study. The general presentation is usually in a visual format. The independent variable-dependent variable (IV-DV) was adopted by the majority, 13 (or 76.5%) of the researchers, in their conceptual frameworks, followed by the Input-Process-Output with 17.6% and Simulacrum. Since the majority used the quantitative method, the Independent Variable-Dependent Variable (IV-DV) framework is preferred. The experimental researchers applied the Input-Process-Output (IPO) framework. The role of the conceptual framework has been underscored in the study by Luft et al. (2022), which highlights the understanding of the primary concepts. Hence, as compared with the theoretical framework, Charlesworth (2022) emphasized that the conceptual framework is developed before the start of the experiment and represents the hypothesized relationship between variables. In contrast, in the conceptual framework, one has to identify themes in literature reviews, list all constructs, and check whether each is related to a theory.

Researchers chose varied methods, with mixed methods as the most commonly used (10, 58.8%). A pure quantitative method was applied by six (35.3%), and one (5.9%) opted for a qualitative method. Writing a methodology starts by describing the problem statement and the type of data to be used to answer it. Sample quantitative methodology has been discussed by Chris (2021), underscoring the aim of increasing research credibility for reproducibility and transparency. When the researcher intends to establish cause-and-effect relationships, test hypotheses, and develop generalizable findings for a larger population, quantitative research is favored over qualitative research. The reason for this, according to Verhoef & Casebeer (2025), is that, in addition to generating factual, reliable outcomes, it is strong in inductive reasoning. However, by combining quantitative and qualitative methods, known as mixed methods, a certain level of completeness can be achieved (George, 2021). Exploratory sequential design is used by 41.2% of the researchers, as they opted for a mixed-methods approach. This design starts with qualitative data collection and analysis and builds to quantitative data collection and analysis, leading to interpretation. In this design, the qualitative results were used to develop a new quantitative instrument. Six (35.3%) researchers used a descriptive-correlational design. Due to the nature of the qualitative research method, a phenomenological design was adopted. Three (17.6%) researchers used the experimental design. While various research designs have been offered to researchers, whether the study involves qualitative or quantitative work, Thomas and Zubkov (2023) discussed one particular design: the exploratory design. As explained, exploratory design intends to develop research problems, helping to determine what the researcher wants to describe. Quantitative research designs also provide a systematic discussion of how research questions are addressed in a quantitative study, and among these designs are survey, descriptive, correlational, experimental, and causal-comparative designs. In inferring vital information from a population using samples, the researcher uses sampling techniques. Thus, for a study to attain accuracy, careful sample selection is required.

Purposive sampling was chosen by 29.4%, followed by simple random (23.5%), and four researchers did not use sampling, as they considered complete enumeration of the population. Systematic and stratified random sampling were also used to select the samples at a rate of 11.8%. As underpinned by Makwana et al. (2023), there

should be a careful assessment of the study's objectives, the population's characteristics, and the resources. One of these techniques is purposive sampling, also known as judgmental sampling, in which respondents are selected based on their relevance to the research objectives. One advantage of purposive sampling, according to Andrade (2021), is that it makes the samples homogeneous, making statistical significance easier to obtain due to reduced variance. However, it has the drawback of limited external validity. Aside from purposive sampling, a study by Ahmed (2024) explained other commonly used sampling techniques, including simple random, stratified, and systematic sampling. A basic method that reduces selection bias is simple random sampling (Noor et al., 2022). When using a population divided into strata based on similar categories such as salary, education, or status, stratified sampling is used to derive a sample representative of the entire strata (McLeod, 2023). The result increases the accuracy of the estimates, as every stratum is well represented. An efficient and easier-to-conduct technique is systematic sampling, in which the nth respondent is selected systematically from the list (Rahman et al., 2022). Overall, these sampling techniques are fundamental for obtaining statistically significant inferences about a larger population.

In studies with interviews, the mean number of participants was 12, comprising groups of 15-19 and 10-14. Larger sets were covering 20-24 and 25-30 participants. In qualitative research, data saturation is applied to determine the number of participants, ensuring that once data collection stops, no new themes emerge. The purpose, as emphasized by Ahmed (2025), is to enhance the credibility and completeness of the research findings. In terms of the number of respondents, the highest frequency was in the 30-129 range, followed by 330 and above. The mean frequency of respondents considered is 189. No respondents were included in the four research studies, as they were experimental in nature. While determining an appropriate sample size is important for drawing realistic conclusions from research findings (Memon et al., 2020), the number of respondents still varies depending on the study's population size. Moreover, the appropriate sample size should be determined based on the research topic, population, research aim, and analysis techniques. The results of this study align with those of Delice (2010), underscoring that when a parametric test is to be employed, the necessary sample size ranges from 30 to 500 respondents. The most commonly used instruments for data collection were an interview guide and a researcher-made questionnaire, with 52.9%. Three studies (or 17.7%) used the researcher-constructed questionnaire; in the experimental studies, diversity, reconnaissance, and ecological surveys were used. Observation and validation checklists, along with focus group discussions, were also used as research instruments. These results align with Taherdoost's (2016) findings, emphasizing the questionnaire as one of the most widely used tools for collecting data to obtain relevant information most reliably and validly.

Meanwhile, in ecology and biodiversity research, diversity, reconnaissance, and ecological surveys are commonly used to help researchers understand species distribution and abundance, habitat characteristics, and species-environment relationships. Findings from Cleland's (2011) species-diversity survey showed that similar relationships between species diversity and ecosystem productivity exist in human-managed ecosystems. The combined thematic analysis and structural equation modeling were used to analyze the data from 6 studies (35.3%). In 2 (11.8%) of the studies, a combined thematic and regression analysis was used. Three (17.6%) experimental studies used the paired-samples t-test, and three used the diversity index. Thematic analysis is used to explain the qualitative findings, while regression analysis and sequential equation modeling address the quantitative problems. As one of the widely used methods for analyzing textual data, Ahmed et al. (2025) underscored the centrality of thematic analysis to generating trustworthy and insightful qualitative research. While thematic analysis was compared to other methods such as phenomenological analysis and grounded theory, it was found that thematic analysis emphasizes interpretive depth and flexibility, allowing for both descriptive and rich conceptual analysis across diverse topics. Another statistical treatment applied is structural equation modeling (SEM), which combines the principles of factor analysis (Vogelsmeier et al., 2024) and regression analysis (Ali & Younas, 2021). A literature review by Hidayat & Wulandari (2022) argues that SEM has greater predictive power than path analysis and multiple regression because it can analyze the variables under study at the deepest level.

Table 4

Length of Thesis by Pages

Number of Pages	Frequency	Percent
Whole Manuscript (Mean=148.2)		
100 - 149	11	64.7
150 - 199	4	23.5
200 - 249	2	11.8
Preliminary Section (Mean=11.4)		
10 - 12	15	88.2
13 - 15	1	5.9
16 - 18	1	5.9
Review of Related Literature (Mean=22.6)		
11 - 17	5	29.4
18 - 24	7	41.2
25 - 31	2	11.8
32 - 39	3	17.6
Chapters I-V (Mean=84.9)		
55 - 74	5	29.4
75 - 94	7	41.2
95 - 114	5	29.4
References (Mean=7.8)		
3 - 5	5	29.4
6 - 8	5	29.4
9-11	4	23.5
12 - 14	3	17.6

Table 4 presents the length of thesis by pages. The majority of studies produced manuscripts with total page counts of 100-149. Four studies have more than 150 pages, while two have more than 200. The mean (average) number of pages across the 17 completed studies was 148. This is due to the varied topics covered in the study. The preliminary section includes the approval sheet, abstract, acknowledgment, dedication, table of contents, and list of tables and figures. The preliminary pages of 15 studies ranged from 10 to 12 pages, and the rest ranged from 16 to 18 pages. Conducting a literature review is considered essential for every research undertaking. Ulz (2022) enumerated the reasons for its importance, highlighting the primary purpose of creating new knowledge, identifying knowledge gaps, and providing an overview of interdisciplinary research areas. For the comprehensive review of related literature (RRL) for the completed studies, 18 to 24 pages were found across seven studies. The fewest pages covered 11 to 17, while the longest covered 32 to 39, with an average of 23 pages for this section. The main body of the thesis, comprising five chapters, was written in 75 to 94 pages across seven studies, followed by 95 to 114 pages across five studies, and the fewest pages were 55 to 74. On average, the main body has 85 pages. While the number of pages is considered for a written thesis, some universities, as in the formatting manual issued by UC Irvine Libraries (2024), place no limit on the length of the thesis or dissertation but set a limit on the thickness of the manuscript to a maximum of 2.25 inches. Using ideas, data, or quotes from other sources requires acknowledging these sources through in-text citations of the author and publication details and a reference list at the end of the manuscript. Depending on the study, the reference pages ranged from 3 to 5 in 5 studies and from 12 to 14 in 3 studies. The average number of pages in the reference section is 8.

Understanding the average length of the manuscript helps the research writer stay on track and avoid unnecessary processes. No set length for a thesis is defined; however, a concisely written thesis may comprise 50 pages in double-spaced format, according to the EMS Guidelines for Thesis (2019). While master's theses typically differ in length by field of study, the standard length may change over time in line with academic standards and expectations. While there is no one-size-fits-all ideal length, meeting the minimum word count requirements and ensuring sufficient depth and clarity should be considered. The findings above align with the overview provided by Elliot (2025), which states approximately 60 to 100 pages for a master's thesis and 150 to 300 pages for a dissertation. The length of related literature, for instance, varies depending on how much previous work has been conducted. According to the EMS Guidelines for Thesis (2019), fewer than 10 pages is likely too brief a review. With new media technology, the variables of interest and the theoretical understanding of the processes and effects related to its use may be established in other contexts.

Table 5

Description of Research Results (n=17)

Research Results	Frequency	Percent
Hypothesis Test		
Reject Ho1	4	23.5
Reject Ho1 & Ho2	9	52.9
Reject Ho1, Ho2 & Ho3	2	11.8
Accept Ho1 & Reject Ho2	1	5.9
Not applicable	1	5.9
Conclusion		
Significant Relationship	11	64.7
Significant Difference	4	23.5
No Significant Diff. (Ho_1) & Significant Diff. (Ho_2)	1	5.9
RRR Compliant	1	5.9
Research Output		
Action/Devt/Mgt Plan/Program	8	47.1
Module	3	17.6
Framework	1	5.9
None	5	29.4
Total	17	100.0

Table 5 discloses the description of research results. While the number of hypotheses ranges from 1 to 3, the results yield 11 studies, with 52.9% and 11.8% leading to the rejection of two hypotheses. Rejection of the null hypothesis implies the existence of either a significant difference or a significant relationship between the variables under study. One study found support for the first hypothesis and rejection of the second. The qualitative study did not require hypothesis testing. While a single study may have one or many hypotheses, not all studies have a hypothesis (Trochim, 2025). As a hypothesis is formally set up, two hypothesis statements are presented: one describing the prediction and the other describing all possible outcomes with respect to the hypothesized relationship. The hypothesis forms the foundation of a research proposal, as underscored by Misra & Agarwal (2020). Thus, a study based on a sound hypothesis is more likely to make a meaningful contribution to science.

The findings reveal significant relationships in 11 (64.7%) studies and 4 (23.5%) showing significant differences. One study yielded opposing conclusions for the two hypotheses. The conclusion of the qualitative study presents compliance with the RRR (Reduce, Reuse, Recycle) program. As the last section of the research paper, the conclusion provides a clear understanding of the study's findings and answers the statement of the problem. To arrive at a clear conclusion, George and McCombers (2022) suggested that the answer to the main research question be stated clearly, that the research process be summarized, that recommendations for future studies be provided, and that new knowledge contributed to the field of study be highlighted. In writing a conclusion, as emphasized by Caulfield (2023), its content varies depending on the paper: it may present the results of original empirical research or construct an argument through engagement with primary or secondary sources.

A variation of action/development plan and management program was the research output of 8 (47.0%) studies; 3 (17.6%) produced a module, and 1 constructed a framework. No research output was indicated in five (29.4%) studies. Output has been differentiated from outcome in the study by Steinebach (2023), highlighting policy outputs as the direct result of the decision-making process, while policy outcomes capture the consequences that follow from these outputs. In research, outputs are what are produced, while outcomes are what are achieved as a result of the outputs. While a research outcome involves aligning actions with goals, Hearn et al. (2025) identified an approach that provides a framework for assessing the results. As a result of the decision-making process, policy outputs are produced to improve practices or implement policy changes (Steinebach, 2023).

The regression analysis highlights a significant relationship between the thesis's descriptive characteristics as predictors and the research results, as reflected in the hypothesis test, conclusion, and research output, with correlation coefficients (*R*-values) ranging from 0.520 to 0.851 is shown in Table 6. Multiple correlations were run on all variables of interest, and computations were based on the 0.05 significance level. It should be noted that regression can help identify causal relationships between variables, whereas correlation does not imply causation

(Maryati et al., 2021). The strongest predictors of the conclusive statements come from the combined contributions of the conceptual framework and the statistical treatment (R=0.851, p=0.001, 0.023). The large, significant effect of these combined variables is supported by an R^2 of 0.685 ($R^2 = 0.685$). This implies that a well-constructed conceptual framework and an appropriate statistical treatment of the data may yield a sound conclusion for the study. In fact, a study by Salawu et al. (2023) recommended leveraging both conceptual and theoretical frameworks in research to enhance study stability and make findings generalizable.

Table 6

Regression Analysis Between Descriptive Characteristics and Research Results

Predictors	*Dependent Variable*	*R* value	*Adjusted* R^2	*p* value	Interpretation
Research Method	Hypothesis Test Result	0.520	0.222	0.032	Significant
Conceptual Framework	Conclusion	0.851	0.685	0.001	Significant
Statistical Treatment				0.023	Significant
Research Locale	Research Output	0.617	0.340	0.008	Significant

A moderate predictive level of research locale on research output is indicated by an R-value of 0.617 and a p-value of 0.008, disclosing a 34% significant effect. This suggests that the research output, in whatever form, be it an action plan, development plan, management program, learning module, or framework, should provide applicability to the same locale where the study is conducted. A valuable learning module developed by the researcher should benefit learners in the locale, ensuring its availability for use. While the research locale serves as a contextual backdrop, as Fonseca (2023) underscores, it can influence the entire research process and shape the knowledge and insights emerging from the research.

Another moderate correlation is observed between the research method and the hypothesis test result, yielding an R-value of 0.520 and a p-value of 0.032. This implies that the chosen research method is moderately contributing to the results; however, other factors may also be at play (Schober et al., 2018). About 22.2% of variations in research methods affect the hypothesis result, indicating whether it is rejected or accepted. These confirm that the choice of a suitable research method plays a decisive role in the expected hypothesis test result. Thus, choosing the wrong method can lead to misleading conclusions (Thattamparambil, 2020). These findings provide evidence to reject the null hypothesis, confirming that the conceptual framework, statistical treatment, research locale, and research method can predict the results of the research study. Therefore, the results section of a research paper presents the findings based on the information gathered as a result of the methodology.

Table 7

Regression Analysis Between Length of Thesis and Research Results

Predictors	*Dependent Variable*	*R* value	*Adjusted* R^2	*p* value	Interpretation
None	Hypothesis Test Result	-	-	-	Not Significant
None	Conclusion	-	-	-	Not Significant
None	Research Output	-	-	-	Not Significant

The analysis discloses in Table 7 that none of the length-of-thesis predictors of research results entered the regression model, indicating that the length of the thesis, measured by the number of pages, was not significant and did not contribute to the multiple regression model. In other words, the length of the thesis may not directly determine the quality of the research results. Regardless of the length of the manuscript, research results are generated from other parts of the thesis, specifically from the findings and information gathered through the methodology. While thesis length may vary by academic level and field, as Gilbert (2024) reiterated, the focus should be on thorough, clear research findings rather than page count. Given that the thesis's length does not affect the research results, this supports Elliot's (2025) contention that a well-crafted manuscript can yield strong findings. While the length of the thesis is a guide to be considered, the quality and depth should be given utmost importance.

4. Conclusions

Upon considering the findings, the following conclusions were drawn: Thesis types by MASE and MAED were almost equal in number, and the majority were completed in 2024, 2022, and 2020. Subject descriptors primarily focused on teaching, distance learning, and science—species diversity. San Jose, Magsaysay, and Rizal were the majority's selected research locales. The most common conceptual framework adopted is IV-DV. The majority of the research used a mixed-methods approach, applying the exploratory sequential and descriptive-correlational designs. The commonly used sampling techniques were purposive and simple random. The composition of participants and respondents was typical in terms of numbers. Data collection generally employed an interview guide and a researcher-made questionnaire. Mixed-methods studies mostly used thematic analysis and sequential equation modeling, while experimental studies used the paired-samples t-test for statistical analysis. The sections of the theses comprise a typical number of pages. The majority of the results disclosed rejection of the hypotheses, indicating a significant difference or relationship between the variables under study and concluding the study as significant. The predominant research outputs focused on action/development plans. The research method predicted the hypothesis test result. The conceptual framework and the statistical treatment strongly predicted research conclusions. Research locale accounted for a moderate amount of the research output.

Recommendations - In light of the findings and conclusions, it is recommended that the research writers ensure their study employs a well-defined, clear methodology to provide an accurate assessment of the evidence's strength in supporting or refuting the hypothesis. The IMRaD format may be implemented at the graduate school level starting in the 2025-26 academic year for use by graduate research students in preparation for journal publication. Content analysis of MA, MAED, and MASE theses may be continued by the graduate school students covering the school years before 2020 and from 2025 onwards. Future researchers may always include research outputs in their thesis. Aside from the action/development plan, future researchers may also consider theory development. Future studies on quantitative content analysis may be initiated and focused on the theses completed by MBA students from 1995 onwards.

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An analysis of graduate theses in the Master of Arts in Education Major in Administration and Supervision

Gante Jr., Luis I. ✉
Divine Word College of San Jose, Philippines (luisgantejr@gmail.com)
Javines Jr., Felino B.
Divine Word College of San Jose, Philippines (dwcsjk12@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)
Lazaro, Neofe J.
Divine Word College of San Jose, Philippines (mharifel.javier.lazaro@gmail.com)

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Abstract

The content analysis of graduate school theses provides a thorough insight into developing educational trends, challenges, and innovations in the academic sector. This study aimed to synthesize the findings of the fifteen theses reviewed and investigate the contributions of the graduate theses at Divine Word College of San Jose from 2020 to 2024, to provide valuable insights that can inform future educational practices, policies, and research. Findings show a lack of significant correlation between these observations and the Office Performance and Commitment Review Form (OPCRF), the official metric used for evaluating teacher performance. This finding raises questions about the alignment between formative and summative assessment tools in education. While classroom observations are practical for individual growth, their potential to inform broader institutional evaluations remains underutilized. Moreover, the fifteen theses underscore the value of community-based programs, such as home visitation and school-based feeding initiatives, in addressing systemic issues like parental support and student nutrition. These programs demonstrate the importance of collaboration between schools, families, and communities in creating a holistic support system for learners. The aforementioned findings call for sustained research into the intersections of technology, pedagogy, and learner well-being. As the educational landscape continues to evolve, future studies may focus on developing comprehensive strategies that integrate leadership, technology, and personalized support to create more resilient and adaptive educational environments. By addressing these interconnected areas, educators and policymakers can work towards building a more inclusive and effective education system that meets the needs of all learners.

Keywords: content analysis, instructional leadership, technology integration, home visitation, parental support, graduate theses, community based programs

An analysis of graduate theses in the Master of Arts in Education Major in Administration and Supervision

1. Introduction

Content analysis of graduate school theses offers a profound understanding of the emerging educational trends, issues, and innovations in the academic landscape (Durak et al., 2016). This study focuses on a collection of theses produced by students in the Master of Arts in Education, Major in Administration and Supervision program at the Divine Word College of San Jose from 2020 to 2024. These theses span various critical topics in education, reflecting the diverse challenges and opportunities faced by schools, teachers, and students in the Philippines (Frianeza et al., 2024).

The analysis includes research on various facets of education, including classroom management and leadership, community engagement, and technological integration. For example, Ortega (2020) investigated the use of classroom observation tools to improve teacher performance, whereas Orosco (2020) underlined the importance of instructional leadership in successfully integrating technology in the classroom. Casuncad (2021) evaluated the adoption of gender-awareness and development programs in schools and found that they promote inclusion. Caleze (2022) examined compliance with Disaster Risk Reduction and Management (DRRM) methods in schools, providing insights into disaster preparedness. Furthermore, studies by Chavez (2022) and Herrera et al. (2024) identified factors influencing students' learning domains, notably in early childhood education and secondary school. Ferrer et al. (2023) and Macaslam (2024) investigated leadership practices and administrative readiness in schools, focusing on the preparedness of school leaders and teachers for developing difficulties. Suerte (2022) and Pablo (2022) conducted a study on parental participation and student coping mechanisms in response to modular and online learning environments, offering methods to improve academic achievement. Paglicawan (2021) provided insights into the significance of school-based feeding programs, highlighting their impact on student wellbeing. Furthermore, Mase (2023) and Perez et al. (2023) investigated factors influencing academic success, whilst Jadia et al. (2023) studied coping techniques for working students and their academic performance. Bioy (2023) conducted a critical analysis of assessment techniques and processes in Technology and Livelihood Education (TLE), highlighting the need for greater alignment between classroom assessments and curriculum goals.

Collectively, these theses provide a comprehensive and diversified analysis of the educational system, focusing on how leadership, teacher professional development, technological integration, and community involvement interact to influence student performance. They underscore the need for adaptable techniques to meet the increasing demands of learners and educators in a rapidly changing educational environment.

Research Objectives - This content analysis has the following aims: (1) to synthesize the findings of the theses reviewed. (2) to point out the relevance and give an overview of how each study contributes to the priorities outlined in the Basic Education Research Agenda (DepEd Order No. 39, 2, 2016). (3) to identify the intersection between the studies reviewed and the National Higher Education Research Agenda (NHERA). Moreover, this content analysis investigated the contributions of the graduate theses produced by Master of Arts in Education, Major in Administration and Supervision students at Divine Word College of San Jose from 2020 to 2024, providing valuable insights to inform future educational practices, policies, and research.

Significance of the Study - This content analysis of graduate theses is extremely valuable to numerous stakeholders in the education sector. First, it provides educators, school administrators, and politicians with a thorough understanding of the changing educational landscape, particularly in the Philippines. This study provides insights into the practical consequences of instructional leadership, classroom practices, community participation, and technological integration by examining themes and findings from a variety of research studies. The study is an invaluable resource for educational leaders and policymakers seeking to discover strengths and potential areas

for growth in educational programs, leadership tactics, and teaching techniques. Furthermore, it highlights the value of ongoing professional development, evidence-based decision-making, and the incorporation of innovative approaches to address issues such as remote learning, gender sensitivity, and disaster risk management. This study benefits the larger educational community by adding to the body of knowledge that guides effective educational practices, with a special emphasis on supporting student success and well-being amid growing obstacles. This study is significant for future graduate students because it provides a thorough review of academic trends, research gaps, and essential topics in educational reform. It also lays the groundwork for future research that will help to build more resilient, flexible, and inclusive educational institutions.

Scope and Delimitation of the Study - This study is limited to theses written within the specified period (2020-2024) and produced by graduate students of the Divine Word College of San Jose's Master of Arts in Education, Major in Administration and Supervision program. It primarily focuses on analyzing the themes, methodologies, findings, and recommendations of the selected theses, aiming to provide an overview of the emerging trends and challenges in the educational sector as addressed by the research. The study does not include theses produced outside of the specified time frame or those from other academic institutions. Additionally, it does not delve into the implementation or impact of the recommendations made in the theses. Instead, it focuses on synthesizing the content and identifying patterns or insights relevant to the broader educational context. The analysis is based solely on the written texts of the theses, without considering any additional data or external factors not included in the documents themselves.

2. Methodology

This study employed content analysis of the graduate theses produced by Master of Arts in Education, Major in Administration and Supervision students at the Divine Word College of San Jose from 2020 to 2024. The study examined 15 master's theses covering various aspects of education, including classroom practices, leadership strategies, community involvement, technology integration, and student wellbeing. The selected theses address a range of educational issues, such as assessment tools and practices, disaster risk management, gender awareness programs, academic performance, coping mechanisms, and the challenges of remote learning, among others.

3. Results and Discussions

The results of the analyzed studies offer a comprehensive understanding of the diverse challenges, practices, and innovations shaping the current educational landscape. These findings reveal critical insights into classroom practices, leadership dynamics, technological integration, and student outcomes, presenting a nuanced picture of how schools, teachers, and students navigate evolving demands and opportunities. Based on the collected and analyzed graduate theses, these themes/variables were analyzed by the researcher:

Classroom Observation and Teacher Performance - One significant trend that emerged from the studies was the use of classroom observation tools (COTs) to evaluate and enhance teacher performance. In Ortega's (2020) study, classroom observations were found to positively contribute to teacher professional development by encouraging reflection and improving instructional strategies. However, the study also revealed a lack of significant correlation between these observations and the Office Performance and Commitment Review Form (OPCRF), the official metric used for evaluating teacher performance. This finding raises questions about the alignment between formative and summative assessment tools in education (Gezer et al., 2021). While classroom observations are practical for individual growth, their potential to inform broader institutional evaluations remains underutilized. This highlights the need for systemic reforms to integrate observational feedback into official evaluation processes, ensuring that professional development initiatives align with institutional performance goals (Kutasi, 2023).

Instructional Leadership and Technology Integration - The role of instructional leadership in driving technology integration was another pivotal theme identified in the studies. Orosco's (2020) research underscored

the critical impact of principals' leadership qualities on the successful adoption of ICT tools in classrooms. Schools led by proactive and visionary principals exhibited higher levels of teacher engagement with technology, resulting in enhanced classroom outcomes. The findings emphasized the need for digital leadership training for school administrators, equipping them to foster an environment conducive to technological innovation. This is especially relevant in the context of 21st-century learning, where digital tools have become indispensable for delivering quality education (Zuo et al., 2025). The study also noted that technology integration was most effective when coupled with ongoing teacher training programs, suggesting that leadership must prioritize professional development alongside technological infrastructure

Gender Awareness and Classroom Management - According to Casuncad's (2021) research on gender and development (GAD) programs, integrating them into schools has a significant impact on classroom management and educational outcomes. The study emphasized the effective implementation of GAD programs in the San Jose West District, which boosted gender awareness and inclusion among instructors and students. However, the study found inadequacies in GAD coordinators' technical skills, recommending continued training and the development of a specialized technical working group to oversee program changes. These findings highlight the transforming impact of gender equality programs in creating more inclusive and effective learning environments, while also emphasizing the importance of continued support and resources to sustain their long-term efficacy (Kuteesa et al., 2024).

Home Visitation and Parental Support - The significance of home-visiting programs and parental involvement in aiding student learning was a recurring theme throughout the research. Suerte's (2022) research found that teacher house visits and active parental participation significantly increased student achievement, particularly in modular learning settings. This technique helped address remote learning challenges such as limited access to resources and diminished teacher-student interaction. The study found that tailored support from both teachers and parents helped pupils stay motivated and overcome learning challenges. According to Đurišić and Bunijevac (2017), home visitation programs should be implemented as a fundamental method to improve parent-teacher collaboration and student performance.

School-Based Feeding Programs - Paglicawan's (2021) study on school-based feeding programs revealed important information on their impact on student well-being and learning outcomes. Both teachers and parents reported satisfaction with the program's execution, recognizing its role in increasing student nutrition and attendance. However, the analysis identified differences in the assessment of resource management and procurement processes, suggesting opportunities to improve program efficiency. Tamiru et al. (2024) argue that by solving these logistical problems, schools may maximize the benefits of feeding programs, ensuring that they contribute more effectively to student health and academic achievement.

Disaster Risk Management in Schools - Caleze's (2022) study focused on disaster risk reduction and management (DRRM) procedures in schools and found strong adherence to established protocols. Despite this, the study discovered a significant deficit in the training offered to DRRM coordinators, limiting their ability to respond effectively in emergencies. The findings highlight the need for professional development for DRRM coordinators, as well as for enhanced resource allocation to improve preparedness and response skills. This is especially important in areas prone to natural catastrophes, where schools frequently serve as both educational institutions and emergency shelters.

ICT Materials and Online Learning Challenges - The utilization of ICT materials in online learning was a significant emphasis of Pablo's (2022) research. While laptops and smartphones with Wi-Fi were the most popular devices, learners still encountered other hurdles, including technological difficulties, health issues, and poor study habits. The study discovered a strong correlation between the availability of ICT resources and the severity of these difficulties. No direct association was found between ICT use and pupils' coping techniques. These findings illustrate the limitations of relying solely on technological solutions to address the challenges of online learning. A comprehensive approach that combines technical assistance, mental health services, and digital literacy training

is required to produce more effective online learning settings (Buchan et al., 2024).

Coping Mechanisms and Resilience - Coping techniques have emerged as an important aspect in assisting learners and educators to handle problems (Sanchez & Mananquil, 2024). Recreational activities, emotional intelligence, and social support were indicated as important techniques for students. Jadia et al. (2023) found that time management, grit, and escape-avoidance tactics help students in the workplace. These findings indicate that developing resilience through structured programs and peer support networks can improve students' ability to overcome academic and personal challenges.

Leadership Practices and Administrative Readiness - Leadership methods were shown to be crucial to the success of educational initiatives. According to the Ferrer et al. (2023) study, school leaders who displayed strong leadership skills had a positive impact on their schools' readiness for remote and blended learning. Similarly, Macaslam's (2024) research on administrative preparation emphasized the significance of interventions in financial literacy and retirement planning for educational workers. These findings are consistent with Plaku and Leka's (2025) emphasis on the diverse roles of school leaders in developing institutional and individual preparation.

Reading Comprehension and Learning Domains - Herrera et al.'s (2024) reading comprehension study highlighted concerns among Grade 10 students, including vocabulary shortages and difficulties with focus. The study found that the psychomotor domain, which includes physical involvement and interactive learning, significantly influenced reading comprehension. Tindan and Anaba (2024) support these findings, arguing that incorporating hands-on activities and physical involvement into reading programs can increase student performance.

Assessment Practices and Curriculum Alignment - Bioy's (2023) study on Technology and Livelihood Education (TLE) assessments revealed gaps between intended learning outcomes and test item alignment. These discrepancies underscore the need for improved assessment practices, including ongoing teacher training and supervision (Zeichner et al., 2024). By aligning assessments with curriculum goals, schools can ensure that students are evaluated more accurately and effectively.

Factors Affecting Academic Performance and Learning Domains - Studies such as Mase (2023) and Perez et al. (2023) investigated the elements impacting academic achievement and teacher adaptability, respectively. Parental support, study habits, and pedagogical skills were identified as major predictors of success, underscoring the importance of comprehensive support systems that address individual, familial, and institutional needs. Chavez (2022) investigated the factors influencing kindergarten students' learning domains and found a significant relationship between these factors and ECD outcomes in the Gross Motor Domain, Fine Motor Domain, Self-help Domain, Expressive Language Domain, and Cognitive Domain. In general, the findings provide a comprehensive assessment of the current state of education, including actionable insights into leadership, community involvement, and ideas for tackling systemic issues. These findings, as supported by Stockard (2021), are an invaluable resource for educators, politicians, and academics working to build a more effective and equitable educational system.

4. Conclusions and Recommendations

The analysis of graduating theses from 2020 to 2024 reveals a diversified approach to tackling the changing issues of the educational landscape, particularly in the Philippines. These studies emphasize the importance of leadership, teacher development, parental involvement, and community-based activities in creating a conducive atmosphere for student success. The findings highlight the need to understand education as a dynamic system in which many parts must collaborate to meet evolving needs and improve outcomes. A constant subject across the theses is the growing importance of technology integration in education. Although ICT tools have the potential to improve teaching and learning, they are not stand-alone solutions. The findings show that effective instructional leadership, proper educator training, and the availability of resources are all necessary for successful technology integration.

Furthermore, findings emphasize the importance of matching digital technologies with instructional objectives to enable meaningful and impactful use. The findings also highlight the necessity of adaptive coping skills for both students and instructors. Effective coping techniques, including time management, emotional intelligence, and social support, are critical for navigating the challenges of modular learning, online education, and other non-traditional settings. These findings highlight the need for institutional interventions to promote mental health and resilience among students and teachers, especially during periods of significant upheaval, such as the post-pandemic recovery. Leadership was identified as a critical component of educational success in the investigated theses. The study demonstrates how proactive and imaginative leadership may stimulate the adoption of innovative practices, such as ICT integration and gender awareness initiatives, while also improving schools' preparedness for emerging difficulties. School leaders and administrators who prioritize professional development, resource allocation, and community participation have a positive ripple effect on the entire educational environment. The aforementioned findings call for sustained research into the intersections of technology, pedagogy, and learner well-being. As the educational landscape continues to evolve, future studies should focus on developing comprehensive strategies that integrate leadership, technology, and personalized support to create more resilient and adaptive educational environments. By addressing these interconnected areas, educators and policymakers can work towards building a more inclusive and effective education system that meets the needs of all learners.

The following recommendations are hereby forwarded: School administrators may provide regular and targeted professional development programs for school leaders and teachers, focusing on instructional leadership, technology integration, and coping mechanisms. School leaders may encourage visionary leadership practices by offering leadership training that emphasizes innovation, adaptability, and inclusivity. School administrators may establish mentoring systems where experienced leaders guide new school administrators in implementing best practices. Teachers may align ICT tools and digital resources with curriculum goals to ensure their meaningful and impactful use in the classroom. Moreover, schools and/or institutions (1) may invest in the infrastructure and resources needed to support technology integration, including reliable internet access and updated devices; (2) may offer ongoing training for educators on the effective use of technology to enhance teaching and learning; and (3) may develop institutional programs focused on promoting mental health, resilience, and well-being among students and educators. Furthermore, school leaders/administrators (1) may integrate life skills training, such as time management and emotional intelligence, into the curriculum to better equip learners for non-traditional education setups; (2) may create support systems that provide counseling and peer-support groups for both students and teachers; (3) may conduct regular workshops and training sessions for educators on designing and implementing practical assessment tools; (4) may periodically review and revise curriculum standards to ensure alignment with current educational trends and learner needs; (5) may develop a system for feedback and continuous improvement based on assessment outcomes to refine teaching strategies; (6) may strengthen collaboration between schools, families, and communities to address systemic issues like student nutrition and parental involvement; (7) may expand and improve programs like home visitation and school-based feeding initiatives to ensure holistic support for learners; and (8) may encourage community participation in school activities to foster a sense of shared responsibility for student success. The Department of Education (1) may promote policies that prioritize inclusivity and adaptability within the education system to address the needs of all learners better better and (3) may advocate for government and private sector support in funding innovative and inclusive educational programs. Lastly, future researchers may also consider the research priorities for Occidental Mindoro, including Indigenous Peoples (IP), Tamaraw Conservation, and Salt Production.

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Conformance of Divine Word College of San Jose MBA Theses with CHED CMO No. 52 series of 2016

Macabata, Nancy S.
Divine Word College of San Jose, Philippines (nancy.santiago.macabata@gmail.com)
Javines Jr., Felino B.
Divine Word College of San Jose, Philippines (dwcsjk12@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)
Lazaro, Neofe J.
Divine Word College of San Jose, Philippines (mharifel.javier.lazaro@gmail.com)

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Abstract

To ensure alignment with academic and development priorities, the proponent endeavors to analyze the MBA Thesis in accordance with CHED CMO No. 52, s 2016, focusing on the Pathway to Relevance by evaluating its capacity to generate impactful and applicable knowledge that addresses real-world business challenges and contributes to national development goals. This content analysis, using the IPO, explicitly determines the profile of the MBA thesis in terms of category, research design, instrument, respondents, study findings, and the CHED RDE Platform, and analyzes and evaluates the findings to determine whether they conform to the CHED CMO. The in-depth analysis of the thirteen MBA theses shows that only five are considered in conformity with CHED CMO. Three out of the five are aligned with CHED RDE 4, particularly SDG 8 on sustainable economic growth and employment 2, and SDG 9 on fostering innovation. The other two adhere to CHED RDE 1 on food production and security under SGD 2 and to the promotion of sustainable agriculture. Moreover, the two highest classifications of the MBA theses are Innovation and Entrepreneurship, which underscore the crucial factors for adapting to a rapidly changing business environment and the essential tools for sustainability and growth. Thus, the MBA curriculum may be reviewed to incorporate the provisions of CHED CMO No. 52, particularly its RDE Platforms, into core research and/or capstone courses. This will ensure that MBA students are not only aware of the framework but are also trained to design a research study that directly incorporates the CHED CMO guidelines.

Keywords: content analysis, food production, sustainable economic growth, graduate theses, Master in Business Administration

Conformance of Divine Word College of San Jose MBA Theses with CHED CMO No. 52 series of 2016

1. Introduction

The Divine Word College of San Jose (DWC-SJ) is a premier Catholic institution of learning in the province of Occidental Mindoro. For almost eighty (80) years, the institution has not wavered in its genuine commitment to molding young minds in the world of academia. With a firm focus on moral, spiritual, and intellectual growth, DWC-SJ pursues a holistic approach in the development of a person, as clearly stated in its Vision-Mission-Goal (Divine Word College of San Jose, 2025). After successfully overcoming the challenges posed by the COVID-19 pandemic, the school, with renewed vigor and a clear mandate, has revitalized its operations under the leadership of its new and visionary President, Rev. Fr. Felino B. Javines, Jr., SVD, DM. As part of his strategic initiatives, Fr. President proposed the integration of three (3) significant regional resources: salt, Tamaraw, and Indigenous People (Mangyans) into future MBA research endeavors. In line with this vision, Fr. President launched a program aimed at studying and analyzing MBA Theses, using CHED CMO No. 52, series of 2016 (CHED CMO), as a guiding framework. This effort focuses on evaluating the alignment of MBA research with the "Pathways to Relevance" as outlined in the CHED CMO. The primary goal of this directive is to ensure that the research output of MBA students not only meets academic standards but also contributes meaningfully to addressing real-world issues and advancing both regional and national development goals (Sarsale et al., 2024).

This "Pathways to Relevance" provides the following: Research, Innovation, and Extension in Philippine higher education institutions (HEIs), which must Work contextually and purposively. Under the CHED CMO, knowledge generation in HEIs should enable us to a) Deepen our understanding of ourselves as a people and as a nation and b) Discover practical, evidence- and science-based answers that can address real-world social, economic, and environmental challenges of families and communities. The above-quoted "Pathways to Relevance" is intentionally inclusive, serving as a broad guide in identifying potential areas of focus for research studies within HEIs. These areas are closely aligned with the United Nations (UN) Sustainable Development Goals (SDGs), which are integral to the UN 2030 Agenda for Sustainable Development. Mohammed (2015) explains that the 2030 Agenda is set to deliver a rights-based agenda for People, to end poverty and hunger in all their forms and dimensions; an agenda for protecting the Planet, our typical home, from degradation, sustainably managing its natural resources, and taking urgent action on climate change; an agenda for Prosperity, to ensure that all human beings are included and can enjoy prosperous and fulfilling lives in harmony with nature; and an agenda for Peace, to foster peaceful, just, and inclusive societies that are free from fear and violence.

Under the CHED CMO, the UN SDGs are categorized into six (6) Research, Development, and Extension (RDE) platforms, namely: Food Production and Security; Environment, Disaster Risk Reduction, Climate Change, and Energy; Terrestrial and Marine Economy: Biodiversity and Conservation; Smart Analytics and Engineering Innovations; Health Systems; and Education for Science, Technology, Engineering, Agriculture-Fisheries, and Mathematics (STEAM). Based on the CHED CMO, this structured framework not only supports HEIs in contributing to global sustainability goals but also ensures that their research outputs remain relevant and impactful in addressing pressing social, economic, and environmental challenges. Nelson and Torres-Rahman (2015) argue that to drive sustainable development, companies and individuals must have market insight that explains why challenges exist and suggests ways to overcome them. This includes insight into the environmental, institutional, and cultural contexts in which companies operate and insight into the options and incentives of the people whose decisions companies need to influence—whether these be consumers, suppliers, distributors, retailers, employees, or stakeholders in the broader business, government, civil society, or donor community. Moreover, HEIs must also understand the different business models that can be employed. By aligning its research initiatives with the SDGs and the overarching vision of the UN 2030 Agenda, DWC-SJ solidifies its position as a hub of academic excellence

and societal impact, not only in the province of Occidental Mindoro but also in the MIMAROPA Region.

Research Objectives - This content analysis aimed to (1) determine the profile of the MBA thesis in terms of category, research design, instrument, respondents, findings of the study, and the CHED RDE Platform; and (2) analyze and evaluate the findings to determine if they conform to the CHED CMO No. 52 series of 2016.

Significance of the Study - This content analysis of the MBA graduate theses is significant, as it aims to ensure that the academic research outputs of DWC-SJ MBA students remain relevant and impactful in addressing pressing social, economic, and environmental challenges outlined in CHED CMO No. 52, series of 2016, and the UN Sustainable Development Goals. This study is limited to theses written by MBA students of the DWC-SJ during the specified Academic Year 2020-2024.

2. Methodology

This part of the study presents the proper procedure undertaken to determine conformance of DWC-SJ MBA Theses with the CHED CMO. All MBA Theses submitted and approved for the period 2020-2024 were included in this study. Each research problem was carefully evaluated and approved, with the relevant sections of the thesis identified for analysis. Copies of the MBA Theses were obtained from the college library and thoroughly reviewed and analyzed to gain a comprehensive understanding of their contents. Information and data relevant to the study were systematically collected and encoded for ease of reference. It was determined that qualitative research was best for this study. Teodorescu (2024) clearly explained that qualitative data helps in-depth analysis. Data were arranged categorically based on their attributes and properties. Moreover, he explained that data records are an exploratory collection method that primarily focuses on gaining insights by using existing, reliable documents as the data source. These data helped complete the study. A review of related literature was conducted to support the discussion of the findings.

In order to provide a more straightforward presentation of the results, descriptive statistics such as frequency and percentage were used. Given the qualitative nature of this research and its focus on analyzing conformance to an existing CHED-CMO, the Input-Process-Output (IPO) framework was identified as the most appropriate research design. As qualitative research with an in-depth analysis of conformance to an existing CHED-CMO, the IPO is the most appropriate research design. IPO, as a systems model, is not linear; all parts affect each other (Dunaetz, 2024). The model offers a simple, practical, and efficient way to analyze and document (Feldman, 2025).

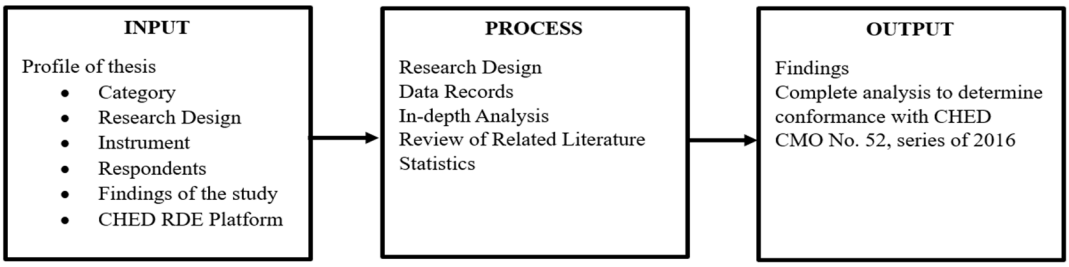

Figure 1. Input-Process-Output Model

Figure 1 shows the IPO model of the study. Under the input, the available profile of the thesis, including the category, research design, instrument, respondents, findings of the study, and the CHED RDE Platform. For the PROCESS, the research design, data records, in-depth analysis, review of related literature, and statistics using frequency and percentage. For the OUTPUT, the researcher analyzed the findings and evaluated whether they conform to the CHED CMO.

3. Results and Discussions

The results present the study's findings, noting any significant outcomes and highlighting patterns in the data. It is the culmination of extensive efforts to study and analyze the topics presented in the DWC-SJ MBA Theses for the period 2020-2024. Presented below are the results of the analysis, starting with the Category of MBA Theses under Table 1.

Table 1
Category of MBA Theses

Category	Frequency	Percentage
Good Governance	2	15%
Innovation	5	39%
Entrepreneurship	4	31%
Human Relations	2	15%
Total (13)	13	100%

Table 1 shows that the most common category of the MBA Theses was innovation at 5 (39%), followed by entrepreneurship at 4 (31%). Both good governance and human relations are at two (2) or 15%. In designing and evaluating research, Frankel et al. (2017) explained that categorical data are obtained by determining the frequency of occurrence in each of several categories. Although it is hard to quantify intangible concepts such as creativity and innovation, success and failure, and the quality of information, the methodology of categorical data analysis is helpful (Vuong et al., 2023). Based on this premise, the researcher classified the MBA Theses into four (4) main categories, namely, Good Governance, Innovation, Entrepreneurship, and Human Relations. Five (5) among the thirteen (13) MBA Theses harped on Innovation, which is crucial and necessary in today's technological developments. Innovation is critical across all industries. Innovation can be mastered by adopting novelty, creativity, sustainability, and successful entrepreneurship (Balaji, 2022). Innovation is indeed the tool of entrepreneurship, especially in light of the significant changes that characterize the 21st-century entrepreneurial landscape (Eliakis et al., 2020).

Table 2
Research Design Used by the MBA Students

Category	Descriptive Correlational		Qualitative-Quantitative		Input-Process-Output		Total	
	F	%	F	%	F	%	F	%
Good Governance	1		1					
Innovation			4		1			
Entrepreneurship	2		2					
Human Relations			2					
Total (13)	3	23%	9	69%	1	8%	13	100%

For the research design, the majority of the MBA students opted for a qualitative-quantitative design (9/13, 69%), which is an exploratory sequential mixed-methods design that involves collecting and analyzing qualitative data first. Quantitative data and, finally, integrating the two. (Fetters et al., 2013; Berman, 2017). Only one (1) used the Input-Process-Output (IPO) design, while the rest used descriptive correlational designs at 3 (23%). It is noteworthy that the mixed-methods design was commonly used by the MBA students, with 9 (69%) using it. Mixed-methods design involves collecting and analyzing qualitative data first, then quantitative data, and finally integrating the two. Mixed-methods approaches require not only the skills of the individual quantitative and qualitative methods but also a skill set to bring two methods/datasets/findings together in the most appropriate way (Wasti et al., 2022).

Table 3 presents the types of instruments used in MBA theses. As to the types of instruments used, the most common method was a combination of an interview schedule and a questionnaire at 9 (69%). Three (3) MBA students, or 23%, used a questionnaire, and only one (1), at 8%, used triangulation or a combination of an interview schedule, questionnaire, and ocular inspection. Usually, an interview schedule is prepared for follow-up, especially for unanswered survey questionnaires. The methods of data collection in qualitative research follow a convention

that is almost the opposite of those in quantitative research. The wording, order, and format of these questions are neither predetermined nor standardized. Qualitative methods are characterized by flexibility and freedom in terms of the structure and order given to the researcher. Most qualitative study designs are method-based: that is, the method of data collection seems to determine the design (Tenny et al., 2017). As to the type of instruments used in this study, the most common method used by MBA students was a combination of an interview schedule and a questionnaire, with 9 (69%) respondents. Three (3) MBA students, or 23%, used the questionnaire. A questionnaire is one of the most widely used tools to collect data, especially in social science research. The main objective of a questionnaire in research is to obtain relevant information as reliably and validly as possible. Thus, the accuracy and consistency of survey/questionnaire forms are significant aspects of research methodology and are known as validity and reliability (Taherdoost, 2016). Only one (1) at 8% used triangulation or a combination of interview schedule, questionnaire, and ocular inspection. This indicates that all students used a questionnaire as the instrument, with some preferring to include a form of interview or inspection alongside the questionnaire. Kuphanga (2024) finds the questionnaire method to be a versatile and potent tool for data collection across diverse research domains. Its structured format facilitates standardized data collection, organization, and analysis, particularly advantageous for quantitative research endeavors. This method offers researchers cost-effectiveness, accessibility, and the ability to reach a broad, diverse population, enabling the efficient collection of comprehensive insights.

Table 3

Types of Instruments Used

Category	Interview Schedule & Questionnaire		Questionnaire		Interview Schedule, Questionnaire, Ocular Inspection	
	F	%	F	%	F	%
Good Governance	1		1			
Innovation	4				1	
Entrepreneurship	2		2			
Human Relations	2					
Total (13)	9	69%	3	23%	1	8%

Table 4

Frequency and Percentage of Select Respondents Utilized in the Study

Respondents	Frequency	Percentage
Businessman	5	38%
Students (HS/College)	2	15%
Employees	3	23%
Rabbit Raisers	1	8%
Producers	1	8%
Consumers	1	8%
Total (13)	13	100%

Moreover, most of the respondents in this study are businessmen at five (5), or 38%, while the next two (2) are employees at three (3), or 23%, and students are divided into High School and College at two (2), or 15%. The rest, including rabbit raisers, producers, and consumers, is at one (1) or 8% each. A well-conducted survey not only needs to ensure that it is in the correct format but also that respondents are selected according to the proper criteria (Raišys, 2022). Moreover, Taherdoost (2016) noted that the selection of respondents is a critical aspect of research design, as it affects the reliability and validity of the study's findings. Most of the respondents in this study are businessmen at five (5), or 38%, followed by employees at three (3), or 23%, and students are divided into High School and College at two (2), or 15%. The rest, including rabbit raisers, producers, and consumers, is at one (1) or 8% each. Businessmen comprise the most significant number of respondents, since the course is an MBA, and students would necessarily gravitate towards business owners to put the theoretical frameworks discussed in class into practice. This result implies that ten (10) out of the thirteen (13) respondents, or 77%, are either business people/owners/producers or employees who have direct access to or knowledge of the business operations. Schuhmacher and Thieu (2022) posit the stakeholder theory, which holds that every organization must focus on managing key stakeholders to achieve its mission successfully. According to them, a key stakeholder (such as a

businessman, owner, producer, or employee) is a person or entity with a legitimate interest in the organization's implementation and outcomes and with the right to intervene.

Table 5
Cluster of SDGs under the Six CHED RDE Platforms

Category	CHED RDE 1	UN SDG 2	CHED RDE 4	UN SDG 8	UN SDG 9	Total	%
Good Governance Innovation Entrepreneurship Human Relations	2	□	3	□	□	5	38%
Total (13)	2	15%	3		23%	5	38%

Table 5 presents the SDG clusters under the Six CHED RDE Platforms. An in-depth analysis of the thirteen (13) MBA Theses shows that only five (5), or 38%, conform to CHED CMO No. 52, series of 2016. Three (3) out of the five MBA Theses are aligned with CHED RDE 4, particularly SDG 8 on sustainable economic growth and employment, and SDG 9 on fostering innovation. As mentioned in the Findings, these MBA Theses address the adoption of financial technology, the extent of e-commerce application among MSMEs, and the enabling of research using online marketing strategies to foster innovation and sales. The other two (2) MBA Theses adhere to CHED RDE 1 on Food Production and Security under SDG 2, which promotes sustainable agriculture.

While the other eight (8) MBA Theses do not fall under specific CHED RDE Platforms, they contribute to vital aspects of business operations, such as Good Governance, Entrepreneurship, and Human Relations. Two (2) of these discuss the Anti-Red Tape Act (ARTA) and multi-purpose cooperative development. Four (4) are centered on entrepreneurship, including the desirability of enrolling in business courses, the economic impact of the new normal on micro-enterprises, and barriers to business start-ups. The final two (2) focus on Human Relations, particularly career pathing for employee loyalty and contractual employment. This study underscores the importance of aligning MBA Theses with CHED CMO No. 52, series of 2016, and its RDE Platforms, designed to address global challenges through the 17 UN SDGs. Future MBA students at DWC-SJ must embrace this alignment to contribute practical, tangible solutions to society's pressing concerns. By fostering innovative and SDG-focused research, students can make meaningful contributions to the vision of the UN's 2030 Agenda.

Table 6
CHED Research, Development, and Evaluation (RDE) Platforms

CHED RDE Platforms	17 UN Sustainable Development Goals (SDG)
Food Production and Security	SDG 1, 2, 3, 6, 8, 10, 12, 13, 16, 17
Environment, Disaster Risk Reduction, Climate Change, and Energy	SDG 3, 5, 6, 7, 11, 13, 16, 17
Terrestrial and Marine Economy: Biodiversity and Conservation	SDG 3, 5, 8, 10, 11, 13, 14, 15, 16, 17
Smart Analytics and Engineering Innovations	SDG 3, 5, 8, 9, 10, 11, 12, 16, 17
Health Systems	SDG 3, 5, 10, 11, 16, 17
Education for STEAM	SDG 4, 5, 8, 16, 17

Table 6 shows the CHED Research, Development, and Evaluation (RDE) Platforms. Among the thirteen (13) DWC-SJ MBA Theses, five (5) were under the Innovation category. Two (2) of the five (5) are aligned with CHED RDE 1 on Food Production and Security under SDG 2, which promotes sustainable agriculture. These MBA Theses address salt production and rabbitry marketing. The remaining three (3) MBA Theses are aligned with CHED RDE 4, particularly SDG 8 on sustainable economic growth and employment, and SDG 9 on fostering innovation. These MBA Theses address the adoption of financial technology, the extent of e-commerce application among micro, small, and medium enterprises (MSMEs), and the enabling of research using online marketing strategies to foster innovation and sales. The finding indicates that, despite not being explicitly directed to conform to the provisions of CHED CMO No. 52, series of 2016, all MBA Theses from 2020-2024 were able to align with the requirements of the CHED CMO. This shows that the MBA student's research goes beyond academic requirements and aligns with the UN SDGs and CHED RDE platforms. It also highlights the growing trend among Philippine HEIs to move beyond traditional academic functions. Baniaga (2024) stated that in the Philippine Higher Education context, universities are being urged to expand their roles beyond traditional academic tasks and directly contribute to

sustainable development.

4. Conclusions and Recommendations

The research analyzed thirteen (13) MBA theses from the DWC-SJ written between the Academic Year 2020 and 2024, which were found to have a significant level of conformance with CHED CMO No. 52, series of 2016, and the United Nations SDGs. The research revealed that while five (5) MBA theses are directly aligned with the specific CHED RDE Platforms, all thirteen (13) MBA theses contributed to the broader goals of good governance, innovation, entrepreneurship, and human relations, which are integral to the "Pathways to Relevance" outlined in the CHED CMO. Moreover, the two highest classifications of the MBA theses are Innovation and Entrepreneurship, which underscore the important factors needed to adapt to a rapidly changing business environment and the essential tools for sustainability and growth.

The following recommendations are hereby forwarded: Integrate the CHED CMO Framework into the DWC-SJ MBA Curriculum: The DWC-SJ MBA curriculum may be reviewed to incorporate the provisions of CHED CMO No. 52, particularly its RDE Platforms, into core research and/or capstone courses. This will ensure that MBA students are not only aware of the framework but are also trained to design a research study that directly incorporates the CHED CMO guidelines. Encourage Applied and Interdisciplinary Research: The DWC-SJ may encourage MBA students to conduct research that is both applied and interdisciplinary. This research study could involve strategic partnerships with LGUs, government agencies and instrumentalities, cooperatives, non-profit organizations, and businesses to address current and emerging threats and concerns in Occidental Mindoro. Develop a Research Fund in Partnership with the Government. The DWC-SJ can initiate the establishment of a research fund, with funding from the local government unit or an international agency, to incentivize projects focused on the three (3) regional resources: salt, Tamaraw, and Indigenous Peoples (Mangyans). This development project would not only align with the school's vision but also directly contribute to the province's growth and development of key resources. Create a Repository of Relevant Studies. DWC-SJ can also take the lead in establishing a publicly accessible repository of all MBA theses that conform to the CHED CMO No. 52, series of 2016, in the province of Occidental Mindoro. This initiative would serve as a valuable resource for policymakers, government agencies, local entrepreneurs, and other researchers, showcasing DWC-SJ's continuous commitment to creating knowledge that is both academically rigorous and socially relevant.

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Conformance of Divine Word College of San Jose feasibility studies with CHED CMO No. 52 series of 2016

Macabata, Heliodoro E.
Divine Word College of San Jose, Philippines (nancy.santiago.macabata@gmail.com)
Javines Jr., Felino B.
Divine Word College of San Jose, Philippines (dwcsjk12@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)
Lazaro, Neofe J.
Divine Word College of San Jose, Philippines (mharifel.javier.lazaro@gmail.com)

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Abstract

Business is a fundamental driver of national progress, catalyzing growth and development. The preparation of a Feasibility Study is crucial for assessing the critical dimensions of proposed projects and determining their success. This study evaluates the alignment of MBA FS with the "Pathways to Relevance" framework. This directive emphasizes contextual, evidence-based research that addresses societal challenges while advancing the UN Sustainable Development Goals (SDGs). The input-process-output (IPO) model was used, along with frequency and percentage measures, to assess the variables. An in-depth analysis of the 12 MBA FS revealed that six, or 50%, addressed topics that conformed to the provisions of the cited CMO. Among these, food production and security emerged as the most common topics. Also, findings show a natural alignment between the business interests of the students and the country's development priorities as outlined by the CHED based on the UN SDGs. Incidentally, projects in other key areas, such as Smart Analytics and Engineering Innovations and Environmental Management, are slowly gaining presence in potential endeavors to be further developed in the future. A notable finding is the difficulty in classifying the Mangyan Handicraft, a culturally focused study, under the current CHED RDE platforms. Thus, it is recommended that the faculty members actively encourage students to explore research in underrepresented but important areas. This can include proposing specific topics related to the distinctive needs of the province of Occidental Mindoro, such as sustainable tourism (RDE 3), renewable energy solutions (RDE 2), and public health systems (RDE 5).

Keywords: content analysis, input process output, graduate theses, UN Sustainable Goals, feasibility study

Conformance of Divine Word College of San Jose feasibility studies with CHED CMO No. 52 series of 2016

1. Introduction

Business is a cornerstone of any nation's progress, driving its growth and development (Prelipcean & Ungureanu, 2023). For any entrepreneurial endeavor to thrive and prosper, preparing a feasibility study (FS) is both necessary and critical. The feasibility study is indispensable for evaluating the key aspects of a proposed project and determining its likelihood of success. It also serves as an assessment of the practicality of a proposed plan or project. A feasibility study analyzes the viability of a project to determine whether it is likely to succeed. The study is designed to identify potential issues that could arise during the project (McLeod, 2021). The DWC-SJ faithfully upholds the practice of preparing the feasibility study as a prerequisite for starting new business ventures. As the premier higher education institution (HEI) in the province of Occidental Mindoro, DWC-SJ has consistently demonstrated its commitment to mold the young minds of its students with a firm focus on the spiritual, moral, and intellectual transformation for them to be globally employable individuals, as envisioned in the school's Vision-Mission-Goal of dedicating itself to the holistic development of the person.

In response to evolving challenges in academe, primarily driven by technological innovations, DWC-SJ has proactively adapted to these new requirements. Under the leadership of Rev. Fr. Felino B. Javines, Jr., SVD, DM, the school has embraced innovative initiatives, including the introduction of three (3) essential topics for graduate research: salt, Tamaraw, and Indigenous People (Mangyans). These three (3) focal points highlight the unique resources of Occidental Mindoro and their potential to drive regional progress when given the attention they deserve. To ensure the relevance of graduate research, particularly for MBA students, Fr. President initiated a program to evaluate the alignment of the FS and determine its fitness and relevance to the ever-changing needs of the time. This initiative uses the CHED CMO No. 52, series of 2016 (CHED CMO), as a guiding framework. The directive aims to assess how well these studies align with the CHED CMO's "Pathways to Relevance," a provision that emphasizes the contextual and purposeful role of research in Philippine HEIs.

This "Pathways for Relevance" highlights that research, innovation, and extension in Philippine higher education must Work contextually and purposively. Under the CHED CMO, knowledge generation in HEIs should enable us to a) Deepen our understanding of ourselves as a people and as a nation and b) Discover practical, evidence- and science-based answers that can address real-world social, economic, and environmental challenges of families and communities. The SDGs map out a global vision for a better world. They set out ambitious goals and targets for people, prosperity, planet, and peace. Getting there will require us to Work together—no matter where we live or Work, this is a universal call to action. Leaders in government, business, and civil society—all of us—must develop new ways of operating and cooperating if we are to leverage the necessary financial, technical, and managerial resources to achieve these goals (Nelson & Torres-Rahman, 2015).

Moreover, Fallon (2015) noted that, from a business perspective, this Sustainable Development Goals (SDG) milestone also provides an opportunity to reflect on how far attitudes and thinking about the role of the private sector in development have shifted. Another key shift is the acknowledgement that business can have its most significant impact through its core business and value chain, thereby ensuring that solutions can be both financially sustainable and scalable. Community and social investment by companies remains important, but it is through their core businesses that truly transformative impact will happen. Nelson and Torres-Rahman (2015) contend that three common imperatives resonate through almost every preparatory meeting and publication on the SDGs. First, country leadership will be needed to prioritize and take ownership of outcomes. Second, a multi-stakeholder partnership will be needed to align agendas, mobilize resources, and ensure shared accountability. Moreover, third, private-sector investment will be needed to develop and scale financially self-sustaining solutions. By aligning the research efforts with the UN SDG and the UN 2030 Agenda for Sustainable Development, DWC-SJ continues to

position itself as a beacon of academic excellence and societal impact in the province of Occidental Mindoro and the MIMAROPA Region.

As used in the CHED CMO, the UN SDGs have been clustered into six (6) Research, Development, and Extension (RDE) platforms, namely Food Production and Security; Environment, Disaster Risk Reduction, Climate Change, and Energy; Terrestrial and Marine Economy: Biodiversity and Conservation; Smart Analytic and Engineering Innovations; Health Systems; and Education for Science, Technology, Engineering, Agriculture-Fisheries, and Mathematics (STEAM). The CHED CMO categorizes research programs into platforms that provide space to discover practical, evidence-based, and science-based answers to address real-world social, economic, and environmental challenges faced by partner-citizens and communities. Nelson and Torres-Rahman (2015) argue that to drive sustainable development, companies and individuals must have market insight that explains why challenges exist and suggests ways to overcome them. This includes insight into the environmental, institutional, and cultural contexts in which companies operate and insight into the options and incentives of the existing, and whose decisions companies need to influence—whether these be consumers, suppliers, distributors, retailers, employees, or stakeholders in the broader business, government, civil society, or donor community. We must also understand the different business models that can be employed.

Undoubtedly, the directive of Fr. President to scrutinize the feasibility study of our graduate students reflects a noble intent to ensure faithful adherence to the CHED CMO. The MBA Professors can also play a pivotal role by diligently assisting the school in realigning the focus of future FS toward critical areas that demand attention and action. By verifying the alignment of MBA FS with the noble intent of the CHED CMO, DWC-SJ, in its modest capacity, contributes to the broader goal of helping our country and the world meet the UN SDGs for 2030. Amid the immense challenges and rapid developments unfolding globally, our commitment to conformance represents a meaningful step towards creating a better, more sustainable future for all.

Research Objectives - This content analysis of the MBA non-thesis (feasibility study) program aimed to (1) determine the profile of the MBA non-thesis in terms of business category, instrument, respondents, types of ownership, socio-economic impact, and market share and ROI; and (2) analyze and evaluate the findings to determine if they conform to the CHED CMO No. 52 series of 2016.

Significance, Scope, and Delimitation of the Study - This content analysis of graduate theses is significant because it aims to ensure that the FS conducted by DWC-SJ MBA students is relevant, purposeful, and aligned with the government's directives and the United Nations SDGs. More importantly, the study aims to verify if these FS conform to the CHED CMO No. 52, series of 2016, which highlights the role of research in addressing real-world social, economic, and environmental challenges in the country. This study is limited to the feasibility studies (FS) submitted as non-thesis requirements by MBA students of the DWC-SJ within the specified period of Academic Year 2020-2024.

2. Methodology

This paper provides an in-depth analysis of the MBA feasibility study's compliance with the CHED CMO. The methodology used to conduct the analysis and achieve the desired results is comprehensively presented in the tables below. Guided by the verbal instruction of Fr. President, this work was promptly initiated and undertaken. The scope and limitations of the study were agreed upon, covering the MBA FS completed during the period 2020-2024. The research problem was identified, and the specific study components to be included were clearly defined. Relevant documents were requested from the library and meticulously reviewed and analyzed to gain a thorough understanding of their contents. All necessary information was systematically collated and encoded for proper handling.

Qualitative research was the most suitable approach for this study. Data and information were categorized by attributes and properties, enabling a more detailed analysis. Sutton and Austin (2015) emphasized that qualitative data is instrumental for in-depth analysis. Similarly, Teodorescu (2024) highlighted that data records, as an

exploratory collection method, primarily aim to generate insights by using existing, reliable documents as data sources. These records were used as a foundation for this new research. A review of the related literature was conducted to support the findings presented in the study's discussion section.

Additionally, descriptive statistics, such as frequencies and percentages, were used to enhance the presentation of the study's results. Given the qualitative nature of this study, the Input-Process-Output (IPO) model was identified as the most appropriate research design to achieve the desired result. IPO, as a systems model, is not linear; all parts affect each other (Dunates, 2024). The model offers a simple, practical, and efficient way to analyze and document. (Feldman, 2025). Hereunder is the Conceptual Framework for easy reference.

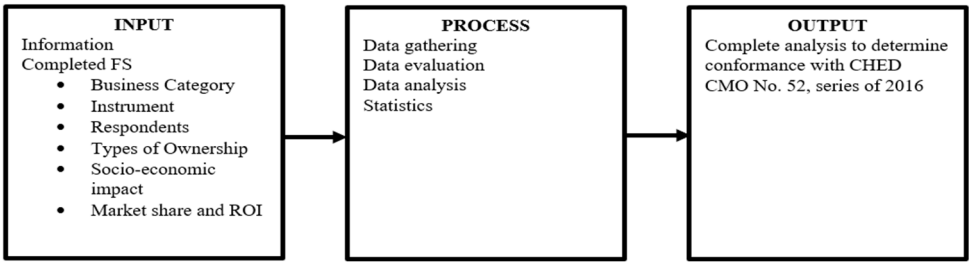

Figure 1. Input-Process-Output Model

Figure 1 shows the IPO model of the study. Under INPUT, the available information includes the completed feasibility study provided by the college library and the MBA FS submitted for the period 2020-2024. For the data gathering and collection, the twelve (12) submitted FS of MBA students were used to come up with six (6) tables involving the subject descriptors as follows: (a) Business Category; (b) Instrument; (c) Respondents; (d) Types of Ownership; (e) Socio-economic impact; and (f) Market share and Return on Investment (ROI). For the PROCESS, this involves data gathering and analysis to produce Statistics in tabular form, using frequency and percentage. For the OUTPUT, the goal is to evaluate conformance with the CHED CMO.

3. Results and Discussions

The results represent the culmination of extensive efforts to study and analyze the topics presented in the MBA feasibility study for the period 2020-2024. While the issues analyzed and their presentations varied significantly, all were united by a genuine desire to contribute something meaningful and beneficial to their Alma Mater and the broader community.

Table 1
Frequency and Percentage of Business Category and Subject Descriptor

Business Category	Subject Descriptor	Frequency (F)	Percentage (%)
Hog Farm Green Grouper Tiger Grouper Smoothie Bar Squash Delicacy Organic Egg	Food and Beverage	6	50%
Hollow Blocks Solar Panel	Innovation	2	17%
Pet Grooming	Health and Safety	1	8%
Bookkeeping	Innovation	1	8%
River Resort	Environmental Management	1	8%
Mangyan Handicraft	No classification	1	8%
Total (12)		12	100%

Presented in Table 1 are the results of the analysis, starting with the business category and subject descriptor. The Table shows the different business categories and their subject descriptors for easy earmarking, in line with CHED CMO. There were twelve (12) MBA FS, which were the subject of an in-depth analysis. The initial analysis was made by classifying them by business category and subject descriptor. Six (6) under food & beverages with

50% share, three (3) under Innovation with 25% share, one (1) under health and safety with 8% share, one (1) under environmental management with 8% share, and only one (1) with no precise classification with 8% share. Its relative importance was measured by frequency and percentage. The majority of the MBA feasibility studies were classified under Food and Beverages, accounting for 50%. For Pet Grooming, this can fall under CHED RDE 2 and CHED RDE 5, both under SDG 3, as injection of pets as part of grooming can be classified as promoting healthy lives and well-being (particularly for anti-rabies shots).

Food and beverage (F&B) is the most common type of FS prepared by DWC-SJ MBA students, as these are the business initiatives most likely to be viable in the province. Based on the ecological profile of Occidental Mindoro, the primary sources of livelihood are farming, livestock, and poultry raising. At the macroeconomic level, the Philippines' rapidly growing F&B industry is one of the most significant contributors to the nation's economy, accounting for about half of its manufacturing sector and about 23-24 percent of the country's GDP. The Philippines is one of Asia's largest producers of food, with the value of its food processing sector exceeding EUR 24 billion (US$28.75 billion) (Fowler, 2021). Given the government's commitment, further intensifying public investment and infrastructure is expected to support this economic growth forecast and bolster job creation, poverty reduction, and higher consumption (Prakash et al., 2023).

Table 2
Instruments Utilized in the Completion of the Study

Category	Questionnaire		Interview Guide		Ocular Inspection	
	F	%	F	%	F	%
Hog Farm	1	8%	1	8%		
Green Grouper	1	8%				
Tiger Grouper	1	8%	1	8%	1	8%
Smoothie Bar	1	8%			1	8%
Squash Delicacy	1	8%	1	8%		
Organic Egg	1	8%	1	8%		
Hollow Blocks	1	8%	1	8%		
Solar Panel	1	8%	1	8%	1	8%
Pet Grooming	1	8%	1	8%		
Bookkeeping	1	8%	1	8%		
River Resort	1	8%				
Mangyan Handicraft	1	8%	1	8%		
Total (12)	12	100%	9	75%	3	25%

Table 2 shows the instruments used to complete the study. The questionnaire was the most common instrument amongst the MBA FS. A questionnaire is a list of questions or items used to gather data from respondents about their attitudes, experiences, or opinions. Questionnaires can be used to collect quantitative and/or qualitative information, and self-administered questionnaires are cost-effective and easy to administer for small or large groups (Roopa & Rani, 2012). It was followed by an interview schedule with 75%, and the least utilized instrument is ocular inspection, which was only opted for in three (3) FS at 25%. It was a common observation that the majority of research works utilized the written questionnaires. All the researchers of the MBA FS used written questionnaires, while nine (9) implemented the written questionnaires with interview guides. The remaining three (3) conducted ocular inspection in addition to the written questionnaires. This suggests that all MBA students opted to use the questionnaire method to complete the study. Ranganathan and Caduff (2023) find the questionnaire method to be a versatile and potent tool for data collection across diverse research domains. Its structured format facilitates standardized data collection, organization, and analysis, particularly advantageous for quantitative research endeavors. This method offers researchers cost-effectiveness, accessibility, and the ability to reach a broad, diverse population, enabling the efficient collection of comprehensive insights.

Table 3 presents the classification of respondents by business category of interest. These people were chosen as respondents because they were expected to have a direct role in the business's success. The most common respondents were owners at 75%, followed by employees at 42% and students at 17%. It can be noted that there are three (3) MBA FS (Squash Delicacy, Smoothie Bar, and Mangyan Handicraft) with multiple respondents. Owners were classified into hog farmers, hotel and restaurant operators, contractors, businessmen, pet owners,

stallholders, exporters, grouper growers, and producers. Based on the table above, the business owners comprise 75% (9), followed by employees at 42% (5) and students at 17% (2). As shown in the table, one FS (Smoothie Bar) used three (3) types of respondents, while two (2) FS (Squash Delicacy and Mangyan Handicraft) used two (2) types of respondents. This table clearly shows who participated in the study to ensure its completion. Omachinski (2024) noted that selecting respondents is a critical aspect of research design, as it affects the reliability and validity of the study's findings. The finding indicates that the majority of the respondents in the study are owners of the establishment, as their direct insights into business operations, resources, goals, and even plans provide practical information that some external analyses might miss. In this regard, Xaba and Rankhumise (2014) stated that owners have the most significant impact, as they make decisions about the day-to-day operations of the business and provide the capital needed to start operations.

Table 3
Classification of the Respondents

Category	Owner	F (%)	Employees	F (%)	Students	F (%)
Hog Farm	1					
Green Grouper	1					
Tiger Grouper	1					
Smoothie Bar	1		1		1	
Squash Delicacy	1		1			
Organic Egg			1			
Hollow Blocks	1					
Solar Panel	1					
Pet Grooming	1					
Bookkeeping	1					
River Resort			1			
Mangyan Handicraft			1		1	
Total (12)	9	75%	5	42%	2	17%

Table 4
Types of Ownership by Business Category

Category	Types of Business Sole Proprietorship	F (%)	Partnership	F (%)
Hog Farm			1	
Green Grouper	1			
Tiger Grouper			1	
Smoothie Bar	1			
Squash Delicacy	1			
Organic Egg	1			
Hollow Blocks	1			
Solar Panel	1			
Pet Grooming	1			
Bookkeeping	1			
River Resort	1			
Mangyan Handicraft	1			
Total (12)	10	83%	2	17%

Table 4 presents the types of ownership by business category. The common forms of business ownership in the Philippines are sole proprietorship, partnership, and corporation. Each one has its distinct advantages and disadvantages. In the study conducted, ten (10) preferred the sole proprietorship. This is not surprising, as it is easy to organize and capitalization is tailored to small businesses (Wolters Kluwer, 2022).). The remaining two (2) opted for partnership. This is good for those who require additional capital and more heads to operate the business. A corporation has the best legal structure, but it is more complicated to operate and to capitalize. It is not surprising that sole proprietorships had the most owners, as they are easy to start and require little capital. Sole proprietorship is the simplest form of business in the Philippines. The registration process is straightforward and cost-effective (Davao Accountants, 2024). No one opted for a corporation because of the difficulty in setting up compared to a sole proprietorship. The finding implies that ten (10) out of twelve (12) MBA FS opted for sole proprietorship instead of a corporation due to low cost, simple registration, complete owner control, and easy tax preparation. In fact, the Department of Trade and Industry confirms that a sole proprietorship is the most basic type of business organization in the Philippines. It can be established by just one person, referred to as a sole proprietor. In a sole

proprietorship, the owner's personal assets are used to satisfy claims against the business, since the business is an extension of the owner (Proto Chat, n.d.).

Table 5
Socio-economic Impacts by Business Category

Business Category	Livelihood (Community)	F (%)	Employment	F (%)	Income of the Government (Taxes)	F (%)	Environ-mental Benefits	F (%)
Hog Farm			1					
Green Grouper			1					
Tiger Grouper			1					
Smoothie Bar			1					
Squash Delicacy			1					
Organic Egg	1		1					
Hollow Blocks			1		1		1	
Solar Panel			1				1	
Pet Grooming			1					
Bookkeeping			1		1			
River Resort			1					
Mangyan Handicraft			1					
Total (12)	1	8%	12	100%	2	17%	2	17%

Table 5 discloses the socio-economic impacts by business category. Businesses are becoming more conscious of their operations and how they affect various stakeholders. Business leaders are increasingly realizing the power of sustainable business strategies not only for addressing the world's most pressing challenges but also for driving their firms' success (Yousef Farhan, 2024).). In the MBA FS analysis, it was found that all (100%) considered their primary impact to be in the community. Two (2) at 17% noted the taxes paid to the government, while another two (1) at 17% considered that the livelihood and environmental benefits were created for their communities. Based on the 2023 Philippine MSME Statistics as reported by the Department of Trade and Industry (https://dti.gov.ph/resources/msme-statistics/), 99.63% of all business establishments (1,241,733 out of 1,246,373) in the Philippines are micro, small, and medium enterprises (MSMEs). In line with the table, the immediate effect of establishing a new business venture is the generation of jobs, measured at 100% of the MBA FS. Although most businesses are created for ROI, we cannot deny that each has a socio-economic impact on the community. Popa and Salanță (2015) noted that businesses play a role in addressing environmental and social challenges.

Table 6
Business Desirability as Measured in Market Share and Return on Investment

Business Category	Market Share	Return on Investment
Hog Farm	20%	65%
Green Grouper	36%	22%
Tiger Grouper	33%	51%
Smoothie Bar	12%	17%
Squash Delicacy	10%	102%
Organic Egg	6%	41%
Hollow Blocks	15%	63%
Solar Panel	33%	60%
Pet Grooming	95%	96%
Bookkeeping	10%	24%
River Resort	24%	17%
Mangyan Handicraft	49%	50%

Table 6 shows the business desirability as measured in market share and return on investment. This table shows how a business can survive in a competitive world. To measure business success, it often uses market share and ROI. In the twelve (12) FS analyzed, Pet Grooming (Fur Babies) registered a whopping 95% market share with a handsome return of 96% in the first year of operation. A good explanation for this is the absence of competition in the said business. On the other hand, organic eggs, which are highly desirable, have only a 6% market share due to close competition and the availability of substitutes. A business worth observing and monitoring is the solar panel installation. With a good 33% market share in the first year, it is expected to decline

to 14% in the fifth year. The rationale is saturation of the consumer market and low barriers to entry for new market players.

In any business, a good market share is often driven by a strong Return on Investment (ROI). Market share is the percentage of total sales in an industry generated by a particular company. This metric provides a general sense of a company's size relative to its market and competitors. The market leader in an industry is the company with the largest market share (Maduranga, 2024). Amongst the twelve (12) MBA FS, Pet Grooming has the highest market share at 95%, while Organic Egg has the lowest market share at 6%. On the other hand, ROI is a ratio that measures the profitability of an investment by comparing the gain or loss to its cost. It helps assess the potential returns on investments in stocks or business ventures (White, 2025). As seen in the table, Squash Delicacy has a 102% ROI, as it is a new food product with a low capital requirement and is easily sold in the market. The two lowest ROIs are Smoothie Bar and Mangyan Handicraft, both at 17%.

While the finding implies a direct correlation between market share and business profits, there are a few outliers in the FS, including Squash Delicacy, Organic Eggs, and Hog Farm, where the respective market share is small but the ROI is huge. Almurshidee (2024) argued that market share was, in many respects, the most important strategic indicator of competitive strength. However, the link between market share and profitability is not clear, according to many other marketing and strategic planning researchers. He further explained that there are researchers who found both that market share and return on investment tended to be jointly determined by other factors, including product and management quality, marketing expenditures, luck, and unanticipated changes in the environment, such as the entry or exit of a major competitor, a change in government regulations, or the introduction of new technology.

Table 7
Conformance of MBA FS with CHED CMO No. 52, series of 2016

Business Category	CHED RDE 1	UN SDG 2	CHED RDE 2	UN SDG 3	CHED RDE 3	UN SDG 14	CHED RDE 4	UN SDG 9	CHED RDE 5	UN SDG 3	CHED RDE 6
Hog Farm	1	□									
Green Grouper	1	□									
Tiger Grouper	1	□									
Smoothie Bar	1	□									
Squash Delicacy	1	□									
Organic Egg	1	□									
Hollow Blocks							1	□			
Solar Panel							1	□			
Pet Grooming			1	□					1	□	
Bookkeeping							1	□			
River Resort					1	□					
Mangyan Handicraft											
Total (12)	**6**	**50%**	**1**	**8%**	**1**	**8%**	**3**	**25%**	**1**	**8%**	

Table 7 presents the Conformance of MBA FS with CHED CMO No. 52, series of 2016. Positive outcomes often result from adherence to established rules and practices. Many institutions are empowered to prescribe remedies to address potential issues before they escalate into serious problems. In response to the challenges and issues confronting the world, the UN introduced the 17 Sustainable Development Goals (SDGs), urging individuals to contribute, even in small ways, to addressing the world's most pressing concerns. Similarly, the CHED, through CMO No. 52, series of 2016, encourages HEIs, their students, and researchers to generate innovative ideas to support the implementation of the UN's 2030 SDG agenda. One practical way to contribute is to conduct research or studies that align with and advance the vision of the SDGs. An in-depth analysis of the twelve (12) MBA FS revealed that six (6), or 50%, addressed topics that, albeit unknowingly, conformed to the provisions of the cited CHED CMO. Among these, food production and security emerged as the most common topics. Food security, as Fahy (2022) emphasized, is a fundamental human right and serves as a measure of people's ability to access

nutritious food. Limited access to food can lead to malnutrition, stunted growth, and, in severe cases, mental health issues (Principato et al., 2024). Recognizing the importance of this issue, the government has launched a flagship nutrition-sensitive program, "*Walang Gutom 2027*" (translated as "No Hunger 2027"), to combat hunger and promote food security nationwide.

Table 8
CHED Research, Development, and Evaluation (RDE) Platforms

CHED RDE Platforms	17 UN Sustainable Development Goals (SDG)
Food Production and Security	SDG 1, 2, 3, 6, 8, 10, 12, 13, 16, 17
Environment, Disaster Risk Reduction, Climate Change, and Energy	SDG 3, 5, 6, 7, 11, 13, 16, 17
Terrestrial and Marine Economy: Biodiversity and Conservation	SDG 3, 5, 8, 10, 11, 13, 14, 15, 16, 17
Smart Analytics and Engineering Innovations	SDG 3, 5, 8, 9, 10, 11, 12, 16, 17
Health Systems	SDG 3, 5, 10, 11, 16, 17
Education for STEAM	SDG 4, 5, 8, 16, 17

Table 8 discloses the CHED Research, Development, and Evaluation (RDE) Platforms. Under Republic Act No. 7722, or "An Act Creating the Commission on Higher Education," it is imperative to enable Philippine HEIs to serve as platforms for research and development, innovation, and extension in pursuit of inclusive social and economic development (CHED CMO No. 52, series of 2016). Despite not being a metric for the preparation of twelve (12) MBA FS, it clearly shows that eleven (11) out of twelve (12) MBA FS comply with the CHED CMO, which has clustered the 17 UN SDGs into six (6) CHED RDE platforms. Six (6) or 50% of the MBA FS were considered to be under Food Production and Security (CHED RDE 1). Three (3) can be classified under Smart Analytics and Engineering Innovations (CHED RDE 4). Pet Grooming can be classified under Environment, Disaster Risk Reduction, Climate Change, and Energy (CHED RDE 2) and Health Systems (CHED RDE 5), while River Resort can be classified under Terrestrial and Marine Economy: Biodiversity and Conservation (CHED RDE 3). Only Mangyan Handicraft is not classified under the CHED RDE Platforms.

The finding indicates that despite not being explicitly guided by the CHED CMO No. 52, series of 2016, almost all (11 out of 12) of the MBA FS from 2020-2024 conform to the CHED CMO's provisions. This highlights a natural alignment between the students' business interests and the CHED's national development priorities. These CHED regulations are being cascaded to Philippine HEIs, where universities are being urged to extend their roles beyond typical academic tasks and directly contribute to sustainable development (Baniaga, 2024).

4. Conclusions

The research concludes that despite not being explicitly directed by the provisions of CHED CMO No. 52, series of 2016, almost all (11 out of 12) of the DWC-SJ MBA FS from the Academic Year 2020-2024 coincidentally conform to the CHED's regulations. This shows a natural alignment between the students' business interests and the country's development priorities, as outlined by the CHED in line with the UN SDGs. The research also shows that fifty percent (50%) of the DWC-SJ MBA FS are heavily concentrated on Food Production and Security, which can be attributed to the ecological profile of the province of Occidental Mindoro, with farming, fishing, aqua-farming, and salt and food processing as its major industries. Incidentally, projects in other key areas, such as Smart Analytics, Engineering Innovations, and Environmental Management, are slowly gaining presence in potential endeavors to be further developed in the future. A notable finding is the difficulty in classifying the Mangyan Handicraft, a culturally focused study, under the current CHED RDE platforms. This highlights a potential gap in the framework's ability to categorize projects related to cultural heritage, indigenous people's handicrafts, and livelihoods.

Recommendations - The following recommendations are hereby forwarded: Integrate CHED CMO No. 52 into the DWC-SJ MBA Curriculum. The DWC-SJ MBA program may incorporate the CHED RDE platforms and the UN SDGs into its curriculum, research framework, and guidelines. This intentional inclusion will result in a careful consideration of the UN SDGs and the CHED RDE platforms in the student's feasibility study, thereby

addressing critical local and national issues and challenges. Encourage Topic Diversification. The members of the DWC-SJ faculty may actively encourage students to explore research in underrepresented but important areas. This can include proposing specific topics related to the distinctive needs of the province of Occidental Mindoro, such as sustainable tourism (RDE 3), renewable energy solutions (RDE 2), and public health systems (RDE 5). The school can also show successful projects such as River Resort, Solar Panel, or Pet Grooming FS to inspire and advocate for a broader range of entrepreneurial ideas. Review of Research Framework: The DWC-SJ faculty and research team may review its research framework and, in the process, implement guidelines to classify projects that do not fit within existing CHED RDE platforms. This is particularly important for projects focused on cultural heritage or indigenous communities, such as the Mangyan Handicraft. By reviewing its research framework and guidelines, DWC-SJ ensures that its FS and other research papers are given proper context and classification.

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Motivation: Impact on job satisfaction and performance of Local Government Unit employees in San Jose, Occidental Mindoro

Manzo, Clariza G. ✉
Divine Word College of San Jose, Philippines (clariza.lgusj@gmail.com)
Macabata, Nancy S.
Divine Word College of San Jose, Philippines (nancy.santiago.macabata@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

This study explores the impact of motivation on job satisfaction and performance among employees of the Local Government Unit (LGU) in San Jose, Occidental Mindoro. Recognizing that public service delivery depends on the efficiency and dedication of LGU personnel, the research examined how intrinsic and extrinsic motivational factors influenced employee satisfaction and performance. Guided by Herzberg's Two-Factor Theory, the study employed an exploratory-sequential design. The qualitative phase involved interviews to identify core motivational and satisfaction themes, which were validated in the quantitative phase using a structured questionnaire administered to 181 permanent LGU employees. Results showed that hygiene factors such as job security, working conditions, and fair rules, along with motivators like recognition, career growth, and interesting work, significantly influenced employee motivation. Job satisfaction was notably affected by pay and benefits, supervision, nature of work, co-worker relationships, and opportunities for advancement. Statistical analysis confirmed significant positive relationships between motivation and job satisfaction, motivation and performance, and job satisfaction and performance. The study highlights the importance of tailored motivational strategies to enhance workforce engagement and productivity in public service. These findings provide useful insights for LGU administrators, human resource managers, and policymakers in designing evidence-based interventions to strengthen public sector efficiency and service quality. A proposed development program focuses on reinforcing both hygiene and motivator factors to improve employee satisfaction and performance.

Keywords: Herzberg's Two-Factor Theory, job satisfaction, local government unit, motivation, performance

Motivation: Impact on job satisfaction and performance of Local Government Unit employees in San Jose, Occidental Mindoro

1. Introduction

Performance and satisfaction levels at work are critically determined by motivation, especially in government organizations. Public service provision depends heavily on Local Government Unit (LGU) workers, who require motivation for realizing effectiveness and productivity, as well as organizational success. According to De Leon et al. (2022), despite motivation being critical, several LGU workers face operational issues that affect both their job happiness and performance quality. Inadequate incentives, along with the absence of professional development opportunities and bloated bureaucracies, reduce both worker morale and productivity. As suggested by Lasana et al. (2023), the development of efficient public service depends on comprehending how motivation influences work satisfaction and performance within LGU personnel. Many types of organizations have had extensive academic research conducted on the relationships between employee performance, job satisfaction, and motivation. The motivational theories, including Vroom's Expectancy Theory, Herzberg's Two-Factor Theory, and Maslow's Hierarchy of Needs, illuminate performance-related worker variables (Ihensekhien & Arimie, 2023). These theories explain that operational satisfaction and workplace output combine external factors with internal driving forces. Intrinsic motivation leads to increased engagement and commitment at work and stems from recognition, career opportunities, and personal meaning. The leading determinant of employee performance, alongside retention, is extrinsic motivation, which includes pay level, job security, and additional staff benefits (Aljumah, 2023). Personal commitment among employees boosts both work performance and attendance rates, leading them to become more involved in their tasks and, in turn, enhancing organizational productivity.

Research lacks specific investigation on LGU employees because no studies focus exclusively on their sector (Concepcion et al., 2024). To enhance governance and service delivery, the government requires proper management of motivating structures among its frontline executive LGUs. Although Rahman et al. (2019) studied motivation, most studies on the relations between job happiness and employee performance examine individual topics rather than motivational correspondence. Early studies on motivating LGU workers have failed to consider key factors in their operational environment that affect motivation. According to Arisman (2022), multiple factors, such as workload, political climate, and leadership styles, are driving significant changes in government agencies and creating varying degrees of employee motivation. The study of Davidescu et al. (2020) indicates that LGU employees experience substantial workloads and political interference, which negatively impacts their motivation levels. The findings show that organizations that support workers, offer growth opportunities, and implement fair pay systems experience better staff engagement and superior performance outcomes. This study is essential for assessing which motivators greatly influence the performance and job satisfaction of employees of the Local Government Unit (LGU) of San Jose, Occidental Mindoro. The research will present results to help legislators and local government unit officials design motivational schemes that enhance employee output and service delivery quality. By identifying the primary drivers of job satisfaction and performance, this study enables government organizations to develop targeted interventions that enhance employee engagement, reduce worker attrition, and foster workplace satisfaction. This study lays the foundation for additional research on public-sector motivation by expanding the theoretical understanding of employee motivation within government agencies and addressing existing knowledge gaps.

Statement of the Problem - The purpose of this study was to determine the impact of motivation on the job satisfaction and the performance of the local government unit employees in San Jose, Occidental Mindoro. Specifically, it sought answers to the following questions: (1) What motivates the LGU employees in the performance of their job? (2) What factors contribute to the employees' satisfaction with their current job? (3) What is the extent of the motivation of the respondents in terms of hygiene factors and motivational factors? (4)

What is the level of job satisfaction of the respondents in terms of pay and benefits, supervision, growth and upward mobility, work itself, co-workers, and attitude toward work? (5) What is the level of performance of the respondents? (6) Is there a significant relationship between the motivation and job satisfaction of the respondents? (7) Is there a significant relationship between the motivation and performance of the respondents? (8) Is there a significant relationship between the job satisfaction and performance of the respondents? (9) What development program may be proposed to improve the performance of the LGU employees?

Significance of the Study - The findings of this study are expected to provide valuable insights for the following: the Local Government Unit (LGU) of San Jose and the human resource office to better understand the elements that drive employee motivation. Through the questionnaire, employees of the LGU will be reminded of the purpose of their jobs and asked to reassess how they can contribute more effectively to the attainment of the office's purpose. To the administration, this study will help them determine the necessary management decisions to enhance performance and identify the determinants of motivation, thereby enabling them to improve the basis for promotion and career advancement of their staff. To the academe, those handling human relations subjects will emphasize the different aspects of motivation—what, how, and why people are motivated—and will find fulfillment and dignity in working in an LGU. Moreover, for future researchers, this study will also provide significant information for those undertaking a study of motivation that covers aspects not covered here.

Scope and Delimitation of the Study - The primary purpose of this study was to determine the impact of motivation on the job satisfaction and performance of the LGU employees in San Jose, Occidental Mindoro. The scope of motivation is the Herzberg two-factor theory, namely, hygiene and motivators. For job satisfaction, it covered only the following determinants: pay and benefits, supervision, growth and upward mobility, the work itself, co-workers, and attitude toward work. The respondents in the quantitative phase of this study were employees from the LGU's different offices in San Jose, Occidental Mindoro. Moreover, this study involved only permanent employees as respondents, excluding heads, assistant heads, and section heads. To determine the total sample size for a quantitative study, the total population is used in a sample size calculator. San Jose LGU employees were the sole participants in this research, as personnel from non-governmental organizations, private-sector agencies, or other entities outside the municipality are excluded. This study restricted the data to San Jose LGU personnel, eliminating external workplace motivators originating from monetary factors beyond office boundaries and economic and political influences. Data collection was conducted from April to May 2025, and the study was limited to information collected during this period. The researcher used surveys, interview responses, and questionnaires to collect data.

2. Methodology

Research Design - This study used an exploratory-sequential design. The researcher first used a qualitative method to identify the key variables underlying a phenomenon. Results from the qualitative phase guided the quantitative method, and quantitative results were used to validate the qualitative findings. (Creswell, 2013; Fraenkel et al., 2013; Trochim, 2016) Moreover, a descriptive-correlational design was used to assess the extent of motivation, the level of job satisfaction, and the performance of LGU employees, and to examine the relationship between the independent and dependent variables. Data were gathered using questionnaires and coded, analyzed, and tabulated.

Respondents of the Study - The respondents of the study were employees from the Local Government Unit (LGU) of San Jose, Occidental Mindoro, for the fiscal year 2025. The total population consisted of 340 permanent employees. For the qualitative phase, 15 participants were considered sufficient, following Hennink and Kaiser (2022), who suggest that 9 to 17 interviewees are adequate to reach saturation in qualitative research. Meanwhile, a total of 181 respondents were included in the quantitative phase, determined using the Raosoft sample size calculator with a 5% margin of error and 95% confidence level. Respondents were distributed proportionally across different municipal departments. The Mayor's Office contributed 16 of 30 employees, while the Municipal Administrative Office contributed 4 of 9. The Municipal Treasurer's Office provided 22 of 41 employees, and the

Municipal Agriculture Office provided 19 of 35. The Municipal Engineering Office contributed 18 of 32 employees, while the Sangguniang Bayan Office contributed 14 of 26. Other offices such as the Municipal Social Welfare and Development Office (7 out of 13), the Municipal Accounting Office (6 out of 12), the General Services Office (6 out of 12), the Municipal Assessor's Office (8 out of 15), the Municipal Budget Office (7 out of 13), and the Municipal Civil Registrar Office (8 out of 15) were also represented. Smaller departments, including the Municipal Cooperatives Development Office (4 out of 8), the Municipal Disaster Risk Reduction and Management Office (6 out of 11), the Municipal Environment and Natural Resources Office (5 out of 9), the Municipal Human Resource Management Office (7 out of 13), and the Municipal Planning and Development Office (9 out of 18), likewise participated. The Public Market Office also had 15 out of 28 employees represented in the study. In total, the quantitative phase engaged 181 employees across 18 departments. In comparison, 41 employees from the Municipal Health Office were excluded from the sample size, as they were solely involved in the reliability testing of the research instrument.

Research Instrument - For the qualitative phase, two open-ended questions were used to gather in-depth insights from participants. For the quantitative phase, a researcher-developed questionnaire was developed based on themes emerging from the qualitative data and relevant literature. The instrument consisted of three main parts. The first part measured the extent of motivation, classified into hygiene and motivational factors. The second part assessed job satisfaction using six determinants identified by Lussier (2021), namely pay and benefits, supervision, growth and upward mobility, the work itself, co-workers, and attitude toward work, as per the result of the interview in the qualitative phase, and lastly, the level of performance of the respondents. The questionnaire items were structured as follows: eight measured hygiene factors, eight measured motivational factors, and 36 assessed job satisfaction, with six items per determinant. Respondents rated each item on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). For performance, the researcher utilized the employees' Individual Performance Commitment and Review (IPCR) ratings from the previous year, covering two consecutive semesters. In preparation for the questionnaire for the quantitative phase, relevant literature and studies were utilized. The degree to which evidence supports any inferences a researcher makes based on the data collected using a specific instrument (Fraenkel et al., 2013). Expert validity was used to assess the questionnaire's validity. The researcher sought assistance from three graduate school professors at Divine Word College of San Jose to evaluate the applicability and appropriateness of the items in question to the topic under investigation. The instrument's inter-item reliability was assessed using the split-half method. It was administered only once, and the Spearman-Brown coefficient of equal length was applied. Parts I and II of the questionnaire were only tested for reliability. The first part covered only hygiene and motivators, and the second part covered the six job satisfaction determinants (Lussier, 2021). A total of 30 permanent employees of the local government unit, from the municipal health office, were asked to complete the 52-item validated questionnaire. They were excluded from the final administration of the questionnaire. Using the split-half method, the questionnaire was tested for reliability, and the Spearman-Brown correction formula was applied due to its one-time administration. The coefficients of reliability based on equal length recorded the results as shown below.

Table 1

Reliability Analysis Results

Item	Reliability Coefficients*	Number of Items	Interpretation
I - Motivation			
1. Hygiene Factors	0.836	8	High Reliability
2. Motivational Factors	0.874	8	High Reliability
II - Job Satisfaction			
1. Pay and Benefits	0.906	6	Very High Reliability
2. Supervision	0.947	6	Very High Reliability
3. Growth and Upward Mobility	0.923	6	Very High Reliability
4. The Work Itself	0.909	6	Very High Reliability
5. Co-workers	0.943	6	Very High Reliability
6. Attitude Toward Work	0.883	6	High Reliability

*Based on Spearman-Brown coefficients of equal length

A generally very high level of reliability is reflected in the table, as indicated by reliability coefficients ranging

from 0.947 to 0.836. Five sections on job satisfaction yielded the highest indices and showed very high reliability. These results attest to the questionnaire's acceptability, which was then administered to a group of local government employees in San Jose, Occidental Mindoro.

Data Gathering Procedure - A letter of request, approved by the concerned office of the LGU and noted by the proponent's adviser, was prepared for the qualitative phase, and likewise for the quantitative phase. For the qualitative phase, a series of semi-structured interviews (face-to-face and via mobile phone) was conducted with 15 LGU employees to discover the variables that were used in the quantitative part. The proponent employed a coding technique in which all interview responses were transcribed into a file and coded for the initial and final thematic analyses. For the quantitative part, a researcher-made questionnaire was used. The researcher tabulated, analyzed, and interpreted the results with her adviser's guidance and the statistical analysis. The researcher distributed and retrieved the validated questionnaire over the course of one month, from April to May 2025. The questionnaire was administered personally by the researcher to ensure the accuracy and confidentiality of the results. Weeks.

Statistical Treatment of the Data - For the qualitative part, thematic analysis was done, and the coded theme was used for the quantitative part. The quantitative data were processed to answer the descriptive part. A weighted mean was applied to describe the extent of motivation and the level of job satisfaction of the respondents, using SPSS version 26. The level of performance, frequency, and percentage were used. To establish the relationship between the independent (IV) and dependent variables (DV) and to test the significance of the relationship among motivation, job satisfaction, and performance of the LGU employees, Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed using WARP PLS Version 7.

Ethical Considerations - In line with Republic Act 10173 or otherwise known as the Data Privacy Act of 2012, the researcher did not disclose any information that could identify the employees of LGU–San Jose who participated in the study. The researcher did not allow anyone to use the data for any purpose other than the study. Moreover, the researcher ensured that all the information provided was factual and supported by evidence to ensure its credibility. The researcher respected the time of the LGU–San Jose personnel, recognizing their responsibilities in their respective offices. The survey questionnaire and interview guide were designed to be unbiased and gender-neutral. The researcher had no intention of causing harm to the offices or their reputations but rather aimed to contribute to the success of the study. In addition, the researcher complied with all rules and regulations to preserve the good name of LGU–San Jose. Any concerns or issues arising from the distribution of survey questionnaires were the sole responsibility of the researcher.

3. Results and Discussions

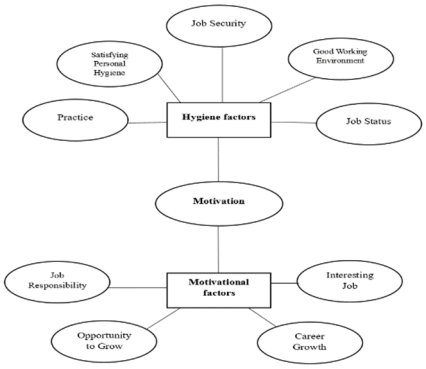

Figure 1. Initial Thematic Map for Motivation

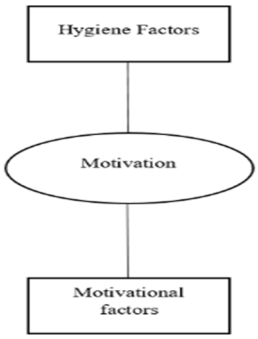

Figure 2. Final Thematic Map for Motivation

Out of the 15 respondents, 20 responses emerged and were classified into two final themes. The two-factor theory of Herzberg (Lussier, 2021) emerged as the final themes, namely hygiene and motivational factors. The

figure presents the web graphic organizer of the initial thematic analysis on motivation, which revealed two key indicators: hygiene and motivational factors, consistent with Herzberg's Two-Factor Theory. Under hygiene factors, employees identified aspects such as workplace practices, personal hygiene satisfaction, job security, a good working environment, and job status, aligning with the ideas of Nickerson (2025) and He et al. (2024), who emphasized the importance of job stability and safe working conditions in preventing dissatisfaction.

On the other hand, motivational factors included job responsibility, opportunities for growth, career advancement, and having an enjoyable or fulfilling job. This supports the findings of Bexheti and Bexheti (2016) and Lee et al. (2022), who found that recognition, achievement, and personal development are strong drivers of motivation. After a thorough understanding of the emerging themes and sub-themes, the researcher identified two leading indicators of motivation: motivational factors and hygiene factors, consistent with Herzberg's Two-Factor Theory. This figure illustrates the interconnection between these two elements and how they collectively influence employees' motivation to work. According to Lussier (2021), employees must first be satisfied with hygiene factors—such as working conditions, supervision, and job security—before motivational factors like responsibility, recognition, and growth opportunities can effectively inspire performance. This is further supported by Shaikh et al. (2019) and He et al. (2024), who emphasized that while hygiene factors prevent dissatisfaction, true motivation stems from intrinsic factors that promote employee engagement and productivity.

Table 2

Mean Extent of Respondents' Motivation in Terms of Hygiene Factors and Motivational Factors

Indicators (Hygiene Factors)	Mean	Interpretation
1. I make sure I treat everyone fairly and professionally.	4.81	Very High Extent
2. I have a satisfying personal life.	4.47	Very High Extent
3. The LGU provides us with good working conditions.	4.36	Very High Extent
4. It is easy to make friends in our department.	4.44	Very High Extent
5. Our department has sensible company rules.	4.35	Very High Extent
6. I have a caring boss.	4.63	Very High Extent
7. My family is the main reason why I work hard.	4.85	Very High Extent
8. I feel secure in my job.	4.49	Very High Extent
Composite Mean	4.55	Very High Extent
Indicators (Motivational Factors)		
1. I feel motivated if my job/task is interesting.	4.50	Very High Extent
2. I am grateful for the appreciation of the work I do.	4.59	Very High Extent
3. I enjoy difficult tasks assigned to me.	4.38	Very High Extent
4. My current work offers an opportunity for advancement.	4.21	Very High Extent
5. Outstanding performance is recognized in our office.	4.26	Very High Extent
6. I can do well in my assigned task.	4.40	Very High Extent
7. Oftentimes, I am appreciated on the work I do.	4.21	Very High Extent
8. My office allows me to grow through learning new things.	4.35	Very High Extent
Composite Mean	4.36	Very High Extent
Overall Mean	4.46	Very High Extent

Scale: 4.20-5.00 Very High Level; 3.40 -4.19 High Level; 2.60-3.39 Moderate Level; 1.80-2.59 Low Level; 1.00-1.79 Very Low Level

Table 2 presents the data on respondents' motivation regarding hygiene and motivational factors; the overall mean is 4.46, indicating a very great extent. This indicates that the employees are highly motivated by both hygiene and motivational factors in the workplace. Thus, hygiene factors had a higher composite mean of 4.55 than motivational factors, which had a composite mean of 4.36. The implication of this overall mean suggests that the workplace is effectively addressing employees' basic and growth-related needs, which may lead to sustained job satisfaction, improved performance, and organizational loyalty. The generally very high level of hygiene indicators indicated that the respondents were highly motivated. This suggests that, more than anything else, employees placed the most significant importance on their family (Menges et al., 2017; Lin et al., 2020), which is why Tariq & Ding (2018) believe that family influences employees' motivation to work. Moreover, Sibonde & Dassah (2021) noted that the absence of employee motivation leads to poor service quality and staff turnover. Therefore, management needs to maintain consistent efforts in motivating employees (David, 2023). Given a very high level of motivation regarding hygiene factors, He et al. (2024) emphasized that proper hygiene practices, both internal and external, are required to meet the respondents' hygiene needs. Moreover, regarding motivational factors, the

majority of respondents reported feeling appreciated when their work is recognized. Somehow, it is often difficult for them to be appreciated at work. According to Alwedo (2021), this feeling followed closely behind employees' ability to accomplish their assigned duties and their enthusiasm for either doing the job or the tasks at hand.

Another theme that wove through the remarks was the level of emphasis on recognizing achievements. A large proportion of respondents reported being satisfied when their endeavors received recognition. It corroborates the study by Bexheti and Bexheti (2016), which found that being rewarded for the work done is not an unusual phenomenon in their professional lives and is a strong incentive. Thus, Herzberg argues that meeting hygiene factors keeps people from becoming dissatisfied (Lussier, 2021; Joseph, 2023). To be satisfied, you must seek to attain motivational factors (Lee et al., 2022). Workplace strategies that enhance motivation and boost organizational effectiveness are often developed on the basis of a clear understanding of both hygiene and motivational factors (Shaikh et al., 2019). In addition, the indispensable role of highly motivated employees has been well recognized in recent studies (Ekundayo & Babalola, 2021).

Table 3 presents respondents' mean job satisfaction levels for pay and benefits, supervision and growth, and upward mobility, with composite means of 4.09, 4.47, and 4.16, respectively, indicating high, very high, and high levels. A composite mean of 4.09 for pay and benefits indicates that these factors drive job satisfaction among employees. According to Robbins and Judge (2022), job satisfaction enables employees to be more effective. Additionally, Licudan-Credo & Naparota (2022) stated that pay and benefits allow employees to feel valued for their work and performance. Moreover, it is revealed that employees are very satisfied when they often receive more benefits at the end of the year, especially during Christmas (4.40), showing that, aside from pay, they expect compensation and rewards for celebrating holidays. The respondents' job satisfaction with pay and benefits is high when their salary is more than enough compared with the same work in another company (3.77). Though the respondents believe that their current rate is in accordance with the approved salary grade, 4.33, a very high level, maintaining competitive pay according to Kano & Tsuda (2023) is a must together with beneficial compensation packages (Rivera et al., 2023; Sumatra et al., 2023), which are currently in the LGU and being enjoyed especially during Christmas. Still, they cannot hide that their take-home pay is not enough and that they are just surviving on it (4.06). Related to equivalent employment in other businesses, when their salaries are more than enough. As argued by Moldabekov et al. (2025), this shows how the beliefs of employees toward the fairness and adequacy of their pay also determine their job satisfaction, which is largely affected by relative compensation and not necessarily the actual compensation. In addition, regarding supervision, the composite mean is 4.47, indicating a very high level. This suggests that, while supervision overall is highly satisfactory, the practice of two-way feedback has a lower perceived impact on job satisfaction. This indicates one area that can be enhanced in supervisory methods to enhance general employee satisfaction, most importantly in the establishment of mutually learning and executable feedback systems (Nickerson, 2025).

Table 3

Mean Level of Respondents' Job Satisfaction in Terms of Pay and Benefits, Supervision and Growth, and Upward Mobility

Indicators (Pay and Benefits)	Mean	Interpretation
1. I am surviving with my salary.	4.06	High Level
2. My salary is commensurate with my skills.	3.96	High Level
3. My current rate is in accordance with the approved salary grade.	4.33	Very High Level
4. Annual salary increase is given to deserving employees.	3.99	High Level
5. My salary is more than enough compared with the same work in another company.	3.77	High Level
6. We often receive more benefits at the end of the year, especially during Christmas.	4.40	Very High Level
Composite Mean	4.09	High Level
Indicators (Supervision)		
1. My supervisor extends support when I need it.	4.52	Very High Level
2. We practice two-way feedback wherein we employees can provide feedback to supervisors and vice versa to act on the feedback we receive.	4.24	Very High Level
3. My supervisor is easy to work with.	4.52	Very High Level
4. My boss is task-oriented.	4.55	Very High Level
5. My boss praises good work.	4.50	Very High Level

6. My supervisor possesses the technical "know-how" to oversee and monitor my work.	4.49	Very High Level
Composite Mean	4.47	Very High Level
Indicators (Growth and Upward Mobility)		
1. Prospect for growth is not limited in our office.	4.17	High Level
2. Deserving employees are promoted in our office.	4.02	High Level
3. Qualifications and guidelines for promotion are communicated to all employees.	4.17	High Level
4. Capacity building through attendance to seminars and trainings is available to all employees.	4.17	High Level
5. Promotion policies are clearly defined in our office.	4.04	High Level
6. Sending employees to relevant trainings will improve and strengthen the LGU service delivery to its stakeholders.	4.40	Very High Level
Composite Mean	4.16	High Level

Scale: 4.20-5.00 Very High Level; 3.40 -4.19 High Level; 2.60-3.39 Moderate Level; 1.80-2.59 Low Level; 1.00-1.79 Very Low Level

Moreover, Alwedo (2021) added that satisfaction also increased when managers possessed technical expertise to adequately monitor and oversee their employees' work. Its combination emphasizes the importance of effective leadership philosophies that incorporate technical expertise, favor beneficial relationships, and provide clear direction. Moreover, a composite mean of 4.16 is reported in Table 3, indicating the mean level of respondents' job satisfaction regarding growth and upward mobility. According to Rawahi (2020), developing growth and achieving upward mobility drive employee satisfaction. Relevant training to improve and strengthen LGU service delivery to its stakeholders shows a very high level of interpretation, with a score of 4.40. Professional advancement is a must, as evidenced by the study by Gazi et al. (2024). The high composite mean implies that providing opportunities for professional development—such as training and career advancement programs—positively affects employee satisfaction. It reflects that LGU employees value growth and perceive it as a motivating factor in their work. However, the lower score in one indicator suggests that not all areas of growth are equally felt, and improvements may be made to ensure that upward mobility is accessible and clear to all employees. This highlights the need for more inclusive and transparent growth pathways to ensure that upward mobility is accessible and clearly communicated within the organization.

Table 4

Mean Level of Respondents' Job Satisfaction in Terms of the Work Itself, Co-Workers and Attitude Toward Work

Indicators (Work Itself)	Mean	Interpretation
1. The organization cares for the workers.	4.27	Very High Level
2. The nature of my work excites me.	4.21	Very High Level
3. I enjoy working with my colleagues.	4.35	Very High Level
4. The overall atmosphere in my office promotes productivity.	4.16	High Level
5. The workplace is pleasant.	4.19	High Level
6. The nature of my work is manageable.	4.37	Very High Level
Composite Mean	4.26	Very High Level
Indicators (Co- Workers)		
1. My co-workers complete their tasks in a timely manner.	4.03	High Level
2. My colleagues demonstrate ambition in their work.	4.02	High Level
3. My co-workers set high standards for themselves and others.	4.02	High Level
4. I easily get along with my co-workers.	4.30	Very High Level
5. My co-workers have high expectations and pay close attention to details.	4.04	High Level
6. I enjoy working with my colleagues.	4.40	Very High Level
Composite Mean	4.13	High Level
Indicators (Attitude Toward Work)		
1. I always engage with my colleagues who have interesting ideas to share.	4.36	Very High Level
2. I feel that my work is remarkable and contributes to the overall performance of my organization.	4.36	Very High Level
3. My work is routinary.	4.14	High Level
4. I practice empathy while at work.	4.38	Very High Level
5. I consider potential solutions to issues that arise with co-workers.	4.28	Very High Level
6. I do nice things for my co-workers.	4.43	Very High Level
Composite Mean	4.33	Very High Level

Scale: 4.20-5.00 Very High Level; 3.40 -4.19 High Level; 2.60-3.39 Moderate Level; 1.80-2.59 Low Level; 1.00-1.79 Very Low Level

Based on Table 4, it achieved composite means of 4.26, 4.13, and 4.33, indicating very high, high, and very high levels, respectively. The 4.26 weighted mean for the work itself was high, reflecting a strong overall

atmosphere at the office, as it promotes productivity. This finding aligns with Ki & Kim (2024), who acknowledged that government workers' job happiness and satisfaction depend on whether their employment corresponds to their service, purpose, and ansocietalty contributions. Same with the results of the ongoing study: a very high level of satisfaction (4.21) with the nature of the work itself, which excites them, so stress at work is lower (Christian et al., 2024). However, Demircioglu & Chen (2019) presented a different scenario. He stated that work satisfaction is an insufficient indicator of morale because it ignores broader motivational dynamics. Although manageability and collegial relationships received very high satisfaction ratings, the slightly lower score related to the office atmosphere suggests that environmental and cultural aspects of the workplace can still be strengthened. This aligns with Shaikh et al. (2019), who emphasized that effective workplace strategies should address not only organizational structure and incentives but also the overall work environment to enhance employee morale and satisfaction. Moreover, a composite mean of 4.13 for respondents' job satisfaction with co-workers indicates a high level of satisfaction. This suggests that the co-workers are significant to achieving job satisfaction for employees. Samsuri et al. (2022) attested that co-employees are significant in work conditions. A harmonious relationship among employees contributes to a supportive work environment, thereby enhancing morale and collaboration (Lopez et al., 2023). Co-workers also serve as a vital source of practical and emotional support, helping reduce workplace stress (Nguyen & Tuan, 2021). Even in the presence of structural difficulties, emotional stability is strengthened when employees feel supported by their peers (Adriyanto, 2020). The results imply that while co-workers already contribute positively to job satisfaction, further promoting collaborative, respectful, and purpose-driven work relationships can continue to uplift morale and productivity among LGU employees. In addition, the composite mean of 4.33 indicates a very high level of attitude toward work. According to Nitafan and Camay (2020), job satisfaction reflects employee work attitudes, which in turn impact performance outcomes and employee health. In addition, employees are valued as a result of interacting with other employees who present some form of interesting ideas (Robbins & Judge, 2022), which promotes a vibrant and intellectually challenging atmosphere. Empathy during the working process and the propensity to explore possible ways to address co-workers' problems are also major contributors to the smoothness of cooperation (Reizer et al., 2023) and to the support of the working environment. In contrast, Hee et al. (2018) stated that a view of a job as just routine is the least motivating factor in developing job satisfaction.

Table 5

Summary of the Mean Level of Respondents' Job Satisfaction

Indicators	Composite Mean	Interpretation
1. Pay and benefits	4.09	High Level
2. Supervision	4.47	Very High Level
3. Growth and upward mobility	4.16	High Level
4. The work itself	4.26	Very High Level
5. Co-workers	4.13	High Level
6. Attitude toward work	4.33	Very High Level
Overall Mean	4.24	Very High Level

Scale: 4.20-5.00 Very High Level; 3.40 -4.19 High Level; 2.60-3.39 Moderate Level; 1.80-2.59 Low Level; 1.00-1.79 Very Low Level

Based on Table 5, the overall mean for respondents' job satisfaction is 4.24, indicating a very high level. The data revealed that employees have a very high level of job satisfaction regarding supervision, the work itself, and their attitude toward work. Somehow, it suggests that employees are highly satisfied with their pay and benefits, growth and upward mobility, and co-workers. This implies that support from supervisors and bosses is significant for attaining job satisfaction, enabling employees to feel appreciated and recognized. Some improvements are needed in pay and benefits to increase employees' satisfaction. Based on the study's results, there is a very high level of employees' overall job satisfaction. In support, Robbins & Judge (2022) stated that the new levels of this satisfaction are most notable in the spheres of supervision, the explicit value of the work one has to deal with, and the preunderstanding and the standard of one's professional role. Gazi et al. (2024) added that factors such as compensation and benefits, opportunities for promotion, and relationships with colleagues all contribute, albeit to a lesser extent, to this high level of overall happiness. However, there is a strong sense of fulfillment in all of these areas. It can be seen that the level of supervision accorded to employees appears to be the primary cause of this high level of work satisfaction. Managers and supervisors need to create an environment where workers truly feel

appreciated and recognized for their efforts. This positive perception of leadership is closely related to higher rates of employee satisfaction, thus emphasizing the immense importance of efficient monitoring in establishing a gratifying work environment (Lussier, 2021).

Table 6
Respondents' Level of Performance

IPCR Rating	January 1 - June 30, 2024		July 1 - December 31, 2024	
	Frequency	Percent	Frequency	Percent
Outstanding	15	8.3	17	9.4
Very Satisfactory	161	89.0	161	89.0
Satisfactory	5	2.8	3	1.7
Total	181	100.0	181	100.0
Mean Rating	4.06 (Very Satisfactory)		4.08 (Very Satisfactory)	

The data in Table 6 show the respondents' performance levels. It has been revealed that the employees are consistent with a very satisfactory level for both periods, January 1 to June 30, 2024 and July 1 to December 31, 2024. 161 out of 181 employees achieved a very satisfactory performance during the first and second terms. Thus, 15 employees achieved outstanding performance in the first term and 17 in the second term. Somehow, five employees attained satisfactory performance in the first term and three in the second term. This shows the improvement of the employees, as they achieved a higher level of satisfaction in the second term compared to the first term. Overall, the mean rating was 4.06 (very satisfactory) in the first term, and it increased to 4.08 (very satisfactory) in the second term. The slight increase in performance ratings implies that motivational strategies and job satisfaction factors may have contributed positively to employee outcomes over time. This aligns with Ekundayo and Babalola (2018), who emphasized that employee motivation significantly enhances job performance and overall organizational productivity. Similarly, Jesús et al. (2025) highlighted that employees with high job satisfaction tend to perform better, which benefits the institution's success. The consistency in high performance suggests that the existing organizational environment, supervision, and growth opportunities are supporting employee engagement and effectiveness.

Table 7
Path Coefficients and p-values for Ho

Path	Beta (β) Coefficient	p-value*	Interpretation
Ho_1: Motivation→Job Satisfaction			
HYGIENE→PYBENF	0.246	<0.001	Highly Significant
HYGIENE→SUPERV	0.179	0.007	Significant
HYGIENE→MOBILITY	0.284	<0.001	Highly Significant
HYGIENE→WORK	0.422	<0.001	Highly Significant
HYGIENE→COWORK	0.391	<0.001	Highly Significant
HYGIENE→ATTITUDE	0.351	<0.001	Highly Significant
MOTIV→PYBENF	0.349	<0.001	Highly Significant
MOTIV→SUPERV	0.490	<0.001	Highly Significant
MOTIV→MOBILITY	0.452	<0.001	Highly Significant
MOTIV→WORK	0.445	<0.001	Highly Significant
MOTIV→COWORK	0.284	<0.001	Highly Significant
MOTIV→ATTITUDE	0.430	<0.001	Highly Significant
Ho_2: Motivation→Performance			
HYGIENE→IPCR	0.049	0.255	Not Significant
MOTIV→IPCR	0.158	0.015	Significant
Ho_3: Job Satisfaction→Performance			
PYBENF→IPCR	0.037	0.311	Not Significant
SUPERV→IPCR	-0.165	0.011	Significant
MOBILITY→IPCR	0.114	0.060	Not Significant
WORK→IPCR	0.266	<0.001	Highly Significant
COWORK→IPCR	0.143	0.024	Significant
ATTITUDE→IPCR	0.028	0.355	Not Significant

*Significant at $p<0.05$

The results of the first test of hypothesis (Ho_1) registered low to moderate *Beta* (β) coefficients ranging from 0.179 to 0.490. These values were generated after the two components of motivation were linked to job satisfaction.

Although these values appear low to moderate, they still highlight a significant to highly significant relationship between employees' motivation regarding hygiene factors and pay and benefits. Considering motivational factors, the beta values indicate a generally moderate and significant correlation with job satisfaction, ranging from 0.430 to 0.490. The least path coefficient is observed in the link between the extent of motivation and the level of job satisfaction regarding co-workers (β=0.284, p<0.001). The path coefficients for hygiene and motivational factors, when correlated with the IPCR rating, yielded low values of 0.049 and 0.158, respectively. This explains the result of the second test of hypothesis, which indicates that only the motivational factors showed a significant connection to the employees' performance rating (β=0.158, p=0.015).

In the third hypothesis test, six components of job satisfaction were linked to performance considering IPCR rating, and only half of these components revealed significant correlation with IPCR rating, namely supervision (β=-0.165, p<0.011), the work itself (β=0.266, $p<0.001$), and co-workers (β=0.143, p=0.024). The structural equation analysis provides a more elaborate explanation of the relationship among the performance of LGU employees, their satisfaction, and their motivation. Pandya (2024) states that, compared to traditional models of satisfaction, intrinsic motivators have a greater influence on satisfaction. In contrast, traditional models often include external factors such as pay or the workplace as key motivators of indulgence. The significance of internal benefits such as fulfilling work and recognition means that the public institutions are supposed to abandon a purely transaction management approach (Osborne et al., 2012) and seek a person-oriented and developmental approach. This is a more significant trend of people-driven management throughout an organization in the realm of public services (Radu, 2023), where the sense of identity and purpose is one of the most important dimensions of labor happiness. Moreover, the clear relationship between performance and intrinsic motivation is a very important lesson for HR directors (Zhenjing et al., 2022), as performance is not fabricated through improvements in working conditions or administrative manipulation. Instead, Naz et al. (2020) stated that creating a workplace environment that appreciates success and promotes autonomy may yield improved results. The relationship indicated between supervision and performance, with an unexpected negative association, is a warning that supervisory processes must be redesigned to shift from authoritative to enabling assistance (Gojar et al., 2025). Basically, this compels LGUs to rethink the role of supervisors, not as controllers but as developers and partners.

Based on these findings, all three null hypotheses are rejected. This overall rejection implies that both motivation and job satisfaction significantly contribute to employee performance in the LGU context. In particular, intrinsic motivators and specific components of job satisfaction must be given greater emphasis to enhance employee outcomes. These findings suggest that LGUs may adopt a more developmental and employee-centered approach to workforce management, focusing not just on external rewards but on building meaningful, supportive, and empowering work environments.

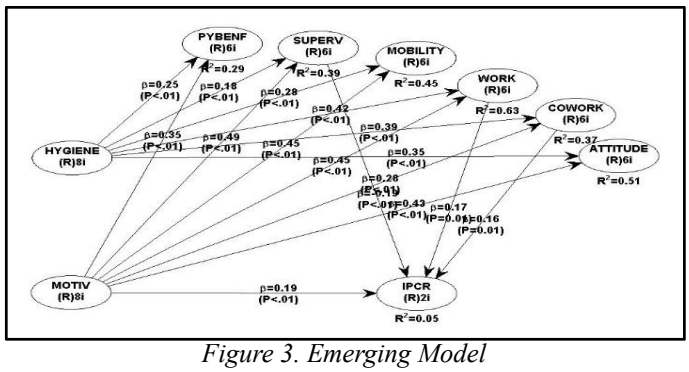

Figure 3. Emerging Model

Four links in the structural model were found to be not significant; thus, an emerging model is generated. This new model, as displayed in Figure 3, reflects only the significant links between the exogenous variables and the endogenous variable. In support of the hypothesis test results, the standardized path estimates, effect sizes, and standard errors are presented in Table 8. It can be noted that the beta coefficients for the correlation between hygiene and motivational factors and job satisfaction remained the same as in the structural model, supported by

p-values generally less than 0.001, suggesting a highly significant effect on job satisfaction. Thus, the null hypothesis (Ho1) stating that motivation has no significant effect on job satisfaction was rejected. This supports Shaikh et al.'s (2019) assertion that both hygiene and motivator factors shape the overall employee experience and influence workplace strategies. In addition, Ekundayo & Babalola (2018) emphasized that motivation positively correlates with employee performance and organizational success.

However, the non-significant paths between hygiene factors and performance and between certain job satisfaction components (such as pay and benefits and mobility) and performance imply that not all variables directly impact employee performance. Therefore, Ho2 and Ho3 were partially rejected, confirming that only specific dimensions—like supervision, the work itself, and co-worker relations—have a measurable effect. This aligns with the claim of Zhenjing et al. (2022) that performance is better enhanced by intrinsic motivators, and with Gojar et al. (2025), who warned that outdated supervisory styles may hinder performance and should be redesigned to foster enabling support instead of authority-based control.

Table 8

Standardized Estimates of the Path in the Emerging Model

Hypothesis	Standardized Estimates (β)	Standard Error	*p*-value*	Effect Coefficient**	Effect Size
Ho_1: Motivation→Job Satisfaction					
HYGIENE→PYBENF	0.246	0.071	<0.001	0.115	Small
HYGIENE→SUPERV	0.179	0.072	0.007	0.090	Small
HYGIENE→MOBILITY	0.284	0.070	<0.001	0.164	Medium
HYGIENE→WORK	0.422	0.068	<0.001	0.303	Large
HYGIENE→COWORK	0.391	0.069	<0.001	0.222	Medium
HYGIENE→ATTITUDE	0.351	0.069	<0.001	0.224	Medium
MOTIV→PYBENF	0.349	0.069	<0.001	0.176	Medium
MOTIV→SUPERV	0.490	0.067	<0.001	0.298	Large
MOTIV→MOBILITY	0.452	0.068	<0.001	0.288	Large
MOTIV→WORK	0.445	0.068	<0.001	0.323	Large
MOTIV→COWORK	0.284	0.070	<0.001	0.150	Medium
MOTIV→ATTITUDE	0.430	0.068	<0.001	0.286	Large
Ho_2: Motivation→Performance					
MOTIV→IPCR	0.187	0.072	0.005	0.039	Small
Ho_3: Job Satisfaction→Performance					
SUPERV→IPCR	-0.191	0.072	0.004	0.042	Small
WORK→IPCR	0.167	0.072	0.011	0.024	Small
COWORK→IPCR	0.164	0.072	0.012	0.031	Small

***** Effect size coefficient: 0.02 – small, 0.15 – medium, 0.30 – large***

The standardized estimates of the path Motivation→Job Satisfaction in the emerging model range from 0.179 to 0.490. These values favor rejecting the first null hypothesis of no significant relationship between the extent of motivation and the level of job satisfaction among LGU employees. This finding indicates that both hygiene and motivational factors contribute, with small to large effects (0.090 to 0.323) on job satisfaction. The significance level reached $p < 0.001$, indicating a strong, significant relationship between the variables mentioned above. Moreover, standard error values of 0.067 to 0.072 are negligible, indicating the accuracy of the samples in relation to the conclusions drawn about the overall employee population. In the second hypothesis, the emerging model showed that only motivational factors had a significant effect on employees' performance, as reflected in their IPCR rating. The effect coefficient yielded a small value of 0.039, with a corresponding standard error of 0.072.

Given that job satisfaction is correlated with performance, the results reveal that the IPCR rating is significantly affected by the indicators, namely supervision (0.042), the work itself (0.024), and co-workers (0.031). Moreover, numerous factors that extend beyond the immediate satisfaction of an employee influence an individual's performance through formal evaluation systems. These include a person's intrinsic skills (Aljumah, 2023), acquired skills (Lorenzo & Garnace, 2023), assets, and training efficiency, as well as the requirements of the role and the organization-wide culture.

Table 9

Proposed Development Program to Improve the Performance of the LGU Employees in San Jose, Occidental Mindoro

Program Component	Objective	Strategies/ Activities	Timeline	Personnel Responsible	Success Indicator	Estimated Budget
1. Motivation Assessment and Profiling	To identify individual motivational drivers among employees	Conduct motivation surveys and one-on-one interviews by department or functional cluster.	Q3 2025	HR Officer, Department Heads	100% of employees profiled; results used in planning	₱50,000
2. Job Satisfaction Focus Workshops	To deepen awareness of job satisfaction determinants and enhance engagement	Organize small-group learning sessions and reflections per cluster/office.	Q3–Q4 2025	HR Division, External Facilitator	80% of participants show increased satisfaction in post-evaluation	₱120,000
3. Career Growth Pathways Program	To address concerns on career advancement opportunities	Develop and disseminate department-specific career progression maps; align with CSC standards.	Q4 2025 – Q1 2026	HR Office, Department Heads, *with CSC advisory input*	At least 1 documented and CSC-aligned career path per job category	₱25,000
4. Compensation and Benefits Review	To enhance employee satisfaction through fair compensation	Benchmark against other LGUs, conduct an internal policy review, and submit a proposal for centralized adjustment.	Q4 2025	Budget Office, HR, Mayor's Office	Proposal submitted to the Sanggunian	₱30,000
5. Recognition and Rewards System	To reinforce desirable performance through positive reinforcement	Launch LGU-wide quarterly recognition program and develop standard criteria for all departments.	Q3 2025	HR, Admin Office	Recognition program implemented with at least 1 quarterly awarding	₱100,000/year
6. Performance Criteria Revision	To upgrade standards and ensure fair evaluation	Form committee to consult per department/cluster and revise performance evaluation tools accordingly.	Q3–Q4 2025	HR, Department Heads	New criteria applied in next appraisal cycle	₱40,000
7. Leadership and Supervisory Skills Training	To enhance supervision and boost staff motivation	Conduct clustered training sessions on leadership, coaching, and communication skills.	Q4 2025 – Q1 2026	HR, External Trainer	90% of trainees report improved leadership application	₱150,000
8. Mentorship and Coaching Program	To guide employees toward outstanding performance	Assign mentors and conduct orientation per department or office, with progress tracked quarterly.	Start Q1 2026	Department Heads, HR	One mentor assigned per 5 employees	₱50,000
9. Employee Development & Training Plan (EDTP)	To implement targeted skills and knowledge training	Conduct Training Needs Analysis by department, prepare annual calendar, and coordinate with training institutions.	Annual, starting 2026	HR, Training Committee	80% of employees completed at least 1 relevant training per year	₱250,000/year
10. Research Study on Motivation Factors	To inform future HR programs by studying intrinsic vs. extrinsic motivators	Design and implement a motivation study using surveys administered by department or cluster; analysis for LGU-wide planning.	Q2 2026	HR, Research Office, Academe Partner	Research results presented and integrated into HR plan	₱25,000

A cluster-based implementation was recommended to improve feasibility, ensure department-specific relevance, and ease coordination among over 400 permanent employees. Programs requiring policy standardization (e.g., Compensation Review, Recognition) will be implemented LGU-wide. Employee motivation is a vital element of workplace success and is deeply rooted in understanding individual needs and internal drivers. Ferrell (2019) and PNU (2013) described motivation as an internal state that energizes and directs behavior. To effectively enhance motivation, Herzberg's Two-Factor Theory recommends first addressing hygiene factors before introducing motivators such as achievement and recognition (Lussier, 2021). The proposed Motivation Assessment and Profiling Program directly aligns with this principle by identifying what uniquely drives each employee. Through surveys and interviews, the program addresses the motivational diversity among employees,

reflecting the need-based framework of Maslow, McClelland, and Herzberg (Lussier, 2021; Lunenburg & Ornstein, 2019).

Understanding the determinants of job satisfaction is essential for ensuring employee retention and organizational effectiveness. Robbins and Judge (2022) emphasize that individuals with higher job satisfaction tend to perform better, and Baxi and Atre (2024) stress that satisfaction is shaped by how well one's job aligns with personal expectations and values. The Job Satisfaction Focus Workshops aim to increase awareness and engagement through reflections and discussions, which is supported by the view that job satisfaction affects not only productivity but also emotional well-being and organizational loyalty (Lee et al., 2022; Karacsony et al., 2025).

The need for clear career progression opportunities is well supported in the literature on growth and upward mobility. Rawahi (2020) and Gazi et al. (2024) noted that professional stagnation erodes morale, while Lumbao and Ferraren (2023) found that clearly defined career paths increase engagement and motivation. The Career Growth Pathways Program addresses these findings by developing career maps to guide employees, especially those in job-order or contractual roles, which are often excluded from promotion opportunities (Estrella-Santos & Tuala, 2024). While the program will be led by the LGU's Human Resource Office and department heads, consultation with the Civil Service Commission (CSC) Field Office will ensure that proposed career pathways are consistent with existing civil service policies and qualification standards, particularly when it comes to eligibility, position reclassification, and career movement within the plantilla system. To sustain skills improvement, the Employee Development and Training Plan (EDTP) ensures that employees receive regular and relevant training. Akpalu and Markom (2022) and Mendoza and Bautista (2022) concluded that training enables public servants to adopt innovations and improve public service delivery. Boongaling et al. (2020) further highlighted that training promotes better customer service, accountability, and ethical practice among LGU staff. Lastly, the proposed Research Study on Motivation Factors is grounded in the ongoing need to differentiate the degree to which intrinsic and extrinsic motivators function effectively. Ekundayo and Babalola (2018) confirmed that motivation directly correlates with improved performance, and Gealon et al. (2021) found that intrinsic motivation drives public sector employees more than external rewards. Cruz (2019) emphasized that success and power are strong motivators in government work. Conducting a comparative study will help refine and tailor future HR policies for greater organizational impact.

4. Conclusions

The study revealed that the motivation of LGU employees stems from both intrinsic and extrinsic factors, with heads of offices expected to focus on understanding employees' needs to better sustain performance. Job satisfaction was found to be determined by six major factors—pay and benefits, supervision, growth and upward mobility, the work itself, co-workers, and attitude toward work—which varied in importance depending on individual employees. Results further showed that hygiene factors such as compensation, job security, and working conditions significantly reduced dissatisfaction and maintained a stable environment, while motivational factors including recognition, achievement, responsibility, and growth opportunities greatly enhanced enthusiasm, engagement, and commitment. Employees also reported high to very high levels of job satisfaction across different dimensions, highlighting the strong influence of supervision, meaningful work, teamwork, and positive attitudes toward tasks. Performance in the two terms of 2024 remained consistently high, with slight improvement, reflecting a steady and productive workforce. Moreover, significant relationships were established between motivation, job satisfaction, and employee performance. However, results suggest that satisfaction and motivation alone may not fully guarantee exceptional outcomes, as other factors may also influence performance. Finally, the proposed development program for LGU employees of San Jose, Occidental Mindoro, if effectively implemented, is expected to further enhance employee capabilities, improve job satisfaction, and increase the number of employees achieving outstanding performance ratings.

Recommendations - Based on the findings and conclusions, several recommendations are put forward to

further improve the motivation, job satisfaction, and performance of LGU employees in San Jose, Occidental Mindoro. Department heads are encouraged to conduct regular assessments or surveys to identify employees' unique motivational drivers, enabling them to adopt tailored management approaches. Likewise, HR personnel are advised to allocate resources to the six identified determinants of job satisfaction while also exploring other potential long-term factors. While hygiene factors such as compensation, job security, and working conditions are already well managed, the LGU is recommended to place greater emphasis on intrinsic motivators, such as recognition, achievement, and responsibility, to foster deeper employee engagement. In support of this, the HR and Budget Offices may review compensation and career development structures in alignment with national guidelines and organizational capacity, ensuring the establishment of competency-based training, promotion systems, and career pathways. To sustain high levels of employee performance, the LGU may continue to monitor productivity, provide timely feedback, and use performance data to guide further improvements. Establishing a formal recognition and reward system in coordination with department heads and the Office of the Mayor is also recommended to consistently reinforce desirable behaviors and performance excellence across departments.

Furthermore, enhancing the existing performance appraisal system in compliance with Civil Service Commission guidelines would ensure that it remains fair, challenging, and aligned with organizational goals, while integrating developmental feedback to support employees' growth from satisfactory to outstanding performance. A differentiated rewards strategy may also be designed to recognize outstanding employees, thereby motivating others and cultivating a culture of excellence. The Human Resource Management Office is further encouraged to implement the proposed employee development program in phases, monitor its effectiveness, and make necessary adjustments based on feedback to ensure its long-term impact on performance. Lastly, future researchers are advised to conduct comparative studies on the influence of intrinsic versus extrinsic motivation on employee satisfaction and performance, which could provide deeper insights into how recognition, purpose, salary, and benefits shape high-level performance and inform more targeted HR interventions in the LGU context.

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Resource allocation and literacy outcomes in the Alternative Learning System (ALS) in Magsaysay, Occidental Mindoro

Ramos, Mary Jane S.
Divine Word College of San Jose, Philippines (maryjaneramos605@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

This study examined the relationship between resource allocation and literacy outcomes in the Alternative Learning System (ALS) in Magsaysay, Occidental Mindoro. Guided by the Practice-Engagement Theory, the research focused on four main areas: teaching materials, technology, teaching time, and teaching strategy. Using an exploratory-sequential design, data were collected from 256 ALS learners and 7 ALS teachers using a validated researcher-made instrument. Findings reveal that ALS learners did not mention teaching strategies as their main resources, suggesting a gap between instructional practices and learners' perceptions. Yet it is still included in the study, along with materials, technology, and time, due to its instructional value. Moreover, learners perceived a very high level of support in terms of materials, technology, and teaching strategies, though teaching time was seen as slightly more limited. Teachers rated both reading and writing proficiency among learners as very high. Statistical analysis revealed a positive link between teaching strategies and reading proficiency, showing that interactive and learner-centered approaches effectively improve comprehension. Similarly, materials and technology positively influence writing skills by providing learners with structured resources and digital tools that enhance writing practice and creativity. However, the negative association of teaching time with both reading and writing suggests that simply increasing instructional time does not guarantee better outcomes; instead, the focus may be on the quality and effectiveness of teaching methods and materials. Based on these findings, the study recommends targeted interventions to strengthen resource allocation to better support ALS learners in developing their reading and writing proficiency.

Keywords: Alternative Learning System (ALS), literacy outcomes, practice-engagement theory, resource allocation, teaching strategy

Resource allocation and literacy outcomes in the Alternative Learning System (ALS) in Magsaysay, Occidental Mindoro

1. Introduction

Education is a vital foundation for individual empowerment and national development. In the Philippines, the Alternative Learning System (ALS) plays a crucial role in providing educational opportunities to out-of-school youth and adults who have been unable to access formal education due to economic, social, or personal barriers. ALS is designed to equip learners with literacy, numeracy, and life skills necessary for individual and societal growth. Despite its valuable purpose, the ALS program faces persistent challenges. According to UNESCO (2019), many ALS programs suffer from inadequate resources, limited access to technology, and insufficient training for facilitators. These limitations significantly affect the quality of instruction and overall learning outcomes. Moreover, Baccal and Ormilla (2021) further emphasize that the lack of instructional materials, suitable facilities, and qualified teachers undermines the effectiveness of ALS, particularly for learners with low literacy levels. These learners often require targeted, resource-intensive interventions to achieve meaningful educational progress. Research by Magatines and Flores (2024) and Perater and Paglinawan (2025) highlights common issues, including limited access to learning materials and inadequate learning environments. However, while these studies discuss the general challenges in ALS implementation, there remains a gap in the literature regarding how strategic resource allocation could directly improve literacy outcomes. As Duncombe (2017) notes, resource constraints can disproportionately affect those who need the most support, making efficient resource management crucial for success. In response to this gap, the study aims to explore how strategic resource allocation can enhance literacy among ALS learners. It seeks to identify effective resource management practices that correlate with improved educational outcomes. This research is not only practical but also aligned with the Philippine government's efforts to promote inclusive and equitable quality education, as envisioned in Sustainable Development Goal 4 (United Nations, 2015).

Statement of the Problem - This study aimed to examine the relationship between Alternative Learning System (ALS) learners' perceived resource allocation and their literacy outcomes assessed by ALS teachers. Specifically, it sought to answer the following questions: (1) What resources are most important for the students in the Alternative Learning System (ALS)? (2) What is the extent of resource allocation as assessed by ALS learners in terms of teaching materials, technology, teaching time, and teaching strategy? (3) What is the level of literacy outcomes of ALS learners as assessed by the teachers in terms of reading proficiency and writing proficiency? (4) Is there a significant relationship between the resource allocation and literacy outcomes of ALS learners? (5) What interventions can be proposed to enhance the literacy outcomes of ALS learners?

Significance of the Study - The findings of this study hold valuable implications for a range of stakeholders involved in the Alternative Learning System (ALS). By shedding light on the relationship between resource allocation and literacy outcomes, the study aims to provide actionable insights that can enhance educational practices, resource management, and learner support. The potential benefits extend beyond the immediate learning community, influencing educators, families, policymakers, and future research in meaningful ways. This study offers significant benefits to various groups connected to the ALS program. For ALS learners, identifying key factors in literacy development can lead to improved support systems, ensuring access to the resources that boost reading and writing skills. Parents, gain a clearer understanding of what truly supports their children's learning, enabling them to provide more effective guidance and involvement at home. ALS educators and facilitators can use the study's insights to refine their teaching strategies and make better use of instructional materials, technology, and time to enhance literacy outcomes. Community organizations and support groups, including NGOs engaged in ALS initiatives, may apply the findings to design targeted programs that address resource gaps and expand learning opportunities. The Department of Education (DepEd) benefits from practical recommendations to

improve ALS implementation, helping identify priority areas for resource allocation and support. Education administrators and policymakers can utilize data-driven evidence to inform policies that ensure a more efficient distribution of resources, ultimately strengthening ALS programs and raising literacy rates. Lastly, future researchers will find this study valuable as a foundation for further exploration into literacy development and resource management within alternative education settings.

Scope and Delimitation of the Study - This study investigated the relationship between ALS learners' perceived resource allocation and their literacy outcomes, emphasizing key resources such as teaching materials, technology, teaching time, and teaching strategies. Although teaching strategies were not explicitly mentioned during interviews, they were included in the analysis based on theoretical frameworks such as Practice Engagement Theory (PET), which emphasizes the role of instructional methods in enhancing learner engagement and literacy development. The research was conducted over seven months, from January to July 2025. Due to the absence of standardized rubrics from the Department of Education (DepEd) tailored explicitly for the ALS program, the study faced limitations in measuring reading and writing proficiency. As a result, it relied on the professional evaluations of ALS teachers working in Community Learning Centers (CLCs), who assessed learners' literacy skills using a researcher-designed rating tool aligned with ALS instructional standards. While this tool was not formally standardized, it provided a structured approach to capture teachers' expert judgments based on their direct experience with learners. The study was confined to ALS learners enrolled in a selected locality and did not include participants from other alternative learning systems or formal education settings. Additionally, because the research used a descriptive-correlational design, it focused on the strength and direction of the relationship between resource allocation and literacy outcomes, without claiming a direct causal effect.

2. Methodology

Research Design - This study used a sequential, exploratory, mixed-methods approach, combining qualitative (narrative) and quantitative (descriptive-correlational) methods, to investigate the relationship between the extent of resource allocation perceived by ALS learners and literacy outcomes as assessed by ALS teachers. In the first phase, qualitative data were collected through interviews with selected ALS learners. These interviews were analyzed to identify key themes and insights related to resource allocation, capturing participants' personal perspectives in depth. The findings from this phase informed the development of a structured questionnaire for the quantitative phase. In the second phase, the survey was distributed to all ALS learners, excluding the 15 respondents from the qualitative phase, enabling statistical analysis to quantify the relationship between resource allocation and literacy outcomes.

Respondents of the Study - For the qualitative phase, fifteen (15) ALS learners from Sitio Tilaga and Sitio Bayabas, Caguray Community Learning Center, were selected. These participants were not included in the final administration of the questionnaire to avoid duplication of responses. For the quantitative phase, the study's respondents consisted of two groups: first, all learners enrolled in the ALS program in Magsaysay for A.Y. 2024–2025. The total population of these learners was 256. Since complete enumeration was used, no sampling distribution was computed. The ALS learners were chosen as respondents because they directly benefited from the program's resources, providing valuable insight into the availability and effectiveness of the program's materials, facilities, and instructional support in improving literacy. Their experiences were essential in evaluating how well resource allocation met their learning needs. Second, seven (7) ALS teachers participated by assessing learners' reading and writing proficiency using a researcher-developed tool aligned with the ALS program. Although not standardized, this tool enabled teachers to provide professional evaluations based on classroom performance and observed competencies, serving as the basis for measuring literacy outcomes in the study.

Research Instrument - The study used both qualitative and quantitative methods in two phases to understand ALS learners' experiences and academic outcomes. First, interviews with learners explored their use of learning resources. Insights from these interviews informed the second phase, which involved structured surveys for both learners and teachers. Learners rated their access to teaching materials, technology, instructional time, and teaching

strategies using a five-point Likert scale. Teachers assessed learners' reading and writing proficiency based on professional observation, also using a five-point scale. This dual-survey approach provided a comprehensive view of resource access and literacy outcomes from both learner and teacher perspectives. Expert validation was used, with three professors from the graduate school program at Divine Word College of San Jose reviewing the questionnaire to ensure it accurately captured the intended concepts. Based on their feedback, the questionnaire was revised and approved by the advisor. It was then tested for reliability to check its consistency over time. The researcher piloted the questionnaire with 30 students and 10 teachers. A week later, it was administered to the same group of respondents who were excluded from the final administration of the questionnaire. Using the test-retest method, the researcher assessed the consistency of 52 items—covering resource allocation and literacy outcomes—through Cronbach's Alpha. The results are presented herein:

Table 1

Reliability Analysis Results

COMPONENTS	RELIABILITY INDEX*	Number of Items	INTERPRETATION
Resource Allocation			
Teaching Materials	0.700	8	High Reliability
Technology	0.751	8	High Reliability
Teaching Time	0.700	8	High Reliability
Teaching Strategy	0.906	8	Very High Reliability
Literacy Outcomes			
Reading Proficiency	0.893	10	High Reliability
Writing Proficiency	0.874	10	High Reliability

*Based on standardized items

The instrument showed high reliability, with Cronbach's Alpha scores ranging from 0.700 to 0.906. These results confirmed its acceptability, making it suitable for use with the final group of respondents.

Data Gathering Procedure - Before data collection, the researcher secured all necessary permits and approvals to ensure ethical compliance. In the qualitative phase, five days of semi-structured interviews were conducted with ALS students in Magsaysay, allowing for thoughtful, anonymous responses and in-depth insights. The quantitative phase involved a structured survey, administered over twenty-five days, face-to-face, providing consistent data for analysis and focusing on learners in the Alternative Learning System for effective and practical implementation.

Statistical Treatment of Data - Data were collected, classified, tabulated, and coded for analysis using statistical software. Thematic analysis was used to identify and categorize qualitative issues related to unforgettable experiences in school and reactions to the mentioned situations. In the quantitative part, the proponent used the weighted mean to assess the perceived extent of resource allocation among ALS learners and the literacy outcomes as evaluated by ALS teachers. To determine the relationship between the independent and dependent variables, calculations were performed using WarpPLS 7.0, a software package for partial least squares (PLS) structural equation modeling.

Ethical Considerations - The study followed key ethical principles—such as informed consent, confidentiality, and voluntary participation—in line with American Psychological Association (APA) guidelines. Participants were provided with detailed information about the study and were required to submit a formal consent letter. They also had the option to sign a Participation and Withdrawal Letter, allowing them to leave the study at any time without penalty. Interviews maintained anonymity and used open-ended questions to encourage honest responses. Ethical instructions were clearly communicated, and any participant concerns were addressed promptly.

3. Results and Discussions

The researcher conducted a thematic analysis of interviews with 15 ALS learners from Sitio Tilaga and Sitio Bayabas at the Caguray Community Learning Center to identify which resources most supported their learning.

Three key resources consistently emerged: teaching materials, access to technology, and sufficient teaching time.

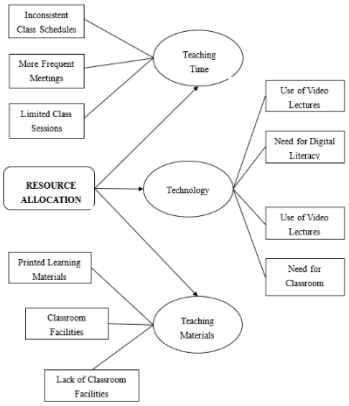

Figure 1. Initial Thematic Map for Resource Allocation

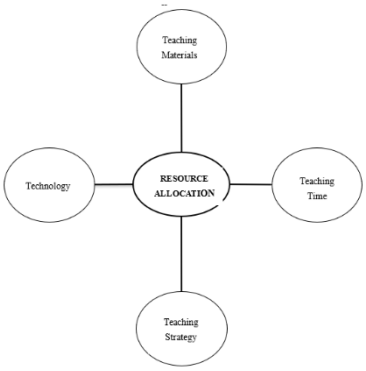

Figure 2. Final Thematic Map for Resource Allocation

Among these, teaching materials, technology, and teaching time were the most frequently mentioned. Learners consistently shared how the presence—or absence—of these resources influenced their participation in reading and writing tasks. Although learners did not explicitly say it, the teaching strategy was also included because of its influential role in how these resources were used. The teaching strategy was defined as the instructional methods teachers used to engage students in literacy tasks, such as reading and writing. Its inclusion was supported by Practice Engagement Theory (Reder et al., 2020), which emphasizes that literacy develops through meaningful participation, rather than just access to resources. Recent research (Zeitschrift für Weiterbildungsforschung, 2024) further supports this view, showing that adult learners improve more when engaged in structured, relevant literacy activities.

Table 2 presents ALS learners' assessments of resource allocation across four core components of the Alternative Learning System: teaching strategy, access to technology, teaching materials, and teaching time. The overall composite mean of 4.27, interpreted as "Very High Extent," indicates that learners perceive a strong level of support across these instructional resources. Among the four components, teaching strategy received the highest composite mean of 4.59, reflecting consistent use of effective literacy-based methods such as repeated reading, vocabulary instruction, guided writing, and group-based activities. This aligns with the work of Hidayati et al. (2021) and Rupley et al. (2020), who emphasized the value of fluency-building and interactive strategies in enhancing reading proficiency. It also echoes the findings of Megawati (2020) and Shen et al. (2024), who highlighted the importance of structured writing instruction and metacognitive strategies in developing learners' writing abilities.

Table 2

Mean Extent of Resource Allocation in Terms of Teaching Materials, Technology, Teaching Time, and Teaching Strategy

Indicators (Teaching Materials)	Weighted Mean	Interpretation
1. Our teacher provides a variety of learning materials to help me understand our lesson.	4.65	Very High Extent
2. Our teacher uses updated modules.	4.46	Very High Extent
3. Our teacher uses digital learning materials (e.g., e-books, online modules).	4.27	Very High Extent
4. Our teacher's learning materials meet my educational needs.	4.28	Very High Extent
5. Our teacher gives us printed homework.	4.65	Very High Extent
6. Our teacher uses physical objects to help us understand the topic.	4.34	Very High Extent
7. Our teacher uses traditional teaching materials every learning session (e.g., blackboard and chalk, visual aids).	4.61	Very High Extent
8. Our teacher provides demonstration activities for our livelihood training.	4.58	Very High Extent
Composite Mean	4.48	Very High Extent

Indicators (Technology)		
1. Our teacher uses modern learning tools (e.g., laptops, computers, tablets) for our learning in ALS.	4.71	Very High Extent
2. Our teacher uses digital resources (e.g., online lessons, apps) to support our lesson.	4.28	Very High Extent
3. Our teacher uses subsidized technological tools for our lesson.	4.33	Very High Extent
4. Our teacher guides us on how to use learning applications.	4.54	Very High Extent
5. Our teacher uses group chat in posting our topic/activities.	4.69	Very High Extent
6. Our teacher uses record videos to help us understand more our lesson.	4.62	Very High Extent
7. Our teacher allows us to use artificial intelligence to answer our assignment.	4.37	Very High Extent
8. Our teacher uses slide show presentation.	4.38	Very High Extent
Composite Mean	4.49	Very High Extent
Indicators (Teaching Time)		
1. Our teacher gives flexible schedule that allows me to learn at a good pace.	1.87	Low Extent
2. Our teacher gives me enough one-on-one support when I need help.	2.00	Low Extent
3. Our teacher gives enough learning hours to improve my skills.	2.02	Low Extent
4. Our teacher provides extra sessions when I struggle with our lessons.	4.28	Very High Extent
5. Our teacher gives us time to do a group work/activity.	4.41	Very High Extent
6. Our teacher's teaching time affects how well I learn.	4.64	Very High Extent
7. Our teacher gives us time to do a collaborative study.	4.49	Very High Extent
8. Our teacher gives us time to have real life job experience with the help of the cooperating agencies.	4.35	Very High Extent
Composite Mean	3.51	High Extent
Indicators (Teaching Strategy)		
1. Our teacher asks us to read passages many times to help us become fluent readers.	4.64	Very High Extent
2. Our teacher taught us new words and their meanings to improve our vocabulary.	4.54	Very High Extent
3. Our teacher asks us to write paragraphs to improve our writing skills.	4.75	Very High Extent
4. Our teacher uses read-aloud sessions to help us improve our reading skills.	4.58	Very High Extent
5. Our teacher gives us phonological awareness activities, like identifying beginning sounds and rhyming words.	4.29	Very High Extent
6. Our teacher gives us group activities to help each other in writing and reading tasks.	4.69	Very High Extent
7. Our teacher talks to us about our writing performance and advise us on how we can do it better.	4.54	Very High Extent
8. Our teacher lectures us about the importance of writing and reading.	4.66	Very High Extent
Composite Mean	4.59	Very High Extent
Overall Mean	4.27	Very High Extent

Scale: 4.20-5.00 – Very High Extent; 3.40-4.19 – High Extent; 2.60-3.39 – Moderate Extent; 1.80-2.59 – Low Extent; 1.00-1.79 – Very Low Extent

Access to technology was also rated highly, with a mean of 4.49, suggesting that learners benefit from tools such as recorded video lessons, educational apps, AI-powered platforms, and online resources. These findings support the conclusions of Adeleye et al. (2024) and Eden et al. (2024), who emphasize the importance of equitable digital access for inclusive education. Similarly, Pangrazio et al. (2020) and Alakrash and Razak (2021) underscore the importance of digital competence as a key component of learner engagement and future-readiness. In addition, the availability of teaching materials received a composite mean of 4.48, indicating that learners have reliable access to a variety of instructional resources in print, digital, and traditional formats. This finding aligns with Wema (2022), who emphasized that resource availability is essential to literacy development, and is further supported by Tzovla and Kedraka (2020) and McKnight et al. (2021), who argue that multimodal materials enhance comprehension and learner motivation.

In contrast, teaching time received the lowest composite mean of 3.51, categorized as High Extent, suggesting that while learners appreciate structured classroom activities and group work, there are notable concerns regarding flexibility and individualized support. These results align with the observations of Heitmann et al. (2023) and Loopoo and Balfour (2021), who argue that time allocation—particularly when tailored to individual learner needs—plays a critical role in educational success. Reder et al. (2020) also emphasized that meaningful engagement in literacy tasks depends heavily on how instructional time is organized, especially for learners with varied learning speeds and needs. Overall, while ALS learners perceive a high level of resource support, the findings highlight the need to address gaps in teaching time flexibility and personalized instruction to ensure equitable literacy outcomes.

Table 3

Mean Level of Literacy Outcomes In Terms of Reading Proficiency and Writing Proficiency

Indicators (Reading Proficiency)	Weighted Mean	Interpretation
1. My ALS learners can read simple texts.	4.14	High Extent
2. My ALS learners can understand and explain the meaning of a passage.	4.00	High Extent
3. My ALS learners can identify the main idea and supporting details in a text.	4.57	Very High Extent
4. My ALS learners can summarize a short story or article accurately.	4.71	Very High Extent
5. My ALS learners can infer meaning from context when reading.	4.00	High Extent
6. My ALS learners can recognize and use new vocabulary in sentences.	4.57	Very High Extent
7. My ALS learners demonstrate improvement in reading comprehension over time.	4.86	Very High Extent
8. My ALS learners can read and follow written instructions effectively.	4.00	High Extent
9. My ALS learners show confidence when reading aloud.	2.86	Moderate Extent
10. My ALS learners can make inferences and conclude from the passage they have read.	4.71	Very High Extent
Composite Mean	4.24	Very High Extent
Indicators (Writing Proficiency)		
1. My ALS learners can write complete sentences.	4.57	Very High Extent
2. My ALS learners can express their thoughts clearly in writing.	3.86	High Extent
3. My ALS learners can compose short paragraphs with proper structure.	4.29	Very High Extent
4. My ALS learners can use correct spelling and punctuation.	2.57	Low Extent
5. My ALS learners can write a summary of a given text.	4.57	Very High Extent
6. My ALS learners can organize their ideas logically when writing.	3.43	High Extent
7. My ALS learners show improvement in written communication over time.	5.00	Very High Extent
8. My ALS learners can write short essays with minimal grammatical errors.	5.00	Very High Extent
9. My ALS learners demonstrate creativity in writing tasks.	4.43	Very High Extent
10. My ALS learners can use transitions and maintain a clear writing style.	5.00	Very High Extent
Composite Mean	4.27	Very High Extent
Overall Mean	4.26	Very High Extent

Scale: 4.20-5.00 – Very High Extent; 3.40-4.19 – High Extent; 2.60-3.39 – Moderate Extent; 1.80-2.59 – Low Extent; 1.00-1.79 – Very Low Extent

Table 3 presents the assessment of ALS learners' literacy proficiency, with a composite mean of 4.24 froficiency and 4.27 proficiency, both interpreted as "Very High Extent." These results suggest that learners are generally competent and show continuous improvement in both literacy areas. The slightly higher score in writing reflects learners' ability to construct complete sentences, compose summaries, and write structured essays—despite some challenges in spelling and grammar. Teachers attribute this progress to instructional guidance and feedback, echoing the findings of Trapman et al. (2018) and Limbong and Tandibura (2023), who emphasized the importance of effective writing instruction and teacher support. In reading, learners demonstrated strong skills in identifying key ideas, making inferences, and summarizing texts; however, the lower score in reading aloud indicates limited oral fluency and confidence. This aligns with Li and Chen and Lee's (2024) distinction between silent reading comprehension and oral reading proficiency, highlighting fluency as an area needing reinforcement. The overall composite mean of 4.26, also interpreted as "Very High Extent," confirms that the ALS program is successfully developing foundational literacy skills. These findings affirm the impact of structured instruction, collaborative learning, and consistent teacher engagement in supporting learners—particularly those from non-traditional or interrupted educational backgrounds—as they progress in their reading and writing competencies.

Moreover, the composite mean of 4.24, interpreted as Very High Extent under reading proficiency, indicates that, overall, ALS learners demonstrate strong reading skills across a variety of domains. These findings align with Misuari-Abdurasul (2023), who emphasized that reading proficiency involves comprehension, interpretation, and meaningful engagement with texts. The strong ratings also echo the work of Fitton et al. (2018), who highlighted that proficient readers can construct meaning, recognize text structures, and link ideas across a passage. Similarly, the high marks for inferencing and conclusion-drawing are consistent with the views of Bernardo and Mante-Estacio (2023), who associated these skills with higher-order thinking and critical literacy. Learners' demonstrated ability to follow written instructions and use vocabulary contextually further supports Baki's (2024) and Yusri and Soh's (2019) assertion that reading proficiency includes flexible strategies such as scanning, skimming, and close reading, depending on the reading task. In addition, the writing proficiency, showing a composite mean of 4.27, is

interpreted as Very High Extent, indicating that learners generally exhibit strong writing skills, including clarity, structure, and creativity. The highest ratings, all at 5.00, were given to learners' ability to write short essays with minimal grammatical errors, maintain a clear writing style using transitions, and demonstrate overall improvement in written communication, highlighting the significant impact of ALS instruction. These findings are supported by Trapman et al. (2018), who emphasize the foundational role of vocabulary and grammar in writing proficiency. Qin et al. (2024) also highlight the importance of coherence and adaptability, which align with the learners' strong performance in essay and summary writing. However, the relatively lower score in logical organization suggests a need for enhanced planning strategies. Moreover, studies by Aziz et al. (2021) and Halili and Diva (2023) underline the connection between reading and writing, noting that exposure to well-structured texts supports the development of written expression. The role of teacher feedback, as discussed by Limbong et al. (2023) and Zhang (2023), is evident in learners' improvement and clarity. Finally, the observed creativity and progress may also be attributed to collaborative writing practices, as proposed by Chua and Bhar (2022) and Chen and Lee (2022), which foster peer learning through group editing, discussion, and feedback.

Table 4

Path Coefficients and p-values for Hypothesis Testing

Path	Beta-Coefficients (β)	*p*-values**	Interpretation**
TCHMAT→READPROF	0.095	0.082	Not Significant
TECH→READPROF	0.084	0.109	Not Significant
TIME→READPROF	0.069	0.154	Not Significant
STRAT→READPROF	0.199	0.001	Significant
TCHMAT→WRITPROF	0.194	0.002	Significant
TECH→WRITPROF	-0.167	0.007	Significant
TIME→WRITPROF	0.050	0.234	Not Significant
STRAT→WRITPROF	0.064	0.172	Not Significant

**Significant at p< 0.05

The results of the hypothesis testing reveal several significant paths within the structural model. Specifically, availability of teaching materials positively predicts writing proficiency ($\beta = 0.194$, $p = 0.002$), suggesting that learners benefit from access to relevant instructional resources—a finding supported by Wema (2022) and McKnight et al. (2021), who emphasize the value of materials in developing vocabulary, structure, and content for writing. In contrast, access to technology shows a significant negative relationship with writing proficiency ($\beta = -0.167$, $p = 0.007$), indicating that without proper integration and digital literacy support, technology use may hinder rather than enhance writing development. This aligns with Alakrash and Razak (2021), who caution against unstructured or passive use of digital tools. For reading proficiency, teaching strategy emerged as the only significant predictor ($\beta = 0.199$, $p = 0.001$), highlighting the crucial role of instructional methods such as scaffolding, repeated reading, and collaborative learning, as noted by Hidayati et al. (2021) and Rupley et al. (2020). Other paths—teaching materials to reading proficiency ($\beta = 0.095$, $p = 0.082$), access to technology ($\beta = 0.084$, $p = 0.109$), and teaching time ($\beta = 0.069$, $p = 0.154$)—were not significant for reading outcomes. Likewise, teaching time ($\beta = 0.050$, $p = 0.234$) and teaching strategy ($\beta = 0.064$, $p = 0.172$) were not significant predictors of writing proficiency. These findings partially reject the null hypothesis, confirming that certain aspects of resource allocation—particularly teaching strategy and access to materials—have a direct impact on literacy outcomes in the ALS context. However, the lack of significance for teaching time supports Loopoo and Balfour's (2021) argument that quality and strategic use of time outweigh duration alone. Additionally, the absence of a link between teaching strategy and writing proficiency may indicate a need for distinct pedagogical approaches to writing, such as personalized feedback and extended practice, as emphasized by Shen et al. (2024) and Megawati (2020).

An emerging model, as presented in Figure 4, finalized the direct links among the latent variables used in the study, which emerged from the structural equation analysis. Among the four components of resource allocation, only the availability of teaching materials and access to technology appear to influence ALS learners' writing proficiency directly. Among the other components, the teaching strategy is singled out as having a direct influence on ALS learners' reading proficiency. Beta coefficients from 0.019 to 0.023, although low, are found to be significantly supported by *p*-values less than 0.01. A minimal percentage of variability, R^2=0.08 or 8% in the

writing proficiency and 5% in the reading proficiency, can be attributed to the variability in the teaching materials, access to technology, and teaching strategy.

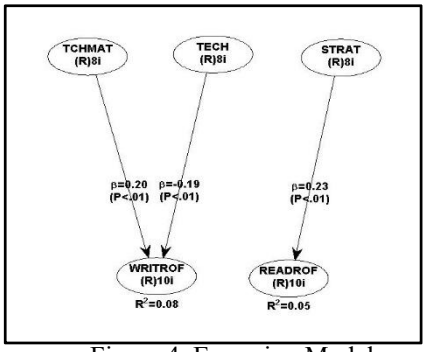

Figure 4. Emerging Model

Table 5

Standardized Estimates of the Path in the Emerging Model

Hypothesis	Standardized Estimates (β)	Standard Error	*p*-value	Effect Size**
STRAT→READPROF	0.225	0.066	<0.001	0.051
TCHMAT→WRITPROF	0.202	0.066	0.001	0.041
TECH→WRITPROF	-0.186	0.066	0.003	0.035

Effect size coefficient **0.02 – small, 0.15 – medium, 0.30 – large**

Table 5 presents the results of a statistical test supporting the rejection of the null hypotheses for three specific paths, with p-values of <0.001, 0.001, and 0.003, confirming the presence of significant relationships. The standardized estimates showed slight improvements, with β = 0.225, β = 0.202, and β = –0.186, respectively. These results reveal that while access to technology has a significant but negative effect on writing proficiency (effect size = 0.035), both the availability of teaching materials and teaching strategy have positive effects on writing and reading proficiencies, respectively, with effect sizes of 0.041 and 0.051. A standard error of 0.066 indicates acceptable sampling accuracy. The strongest predictor in the model is the teaching strategy's impact on reading proficiency (β = 0.225), highlighting the value of interactive and structured teaching methods. This finding aligns with Hidayati et al. (2021) and Rupley et al. (2020), who emphasized that guided reading, repeated practice, and engagement strategies significantly boost reading fluency and comprehension—particularly relevant in the ALS context, where many learners are developing foundational skills.

Meanwhile, the significant effect of teaching materials on writing proficiency (β = 0.202) reinforces the work of Wema (2022) and McKnight et al. (2021), suggesting that access to structured and relevant learning resources directly supports written output, especially for ALS learners who may lack home access to such materials. Conversely, the negative association between access to technology and writing proficiency (β = –0.186) suggests that unstructured or passive use of digital tools may hinder skill development. Alakrash and Razak (2021) and Chen and Lee (2022) caution that technology must be embedded within clear instructional strategies that actively engage learners in writing tasks. Without guided application, learners may default to passive consumption or over-reliance on automated tools, limiting authentic writing practice. These results underscore the need for intentional integration of digital resources, ensuring that technology enhances rather than replaces the writing process in ALS learning environments. The study's findings indicate that while ALS learners show promising levels of literacy proficiency, targeted interventions are necessary to address specific gaps. A key issue is the need for contextualized and leveled teaching materials to support writing development, addressing learners' struggles with generic or insufficient resources. The proposed creation of modules with grammar tips, sample essays, and scaffolded tasks is supported by Wema (2022) and McKnight et al. (2021), who highlight the importance of relevant instructional content. Additionally, the negative impact of unstructured technology use on writing proficiency underscores the need for guided digital activities, such as supervised blogging and structured journaling—an approach aligned with the caution of Alakrash and Razak (2021). Though teaching time showed no strong statistical link to literacy outcomes, learners expressed the need for more flexible and individualized instruction.

Table 6

Proposed Interventions to Improve Literacy Outcomes in ALS

Domain	Intervention Strategies	Objectives	Expected Outcomes	Responsible Unit/Personnel
Teaching Materials	Develop and distribute contextualized and leveled writing modules with grammar guides, writing samples, and structured activities.	To provide learners with guided, relevant, and engaging materials that support writing development	Increased learner ability to organize, express, and revise written outputs with reduced grammatical errors	Learning Resource Management and Development System (LRMDS); ALS Teachers
Technology	Integrate structured digital writing tasks (e.g., guided online journaling, blogging with feedback, use of monitored AI writing tools)	To transform technology use from passive consumption to active writing engagement	Improved writing proficiency through tech-supported but teacher-guided writing practice	ALS Teachers; ICT Coordinator
Teaching Time	Implement flexible instructional scheduling and one-on-one coaching sessions during remedial or enrichment hours	To address learners' varied pacing and provide personalized reading and writing support	Improved learner confidence, especially in oral reading fluency and clarity in written expression	ALS Teachers; District ALS Coordinators
Teaching Strategy	Conduct capacity-building workshops on evidence-based reading strategies (e.g., repeated reading, think-aloud, vocabulary scaffolding)	To equip ALS teachers with instructional techniques proven to improve reading comprehension and fluency	Improved reading proficiency, especially in comprehension, vocabulary use, and summarizing	ALS Education Program Specialist; District ALS Coordinators; Master ALS Teachers
Monitoring and Feedback	Establish regular formative assessment cycles using rubrics for both reading and writing, followed by individual feedback	To monitor learner progress and inform teaching adjustments	Sustained improvement in both reading comprehension and writing mechanics through timely teacher intervention	ALS Teachers
Collaborative Learning	Incorporate peer-led reading groups and collaborative writing workshops	To strengthen learner engagement, peer feedback, and confidence in using literacy skills	Increased fluency, critical thinking, and idea organization through social interaction	ALS Teachers

Thus, flexible scheduling and one-on-one coaching are proposed, in line with Loopoo and Balfour (2021) and Reder et al. (2020), who advocate personalized learning approaches. The strong influence of teaching strategies on reading proficiency also led to the recommendation of teacher training on evidence-based methods, including repeated reading, vocabulary scaffolding, and think-alouds, as endorsed by Hidayati et al. (2021) and Rupley et al. (2020). Furthermore, the plan includes formative assessments with rubric-based feedback, promoting learner reflection and improvement, in line with Limbong et al. (2023) and Shen et al. (2024). Lastly, to enhance engagement and confidence, collaborative learning strategies such as peer-led reading groups and writing workshops are recommended, supported by Chua and Bhar (2022) and Chen and Lee (2022), who emphasize the literacy benefits of social learning. Overall, the intervention addresses both structural and instructional gaps with research-driven solutions to improve literacy outcomes in the ALS setting.

4. Conclusions

Based on the study's significant findings, several conclusions were drawn. First, although ALS learners did not mention teaching strategies as their primary resources, this study still included them alongside materials, technology, and time because of their instructional value, highlighting a gap between instructional practices and learners' perceptions. Regarding the extent of resource allocation, teaching materials received a very high rating, indicating that instructional resources such as modules and handouts were generally available and helpful, reinforcing their central role in delivering foundational content. Technology also received a very high score, reflecting its growing integration into instruction and suggesting that digital tools and platforms were accessible and incorporated into learners' experience. However, this underscores the need for guided use. Teaching time was

rated relatively low, though still high, suggesting potential challenges in providing personalized instruction and sufficient support, as well as limitations in flexible scheduling. The teaching strategy received the highest score, indicating strong learner appreciation for the instructional approaches used by their teachers. In terms of literacy outcomes, reading proficiency was rated very high, indicating that learners can recognize, understand, and process texts effectively when supported by appropriate learning conditions. Writing proficiency was also rated highly, reflecting learners' ability to construct coherent sentences and express ideas clearly; however, this area remains sensitive to the quality of instructional guidance and the application of resources. The study further found a positive link between teaching strategies and reading proficiency, showing that interactive and learner-centered approaches effectively improve comprehension. Similarly, teaching materials and technology positively influence writing skills by providing structured resources and digital tools that enhance practice and creativity. However, the negative association of teaching time with both reading and writing proficiency suggests that simply increasing instructional time does not guarantee better outcomes; instead, the focus should be on the quality and effectiveness of teaching methods and materials. Based on these insights, the proposed interventions detailed in Table 11 offer targeted improvements in teaching methods, contextualized materials, and learner-centered delivery, designed to address the nuanced gaps in resource effectiveness and support sustained literacy gains among ALS learners.

Recommendations - Based on the findings and conclusions of this study, several recommendations are proposed to strengthen the implementation of the ALS program further. First, ALS implementers and local DepEd offices are encouraged to explore additional resources beyond academics, such as motivational and emotional support, which may help build learners' confidence, address life challenges, and promote persistence in learning. To enhance resource allocation, the Department of Education (DepEd) ALS Division, in coordination with local government units (LGUs), may continue providing updated, practical, and accessible learning materials in both print and digital formats. To improve the integration of technology, DepEd ALS implementers and LGUs are advised to establish basic computer access for digital literacy sessions. This effort aims to deliver quality, inclusive, and future-ready education, especially for learners affected by geographic, economic, or schooling disruptions.

Additionally, ALS program coordinators and LGUs may respond to learners' needs for flexible and sufficient learning time by offering varied schedules and make-up sessions, whether face-to-face or online. To further support this, LGUs may consider funding the hiring of additional ALS teachers, as learners often bring diverse educational backgrounds and gaps that require personalized instruction to improve outcomes and sustain the program in the long term. ALS teachers and facilitators are also encouraged to incorporate more learner-centered strategies, such as peer learning, collaborative activities, and experiential approaches, such as livelihood or on-the-job training. These strategies are particularly effective in mixed-age groups and emphasize the practical applications of learning. To support literacy outcomes specifically, ALS teachers may strengthen learners' reading confidence through activities such as reading aloud, performance-based reading, and vocabulary scaffolding. Comprehension skills may be developed using prediction, summarization, sequencing, and WH-questioning strategies. For writing proficiency, teachers are encouraged to focus on grammar, mechanics, and creative expression. Tools like writing prompts, rubrics, and collaborative writing activities—such as journaling and storytelling—can be practical, especially when paired with regular short writing tasks and constructive feedback on both content and structure. To equip teachers for these tasks, DepEd ALS coordinators and school heads may prioritize regular teacher training on effective literacy instruction. Training may include strategies such as repeated reading, vocabulary scaffolding, contextualized writing, and the guided use of technology. Workshops may help teachers integrate digital tools meaningfully into writing instruction while avoiding overreliance on passive AI-generated content.

Furthermore, DepEd ALS program managers, in collaboration with LGUs and community partners, are encouraged to pilot the proposed interventions—including training programs, resource development, structured tech use, and personalized instruction—and refine these based on feedback from both learners and teachers before implementing them more broadly across ALS centers. Lastly, future research may explore what ALS learners truly need to support their learning. This includes not only access to technology but also suitable learning spaces, updated materials, and livelihood training tools. Studying how these resources—when well managed—impact learner progress over time would yield valuable insights. Additionally, exploring regional differences in learner

performance may help in tailoring the planning and delivery of ALS programs for greater effectiveness and equity.

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Innovative teaching strategies and adaptations of science teachers in secondary schools of Sablayan District

Ibon, Analyn S. ✉
Divine Word College of San Jose, Philippines (analyn.ibon001@deped.gov.ph)
Pagayonan, Ephegenia N.
Divine Word College of San Jose, Philippines (ephe1618@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

This study aimed to explore the innovative teaching strategies and adaptations used by science teachers in secondary schools in the Sablayan District. Using an exploratory sequential design, an interview guide, and a researcher-made instrument, data were collected from 45 teachers through complete enumeration. Descriptive statistics summarized the respondents' profiles and levels of adaptation, while multiple regression analysis was used to determine the influence of teacher profile, innovative strategies, and digital literacy on adaptation. The findings show that the high level of implementation across all strategies demonstrates that teachers are consistently applying innovative approaches in their science instruction. Also, findings reveal that teachers are highly committed to ensuring that their instructional content aligns with curriculum expectations and is responsive to both contextual and learner-specific factors. Overall, the data underscore the responsiveness and professionalism of science educators as they modify their practices to ensure the continuity, quality, and relevance of science education. These adaptive strategies are vital in fostering resilient and inclusive learning environments. Findings also revealed that contextualized and localized teaching, differentiated instruction, inquiry-based learning, and current rank significantly affect teacher adaptations, whereas blended learning, game-based teaching, ICT integration, and digital literacy level did not. These results highlight the need to strengthen support for science teachers through sustained professional development, mentoring, and resource provision, particularly in contextualized teaching, differentiated instruction, and inquiry-based learning. Thus, it is recommended that school heads and administrators be encouraged to implement the proposed professional development plan to enhance teachers' instructional capacity in employing innovative teaching strategies.

Keywords: adaptations, blended learning, digital literacy, innovative teaching strategies, science teaching

Innovative teaching strategies and adaptations of science teachers in secondary schools of Sablayan District

1. Introduction

The Philippine education system prioritized curriculum reform, teacher training, and instructional innovations through the implementation of the MATATAG Curriculum (DepEd Order No. 10, s. 2024), which emphasizes essential scientific concepts, inquiry-based learning, and integration of real-life applications. The curriculum aims to simplify content while deepening conceptual understanding and promoting real-world applications. DepEd has also increased teacher training in science pedagogy and digital literacy, recognizing that effective science instruction requires both strong content knowledge and innovative teaching strategies. To support these initiatives, the Department of Education reiterates and intensifies the implementation of DepEd Order No. 42, s. 2017**,** which enforces the Philippine Professional Standards for Teachers (PPST)**.** This framework encourages educators to demonstrate innovation in delivering content, assessing learning, and creating a learner-centered environment. In alignment with this goal, both Bloom's Taxonomy and the Structure of the Observed Learning Outcome (SOLO) Taxonomy serve as valuable tools in enhancing science education. Bloom's Taxonomy, emphasized in DepEd Order No. 8, s. 2015 is widely used in lesson planning and assessment to help teachers formulate objectives that move from foundational knowledge to higher-order thinking skills, such as analysis, evaluation, and creation, using the Structure of the Observed Learning Outcome (SOLO) framework (Chandio et al., 2016).

It provides clear guidelines for designing learning outcomes, assessments, and instructional strategies—especially in science subjects where depth of understanding is critical. When integrated into the science curriculum, these frameworks guide differentiated instruction and meaningful assessment, promoting inquiry-based learning, critical thinking, and scientific literacy. Ultimately, they equip Filipino learners with essential 21st-century competencies aligned with the goals of the K to 12 Science Curriculum. Studies emphasize that combining these taxonomies allows science teachers to design instructional strategies that are both cognitively progressive and conceptually deep. This integrated approach supports the development of innovative teaching strategies that are responsive to learner needs and aligned with curriculum standards—particularly relevant to the present study on science educators' adaptations (Ramos et al., 2024).

Complementing these instructional advancements, efforts from the private sector—such as those by Diwa Learning Systems Inc. and its social development arm, the Bato Balani Foundation Inc. (BBFI)—play a significant role in promoting scientific excellence and supporting science education nationwide. Through programs like the Bato Balani Science Excellence Awards (BB SEA), which honor top-performing science students, and initiatives like the Bato Balani Pinoy Scientist, which provides platforms that celebrate academic achievement, inspire innovation, and encourage student curiosity. In this context, the present study seeks to determine the innovative teaching strategies, profiles, and digital literacy level of science teachers in the secondary schools of Sablayan District. Furthermore, it aims to examine how these factors contribute to the level of adaptations necessary for effective and responsive instruction, with the ultimate goal of enhancing students' academic performance in science.

Statement of the Problem - The primary purpose of the study is to determine the innovative teaching strategies and adaptations used by science teachers in Secondary Schools in the Sablayan District. Specifically, this study sought to answer the following questions: (1) What are the innovative teaching strategies of science teachers in secondary schools of Sablayan District? (2) What is the profile of the respondents in terms of highest educational attainment, number of years in teaching science, current rank, and number of science trainings attended? (3) What is the level of innovative teaching strategies of science teachers in secondary schools of Sablayan District in terms of blended learning, contextualized and localized teaching, differentiated instruction, game-based teaching strategies, inquiry-based learning, and ICT integration? (4) What is the level of digital literacy of science teachers in secondary schools of Sablayan District? (5) What is the level of adaptation of the science teachers in Secondary

schools of Sablayan District in terms of content standards, performance standards, most essential learning competencies, pedagogical techniques, and assessment? Moreover, (6) Is the level of adaptations of science teachers in Secondary schools of Sablayan District significantly affected by their profile, innovative teaching strategies, and digital literacy level?

Significance of the Study - The result of this study is helpful in the following: Science Teachers—it may serve as a reference or guide for improving their pedagogical practices, helping them become more adaptable and practical in diverse learning environments. To Learners, as science teachers become more adaptive and learner-centered, students are more likely to experience engaging, inclusive, and meaningful learning. To School Administrators, the results will assist principals and department heads in identifying the strengths and needs of their teaching staff. To the DepEd Division Office, this study provides evidence-based insights into the current practices, challenges, and innovations employed by science teachers in secondary schools within the Sablayan District. To DOST-MIMAROPA, this study is also significant because it provides empirical data on current levels of innovation and digital literacy among science educators in secondary schools. To Curriculum Planners and Policy Makers (DepEd), this research provides empirical data to inform decision-making on curriculum enhancement, teaching innovation policies, and professional development frameworks. To Parents, it is advisable to engage them in classroom conferences and ensure that they are kept informed of the student's academic progress. To LGU SABLAYAN, this study holds significance to the Local Government Unit (LGU) as it provides valuable insights into the state of science education within its jurisdiction, particularly in terms of innovation, teacher adaptability, and digital literacy. Lastly, for Future Researchers, this study may serve as a basis or point of comparison for future research in science education, especially studies that focus on pedagogical innovation, post-pandemic teaching, or teacher adaptability.

Scope and Delimitation of the Study - This study is limited to science teachers in public secondary schools within the Sablayan District. It employed a complete enumeration of 45 respondents. The study focused specifically on the relationships among respondents' profiles, including highest educational attainment, years in teaching science, current rank, and the number of science training sessions attended, as well as innovative teaching strategies such as blended learning, contextualized, and localized teaching. Differentiated instruction, game-based learning, inquiry-based learning, ICT integration, digital literacy levels, and their level of adaptations in terms of content, performance standards, Most Essential Learning Competencies, pedagogical techniques, and assessment. Moreover, data collection relied on interviews and survey questions. It involved 45 science teachers from 16 different schools within the Sablayan district. The study employed a combination of qualitative and quantitative methods, including interviews and surveys, to gather data on innovative teaching strategies, teacher profiles, and digital literacy levels of science teachers in public secondary schools, and on how these factors influence their level of adaptation. Data collection was conducted over 60 days, from May to June 2025, allowing ample time for in-depth responses, data validation, and analysis. This mixed-methods approach ensured a comprehensive understanding of the instructional practices and adaptability of science teachers in response to evolving educational demands. This study employed regression analysis rather than Structural Equation Modeling (SEM) due to the limited number of respondents and the use of comprehensive enumeration.

2. Methodology

Research Design - This study employed a mixed sequential exploratory research design, integrating both qualitative and quantitative approaches to obtain a comprehensive understanding of the innovative teaching strategies and adaptation of science teachers in secondary schools of the Sablayan district. The qualitative component uses interviews to determine the innovative teaching strategies of science teachers. The quantitative component measures the levels of digital literacy and the adaptations of science teachers using structured survey questionnaires with Likert-scale items. It also aims to analyze the relationships among teachers' profiles, innovative teaching strategies, levels of digital literacy, and levels of adaptation.

Respondents of the Study - The respondents of this study were the entire population of science teachers in

Sablayan District, totaling 45. Since the population was relatively small and manageable, the researcher employed a complete enumeration technique. This means that all science teachers within the identified schools were included as respondents. Complete enumeration ensures that the study captures a complete set of perspectives and minimizes the risk of sampling bias. By involving the entire population, the researcher obtained more reliable and valid results, particularly when analyzing associations between respondents' profiles and their innovative teaching strategies and levels of adaptation. This approach is consistent with best practices in small-population research, where the feasibility of surveying all members outweighs the limitations of applying a sample-based method.

Research Instrument - This study used both qualitative and quantitative research instruments to gather comprehensive data aligned with a mixed sequential exploratory research design. The instruments were carefully developed to assess the types of innovative teaching strategies used by science educators, their level of digital literacy, and the extent of their adaptations across key instructional areas. In the qualitative phase, an interview question was used to elicit detailed responses on teachers' innovative teaching strategies. The responses from this phase were analyzed to identify recurring themes, from which the six most commonly cited innovative teaching strategies were extracted. For the quantitative phase, the researcher-made questionnaire was composed of four parts. The first part focused on the respondents' profiles. The second part measured the level of the six innovative teaching strategies derived from the qualitative responses. The third part, the digital literacy assessment to evaluate teachers' proficiency and confidence in using digital tools for instruction, communication, content development, and assessment. The fourth measured digital literacy.

The validity of the research instrument was crucial for ensuring the accuracy and consistency of the data collected in this study. To establish the validity of the instrument, validation was employed. The expert comprised five professors from Divine Word College of San Jose. Their feedback ensured that the items effectively measured the intended constructs: the level of adaptation, the digital literacy of science teachers, and the types of innovative teaching strategies. This review process was vital for confirming that the questions were relevant, clear, and comprehensive, thereby accurately capturing the nuances of the teachers' experiences. This approach ensured both the validity of the research instrument and meaningful alignment between qualitative themes and quantitative metrics, yielding reliable and actionable findings. The reliability of the instrument was tested outside the district of Sablayan due to the limited teacher population handling the high school Science subject. Thus, the researcher conducted the reliability through a one-time administration of the questionnaire to 12 Science high school teachers from Sta. Cruz District. They responded to 72 items, comprising 12 indicators. Using the split-half method, the reliability was estimated using the Spearman-Brown correction formula based on equal-length coefficients. The computation yielded the following results in Table 1.

Table 1

Reliability Analysis Results

Item	Reliability Coefficients*	Number of Items	Interpretation
I. Digital Literacy Level	0.861	6	High Reliability
II – Innovative Teaching Strategies			
1. Blended Learning	0.813	6	High Reliability
2. Contextualized and Localized Teaching	0.966	6	Very High Reliability
3. Differentiated Instruction	0.855	6	High Reliability
4. Game-based Teaching	0.960	6	Very High Reliability
5. Inquiry-based Approach	0.873	6	High Reliability
6. ICT Integration	0.778	6	High Reliability
III. Level of Adaptation			
1. Content Standards	0.635	6	Moderate Reliability
2. Performance Standards	0.766	6	High Reliability
3. Most Essential Learning Competency	0.935	6	Very High Reliability
4. Pedagogical Technique	0.910	6	Very High Reliability
5. Assessment	0.959	6	Very High Reliability

Table 1 shows a generally high level of reliability, reflected in the results, with coefficients ranging from 0.766 to 0.966, although one indicator yielded a moderate coefficient of 0.635. Five indicators had the highest indices, ranging from 0.910 to 0.966, reflecting very high reliability, and six indicators had high indices, ranging from

0.766 to 0.873. These results attest to the questionnaire's acceptability, which was then administered to Science high school teachers in Sablayan, Occidental Mindoro.

Data Gathering Procedure - The data-gathering process involved multiple steps for both qualitative and quantitative data collection. Initially, the researcher secured permission from the Secondary School Cluster Heads and school administrators to conduct the study. For the qualitative phase, in-depth interviews were conducted with 10 teachers from Ligaya National High School, Burgos National High School, Sablayan National Comprehensive High School–GEA Extension, Malisbong National High School, and Sablayan National Comprehensive High School–Bonifacia Extension. The interviews were conducted over five days using an online platform. An interview guide was used to ensure consistency across interviews, focusing on the types of innovative teaching strategies used by teachers. Every interview was tape-recorded, transcribed, and analyzed for recurring themes. For the quantitative phase, a researcher-made questionnaire was distributed to 45 science teachers across all secondary schools in the Sablayan District, using complete enumeration. The data were collected personally by the researcher over 7 days. Teachers were informed about the purpose of the study, and their participation was entirely voluntary.

Statistical Treatment of Data - The qualitative data from the interviews with the teacher-respondents underwent thematic analysis: this involved recording, transcription, tabulation, and coding to extract themes. To choose the final themes, the first and last thematic maps were depicted. For the quantitative data, statistical analysis was conducted using SPSS version 26. Weighted means and rankings were computed to assess the levels of teachers' innovative teaching strategies based on the results of the final thematic analysis and the level of adaptations. This statistical approach allowed for an examination of the relationships among respondents' profiles, innovative teaching strategies, levels of digital literacy, and levels of adaptation. This study employed regression analysis instead of Structural Equation Modeling (SEM) due to the limited number of respondents and the use of complete enumeration.

Ethical Considerations - The research adhered to ethical guidelines throughout the study. Permission was obtained from the secondary schools' cluster head and school principals in the Sablayan district to gather data, ensuring transparency in the research process. The purpose and procedures of the study were clearly communicated to the respondents, fostering trust and understanding. Confidentiality was prioritized, with all collected data secured and used exclusively for the study's purpose. Participants were informed of their right to withdraw at any time without consequence. Additionally, the research instrument and findings were presented with academic integrity, following the American Psychological Association (APA) style for citations. The study aimed to contribute positively to the field of education without harming participants or stakeholders.

3. Results and Discussions

Figure 1. Final Thematic Map for Innovative Teaching Strategies

The diagram illustrates the final thematic analysis of innovative teaching strategies as identified from the qualitative data collected in the study. These strategies represent the finalized themes that emerged from a systematic coding process of science teachers' responses. Initially, multiple developing codes were identified, which were then refined and grouped into broader thematic categories based on conceptual similarities and the

frequency with which they appeared in the data. This final diagram synthesizes the core innovative strategies used by science teachers, including Blended Learning, Contextualized and Localized Teaching, Differentiated Instruction, Game-Based Learning, Inquiry-Based Learning, and ICT Integration. In this regard, Reyes and Del Mundo (2023) observed that Science teachers in rural areas of Northern Luzon creatively adapted blended learning by maximizing radio-based instruction and community learning hubs, ensuring that learners without gadgets or stable internet access could still engage in science activities. The Department of Education has supported blended learning through its Basic Education Learning Continuity Plan (BE-LCP), which encourages the use of flexible learning modalities and teacher upskilling. These local findings highlight the flexibility, creativity, and resilience of science teachers in implementing blended learning strategies that are inclusive and responsive to learners' varied needs. Moreover, DepEd Order No. 32, s. 2015 emphasizes the importance of contextualizing and localizing instruction to make lessons more meaningful to learners. In science education, this means connecting scientific concepts to real-life situations, local issues, and community resources. In addition, the study showed that using visual aids, hands-on materials, and small-group instruction helped all students engage more deeply with science topics, particularly physics and environmental science (Pulkkinen & Rautopuro, 2022). Moreover, Corpuz & Manalo (2022) reported that teachers found this method most effective when aligned with clear objectives and followed by structured reflection, as it enhances retention, promotes collaboration, and makes learning more meaningful and enjoyable. In addition, Tan et al. (2021) noted that inquiry-based science teaching significantly enhanced students' understanding of scientific methods and increased their ability to evaluate scientific claims critically. Secondary science teachers were trained to design lessons involving guided and open inquiry activities that mimic real-world problem-solving. Platforms like Google Classroom and LMS tools facilitated blended learning, while interactive tools promoted higher-order thinking and increased student motivation and performance in subjects such as biology and chemistry (Yunus et al., 2021).

Table 2

Science Teachers' Profile in terms of Highest Educational Attainment, Number of Years in Teaching Science, Current Rank, and Number of Science Trainings Attended (n = 45)

Highest Educational Attainment	Frequency	Percent
Bachelor's Degree	39	86.7
Master's Degree	5	11.1
Doctorate Degree	1	2.2
Number of Years in Teaching Science		
1 - 5	11	24.4
6 - 10	18	40.0
11 - 15	7	15.6
16 and above	9	20.0
Current Rank		
Teacher, I	11	24.4
Teacher II	2	4.4
Teacher III	28	62.2
Master Teacher I	3	6.7
Master Teacher II	1	2.2
Number of Trainings Attended in Science		
1 - 2	20	44.4
3 - 4	9	20.0
5 and above	16	35.6
Total	45	100.0

Table 2 presents the science teachers' profiles by highest educational attainment, years of teaching science, current rank, and number of science training sessions attended. The data reveal that a significant majority of science teachers in the study area hold only a Bachelor's degree, with 39 (86.7%) holding one. This indicates that while most teachers meet the minimum academic requirements to teach at the secondary level, opportunities for further academic or professional advancement, such as pursuing a Master's or Doctoral degree, may be limited or underutilized. The small percentage of teachers with graduate degrees at 11.1% and doctorates with 2.2 % implies that advanced educational qualifications are not yet widespread among the teaching force. This may have implications for the implementation of innovative teaching strategies, as teachers with higher academic qualifications often have greater exposure to recent research, advanced pedagogical training, and professional

networks. According to Cabansag (2021), teachers with postgraduate degrees exhibit greater confidence in adapting instruction to diverse learner needs and integrating advanced teaching methods such as differentiated instruction, blended learning, and ICT-based assessment tools. Her study across secondary schools in Region II of the Philippines found that teachers with a Master's or Doctorate were more likely to engage in action research and instructional innovations aligned with the DepEd's learning continuity initiatives. Moreover, in terms of the number of years in teaching science. The data reveal that 18 of 45 science teachers surveyed (40%) have 6 to 10 years of teaching experience. This distribution suggests a relatively youthful and dynamic workforce, with a strong presence of early- to mid-career educators. While early-career teachers often bring fresh ideas and are more open to integrating innovative strategies and digital tools, they may also require additional mentoring and training to develop pedagogical depth and classroom management skills fully. In support of these findings, Ingersoll and Strong (2021) believed that teaching experience positively correlates with increased instructional competence, especially in subject-specific fields such as science. Teachers with more years in the classroom develop more profound content knowledge, stronger classroom management skills, and more effective pedagogical skills, all of which enhance learning outcomes.

In addition, the current rank data show that the majority of science teachers hold the rank of Teacher III, accounting for 28 of 45 respondents (62.2%). The dominance of the Teacher III position suggests that many of the district's science educators have already advanced beyond entry-level ranks, indicating accumulated teaching experience and likely completion of the necessary qualifications. However, the relatively low number of Master Teachers implies that while many teachers are progressing, only a small portion have reached higher levels of career advancement. This distribution may reflect limited opportunities for promotion due to either structural limitations within schools or the demanding prerequisites for becoming a master teacher. These findings are supported by Bautista and Ortega (2020), who found that Teacher III and Master Teacher positions correlate with greater involvement in curriculum development, research initiatives, and school improvement programs. Teachers in higher ranks are more likely to have undergone extensive training and to possess graduate degrees, enhancing their ability to implement differentiated, technology-enhanced, and inquiry-based instruction.

Lastly, in terms of the number of science training courses attended. The data reveal that 20 of 45 respondents (44.4%) have attended only 1 to 2 science-related training sessions. This distribution shows that while all science teachers have undergone some forms of professional development, nearly half have had limited exposure to in-depth or repeated training. On the other hand, over one-third of the teachers have demonstrated a strong commitment to professional growth by participating in five or more training sessions. This finding aligns with the assertion of Guskey (2020) that consistent and targeted professional development significantly improves teaching practices and student achievement when it is sustained, subject-specific, and aligned with teachers' classroom needs. In science education, such training is even more vital due to the rapid evolution of scientific knowledge and the growing emphasis on inquiry-based, experimental, and digital science teaching is finding aligns with the assertion of Guskey (2020), that consistent and targeted professional development significantly improves teaching practices and student achievement when it is sustained, subject-specific, and aligned with teachers' classroom needs. In science education, such training is even more vital due to the rapid evolution of scientific knowledge and the growing emphasis on inquiry-based, experimental, and digital science teaching.

Table 3 presents science teachers' mean level of innovative teaching strategies in terms of blended learning, contextualized and localized teaching, and differentiated instruction. The results show that the science teachers in the study demonstrate a generally high level of blended learning implementation, with an overall weighted mean of 3.84. The data reveal that science teachers in Sablayan District are consistently applying innovative teaching strategies, particularly those that integrate digital and face-to-face instruction. This reflects a strong capability to create hybrid learning environments that engage students in both online and in-person settings. In the Philippines, Mendoza and Silva (2022) reported that science teachers in selected public secondary schools in Metro Manila noted that blending online instruction with modular learning helped maintain instructional continuity while addressing students' limited internet access.

Table 3

Science Teachers' Mean Level of Innovative Teaching Strategies in terms of Blended Learning, Contextualized and Localized Teaching, and Differentiated Instruction

Indicators (Blended Learning)	Mean	Verbal Description
1. I regularly combine face-to-face and online instruction in my science classes.	3.80	High Level
2. I use learning management systems (e.g., Google Classroom, Moodle) to distribute lessons or assignments.	3.56	High Level
3. I adapt learning materials based on the learners' cultural and linguistic backgrounds.	3.87	High Level
4. I involve community resources or local experts in science activities or discussions.	3.84	High Level
5. I design activities that integrate digital and physical classroom experiences.	4.00	High Level
6. I assess students using both online and in-person formats.	3.96	High Level
Composite Mean	3.84	High Level
Indicators (Contextualized and Localized Teaching)		
1. I relate science concepts to real-life experiences of my learners.	4.51	Very High Level
2. I use examples from the local community (e.g., environment, health, culture) when teaching science topics.	4.44	Very High Level
3. I integrate indigenous or traditional knowledge into relevant science lessons when appropriate.	4.09	High Level
4. I involve community resources or local experts in science activities or discussions.	3.91	High Level
5. I encourage students to observe and analyze phenomena within their own locality.	4.16	High Level
6. I modify my instructional strategies to suit the socioeconomic conditions of my students.	4.18	High Level
Composite Mean	4.21	Very High Level
Indicators (Differentiated Instruction)		
1. I modify instructional materials to meet the specific needs of learners with difficulties.	4.16	High Level
2. I provide different levels of tasks or activities to accommodate learners' varying abilities.	4.13	High Level
3. I adjust my teaching strategies based on students' learning styles and preferences.	4.18	High Level
4. I provide different levels of tasks or activities to accommodate learners' varying abilities.	4.02	High Level
5. I integrate both remediation and enrichment activities in my science lessons.	4.04	High Level
6. I group students strategically for peer learning or collaborative work.	4.38	Very High Level
Composite Mean	4.15	High Level

Moreover, the data in contextualized and localized teaching show that science teachers exhibit a very high level of implementation of Contextualized and Localized Teaching strategies, as reflected by a composite mean of 4.21. This indicates that educators are effectively embedding local context, indigenous knowledge, and culturally relevant examples into their science instruction. This suggests a strong commitment among teachers to make science education meaningful and relatable to their students' day-to-day lives. Overall, the high and very high mean scores indicate that contextualization and localization are essential elements of science teaching practices among the surveyed educators. These practices not only enhance the relevance and accessibility of science education but also foster deeper student engagement through culturally responsive teaching. In a similar study, Bautista (2022) examined the practices of junior high school Science teachers in Bukidnon and found that localized instruction increased students' participation and improved their ability to apply science in practical contexts. Teachers designed performance tasks that incorporated local environmental issues, such as deforestation and water pollution, thus fostering environmental awareness. Moreover, Ramos and Dela Cruz (2023) reported that teachers in multicultural communities in Mindanao contextualized lessons to align with students' linguistic and cultural identities, thereby promoting inclusivity and deeper understanding.

While the level of differentiated instruction indicates a high level of implementation among science educators, with a composite mean of 4.15, this suggests that teachers actively adjust their instruction to address students' individual needs, learning styles, and performance levels. These findings affirm that differentiated instruction is well integrated into science classrooms, allowing for inclusive and flexible learning environments. Supporting this, Pulkkinen and Rautopuro (2022) found that science teachers use DI strategies effectively to accommodate students with learning difficulties and language barriers. The study showed that using visual aids, hands-on materials, and small-group instruction helped all students engage more deeply with science topics, particularly physics and environmental science. At the same time, Mngomezulu et al. (2022) emphasized that formative assessments played a crucial role in guiding DI in science. Teachers continuously assessed students' understanding using quizzes, think-pair-share, and concept maps, then adjusted content depth and pacing based on individual learning needs. Similarly, Aquino and Flores (2022) reported that public high school Science teachers in Quezon Province

implemented differentiated instruction by modifying content delivery, assessment strategies, and classroom activities based on learners' readiness and learning profiles.

Table 4

Science Teachers' Mean Level of Innovative Teaching Strategies in terms of Game-Based Teaching Strategies, Inquiry-based Learning, and ICT Integration

Indicators (Game-Based Teaching Strategies)	Mean	Verbal Description
1. I use digital quiz platforms (e.g., Kahoot, Quizzes) to review or assess science lessons.	3.64	High Level
2. I use both digital and offline (manual) games to teach science concepts.	3.93	High Level
3. I design classroom activities that simulate games or challenges.	4.02	High Level
4. I align game-based activities with the science competencies or learning outcomes.	3.80	High Level
5. I use leaderboards or rankings to encourage friendly competition among students.	3.89	High Level
6. I regularly reflect on and improve my game-based activities based on student feedback.	3.78	High Level
Composite Mean	3.84	High Level
Indicators (Inquiry-based Learning)		
1. I provide opportunities for students to collect, analyze, and interpret data.	4.29	Very High Level
2. I promote student autonomy by allowing them to plan or modify investigation procedures.	4.04	High Level
3. I design activities that allow students to investigate and discover concepts on their own.	4.09	High Level
4. I use real-world problems to initiate inquiry in my science lessons.	4.36	Very High Level
5. I guide students in formulating hypotheses and testing them through experiments or observations.	4.20	Very High Level
6. I assess student understanding through performance tasks and inquiry-based outputs.	4.24	Very High Level
Composite Mean	4.20	Very High Level
Indicators (ICT Integration)		
1. I use digital tools (e.g., videos, simulations, virtual labs) to explain science concepts.	4.39	Very High Level
2. I promote student autonomy by allowing them to plan or modify investigation procedures.	4.04	High Level
3. I utilize online assessments or quizzes to evaluate student learning.	3.80	High Level
4. I use digital tools (e.g., videos, simulations, virtual labs) to explain science concepts.	4.29	Very High Level
5. I integrate mobile applications or educational software into classroom instruction.	3.96	High Level
6. I regularly update my teaching methods to include new and relevant technologies.	4.16	High Level
Composite Mean	4.11	High Level

Table 4 presents the mean level of Innovative teaching strategies, including game-based teaching, inquiry-based learning, and ICT integration, for science teachers. The results reveal that science educators demonstrate a high level of implementation of game-based teaching strategies, as reflected by a composite mean of 3.84. This suggests that gamification is being actively employed in science classrooms as a tool to engage students and enjoyably reinforce learning. To support these findings, Fernandez and Dizon (2022) observed that public high school Science teachers in Pampanga reported improved student participation and conceptual understanding when integrating educational games, such as crossword puzzles, science trivia contests, and mobile quiz apps like Quizizz and Kahoot, into their lessons. These games encouraged collaboration, healthy competition, and instant feedback, thereby reinforcing learning objectives. Moreover, the level of inquiry-based learning indicates that science educators demonstrate a very high level of implementation, with a composite mean of 4.20. This reflects the teachers' strong commitment to fostering scientific thinking and active engagement through student-centered inquiry processes. The results emphasize that science educators widely practice inquiry-based learning in the district. These strategies support critical thinking, student agency, and engagement, aligning well with modern science education goals. Teachers are effectively creating environments where learners explore, investigate, and construct knowledge, which is fundamental in developing scientific literacy. To confirm these findings, Tan et al. (2021) found that inquiry-based science teaching significantly enhanced students' understanding of scientific methods. It increased their ability to evaluate scientific claims critically. Secondary science teachers were trained to design lessons involving guided and open inquiry activities that mimic real-world problem-solving. Similarly. Locally, Inquiry-based learning (IBL) has been increasingly adopted by science teachers in the Philippines to develop Students' scientific curiosity, problem-solving abilities, and critical thinking. As emphasized by Corpuz and Manalo (2022), Science teachers in Metro Manila implemented structured and guided inquiry strategies to encourage students to explore scientific concepts through questioning, experimentation, and reflection. Meanwhile,

Santos (2021) examined the practices of junior high school Science teachers in Iloilo. He noted that teachers integrated inquiry by designing experiments and problem-solving tasks aligned with real-life contexts, such as local environmental concerns and health-related topics. This localized inquiry approach helped make science learning more meaningful and relevant.

Lastly, the level of ICT integration shows that science educators demonstrate a high level of implementation of ICT (Information and Communication Technology) Integration strategies, with a composite mean of 4.11. This suggests that teachers are actively leveraging technology to enhance science instruction, promote engagement, and improve assessment processes. In Malaysia, Yunus et al. (2021) found that science teachers who integrated ICT—such as interactive whiteboards, learning management systems (LMS), and digital simulations—fostered higher-order thinking skills and active learning. The use of platforms such as Google Classroom and PhET was associated with improved student motivation and achievement in biology and chemistry. Moreover, in the Philippines, the use of Information and Communication Technologies (ICT) in science teaching has expanded significantly due to the need for remote learning. Tools such as simulations, online laboratories, and learning management systems (LMS) have enabled teachers to continue science instruction beyond the physical classroom (UNESCO, 2021). The integration of Information and Communication Technology (ICT) in science education has increasingly become a focal point for innovation among Filipino educators. In particular, Science teachers have begun adopting various ICT tools to improve instructional delivery, student engagement, and learning outcomes.

Table 5

Science Teachers' Mean Level of Digital Literacy

Indicators	Mean	Verbal Description
1. I am confident in using a learning management system (e.g., Google Classroom, Moodle)	3.89	High Level
2. I can create and share digital instructional materials (e.g., videos, presentations, worksheets).	4.27	Very High Level
3. I am able to use online assessment tools (e.g., Google Forms, Kahoot, Quizizz) effectively.	3.60	High Level
4. I integrate digital resources into my science lessons to enhance learning.	3.98	High Level
5. I can troubleshoot basic technical problems (e.g., file sharing, connectivity, software errors).	3.69	High Level
6. I use a digital tool to communicate or collaborate with students and colleagues.	3.98	High Level
Overall Mean	**3.90**	**High Level**

Scale: 4.20-5.00 Very High Level; 3.40 -4.19 High Level; 2.60-3.39 Moderate Level; 1.80-2.59 Low Level; 1.00-1.79 Very Low Level

Table 5 presents the mean digital literacy level of science teachers. The results show that science teachers in the study demonstrate a generally high level of digital literacy, with an overall weighted mean of 3.90. This indicates that, on average, teachers are confident and competent in using digital tools to support teaching, assessment, communication, and classroom management. Teachers expressed very high confidence in creating and sharing digital instructional materials such as videos, presentations, and worksheets (M = 4.27), highlighting their proficiency in content creation and digital resource development. This suggests that educators are well-equipped to design engaging and interactive materials that support student learning. Overall, these results confirm that science teachers in the district are digitally literate and effectively utilize various digital tools to support instruction. However, opportunities for further development remain—particularly in technical troubleshooting and maximizing the use of assessment technologies. In a study conducted by Alvarado and Reyes (2022), Science teachers in public high schools in Quezon City demonstrated moderate to high levels of digital literacy, particularly in using online learning platforms such as Google Classroom and Microsoft Teams.

However, the same study revealed that while teachers were competent with basic ICT tools, they struggled to create interactive digital content and to use data-driven assessment tools. Similarly, Delos Santos (2021) found that in the Bicol Region, many Science teachers learned to adapt through self-directed learning and peer support, often relying on YouTube tutorials and webinars to build digital competencies. These practices were not merely stopgap measures but represented innovative and resourceful responses to professional development constraints. In the absence of structured training programs, teachers supported one another by sharing digital teaching tips, co-creating lesson materials, and collectively troubleshooting technical challenges. This grassroots approach revealed

the power of peer-led learning communities to enhance educators' adaptability and resilience. It demonstrated that, even without formal institutional support, teachers can successfully integrate technology into their pedagogy by leveraging shared experiences, networked resources, and on-demand learning tools.

Table 6

Science Teachers' Mean Level of Adaptations in terms of Content Standards, Performance Standards, and Most Essential Learning Competencies

Indicators (Content Standards)	Mean	Verbal Description
1. I align my teaching content with the prescribed content standards.	4.58	Very High Level
2. I select appropriate science content to fit the time and modality constraints.	4.60	Very High Level
3. I select content based on the Most Essential Learning Competencies (MELCs).	4.49	Very High Level
4. Incorporate interdisciplinary concepts as outlined in the content standards.	4.58	Very High Level
5. I align my content with available resources and students' access to technology.	4.62	Very High Level
6. I regularly review and revise my lesson content based on students' feedback or performance.	4.67	Very High Level
Composite Mean	**4.59**	**Very High Level**
Indicators (Performance Standards)		
1. I adjust learning activities to meet the set performance standards under remote/blended learning.	4.40	Very High Level
2. I select appropriate science content to fit the time and modality constraints.	4.51	Very High Level
3. I reduce the scope of science topics to focus on core concepts.	4.51	Very High Level
4. I reduce the scope of science topics to focus on core concepts.	4.62	Very High Level
5. I align performance assessments with learners 'available resources and tools.	4.58	Very High Level
6. I provide students with multiple formats or modalities for demonstrating learning (e.g., written, video, oral).	4.62	Very High Level
Composite Mean	**4.54**	**Very High Level**
Indicators (Most Essential Learning Competencies)		
1. I collaborate with colleagues in unpacking and clustering MELCs.	4.44	Very High Level
2. I align my assessment tools to reflect the MELCs.	4.60	Very High Level
3. I modify learning tasks to directly target MELCs.	4.47	Very High Level
4. I ensure students achieve MELCs despite learning limitations.	4.47	Very High Level
5. I provide enrichment activities that extend learning beyond MELCs when possible.	4.56	Very High Level
6. I create or select materials that directly support MELCs.	4.60	Very High Level
Composite Mean	**4.52**	**Very High Level**

Table 6 presents the mean levels of adaptation for science teachers across content standards, performance standards, and the most essential learning competencies. The results reveal that science educators demonstrate a very high level of alignment between instruction and Content Standards, as evidenced by a composite mean of 4.59. This suggests that teachers are highly committed to ensuring that their instructional content aligns with curriculum expectations and is responsive to both contextual and learner-specific factors. Supporting this, Tytler et al. (2022) examined how content standards were revised to balance scientific rigor with accessibility. They found that science teachers appreciated the updated standards that allowed greater flexibility to contextualize content while ensuring conceptual coherence across grade levels. This helped accommodate diverse student populations without compromising quality. Teachers noted that grade-level coherence was preserved through the structured progression of concepts. However, the flexibility in implementation allowed for real-time adjustments—such as simplifying complex terminology for younger learners or integrating culturally relevant examples. This adaptability fostered both engagement and understanding, especially in classrooms with students from diverse linguistic, socioeconomic, and cultural backgrounds.

Moreover, the mean level of adaptation in terms of performance standards indicates that science educators exhibit a very high level of adaptation relative to Performance Standards, with a composite mean of 4.54. This suggests that teachers consistently align their teaching practices with expected learner outcomes, even across varying instructional delivery modes. The results reveal a very high level of adaptation in addressing performance standards, with teachers actively adjusting instruction and assessment methods to support learner success. These

findings emphasized that science educators are not only aware of performance standards but also make strategic adjustments to ensure learners can achieve them. Teachers are assessed not only on content delivery but also on their ability to engage students in higher-order thinking, collaborative lab work, and the integration of local scientific issues. Darling-Hammond et al. (2021) showed that clear and actionable performance standards promote self-reflection and continuous improvement. Science teachers who regularly reviewed their performance with mentors were more likely to innovate their instructional methods. Furthermore, Bautista (2021) found that in Region VI, teachers implemented performance standards by engaging students in community-based scientific investigations, such as water quality testing and waste management projects, which made learning more authentic and aligned with local issues. However, inconsistencies in assessment practices were also reported, with some teachers relying heavily on written tests rather than performance-based assessments.

Furthermore, the level of most essential learning competencies reveals that science educators exhibit a very high level of adaptation in addressing the Most Essential Learning Competencies (MELCs)**,** as indicated by a composite mean of 4.52**.** This suggests a strong commitment to aligning instruction and assessment with essential learning outcomes despite various instructional challenges. Aligning with these findings, Yılmaz and Malone (2020). examined how science teachers prioritized essential learning competencies in low-tech and blended learning setups. Key science MELCs included ecosystem relationships, properties of matter, and energy flow, which were taught using contextual examples and simplified learning packets that were well-aligned with science educators. To support this study, DepEd's emphasis on MELCs demonstrates adaptive teaching practices that promote both mastery and flexibility in science education. In support of this, Montebon's (2024) study explored teachers' perceptions of MELCs in the K–12 curriculum. Findings showed that teachers view MELCs as useful for filtering essential competencies across subject areas and grade levels while ensuring curriculum coherence.

Table 7

Science Teachers' Mean Level of Adaptations in terms of Pedagogical Technique and Assessment

Indicators (Pedagogical Technique)	**Mean**	**Verbal Description**
1. I use innovative strategies suited for online or modular instruction, like blended and flipped classrooms.	4.16	High Level
2. I adapt my teaching style to accommodate learners with varied needs.	4.27	Very High Level
3. I use research-based teaching strategies such as differentiated instructions, inquiry and problem-based, etc.	4.09	High Level
4. I create or adapted digital learning materials for my science classes.	4.18	High Level
5. I integrate digital tools (e.g., simulations, videos, interactive platforms) into my teaching.	4.33	Very High Level
6. I design activities that promote independent learning and critical thinking.	4.27	Very High Level
Composite Mean	4.21	Very High Level
Indicators (Assessment)		
1. I modify assessments to suit online, modular, or blended formats.	4.20	Very High Level
2. I assess collaboration and communication skills during group tasks, even in virtual or hybrid setups.	4.27	Very High Level
3. I provide timely and meaningful feedback to students in the new setup.	4.22	Very High Level
4. I employ performance-based assessments that encourage real-world application of science concepts.	4.29	Very High Level
5. I use higher-order thinking skills questions.	4.33	Very High Level
6. I adjust my assessments to fit the limitations of remote/blended learning.	4.33	Very High Level
Composite Mean	**4.27**	**Very High Level**

Table 7 presents the mean level of adaptation among science teachers in pedagogical techniques and assessment. The findings indicate that science educators exhibit a very high level of adaptation in pedagogical techniques, with a composite mean of 4.21. This reflects their strong commitment to modifying teaching practices in response to evolving educational demands and learner needs. Other indicators—such as creating digital materials, using blended instruction, and applying research-based strategies—also scored high, affirming the use of varied, practical approaches in both online and face-to-face settings. These findings aligned with Choi and Park (2021), who documented the growing use of technology-enhanced tools like virtual labs, augmented reality (AR),

and online collaborative platforms (e.g., Padlet, Google Jamboard). Teachers used these tools not only for content delivery but also for formative assessment and student feedback. Moreover, the mean level of adaptation in assessment indicates that science educators exhibit a very high level of adaptation in pedagogical techniques, with a composite mean of 4.27. This reflects their strong commitment to modifying teaching practices in response to evolving educational demands and learner needs. Overall, the data highlight the exceptional efforts of science teachers to maintain assessment quality and relevance despite shifting instructional modalities. Their adaptability reflects a deep understanding of practical assessment principles and a strong alignment with modern educational standards. The literature supported these findings by providing a broader perspective on how teachers evaluate learning. Kim and Park (2021) studied the integration of digital tools, such as online quizzes, virtual labs, and learning analytics platforms, into science assessment. Teachers reported benefits such as instant feedback, customizable tasks, and progress tracking for students. In addition, Cruz and Evangelista (2022) note that teachers in rural areas of Visayas adapted their assessment strategies to address the challenges of modular and blended learning, relying more on take-home performance tasks, reflective journals, and oral presentations. Teachers also reported difficulties in designing fair and valid assessments due to limited student feedback and inconsistent module completion.

Table 8

Regression Analysis Among Science Teachers' Profiles and Innovative Teaching Strategies, Digital Literacy Level, and Level of Adaptations

Independent Variables	Dependent Variable (Level of Adaptations)	Multiple R	Adjusted R^2	p-value	Interpretation
Contextualized and Localized Teaching	Content Standards	0.593	0.336	0.000	Highly Significant
Inquiry-Based Learning	Performance Standards	0.533	0.267	0.000	Highly Significant
Inquiry-Based Learning				0.007	Significant
Profile: Current Rank	MELC	0.774	0.570	0.003	Significant
Contextualized and Localized Teaching				0.026	Significant
Differentiated Instruction	Pedagogical Technique	0.457	0.190	0.002	Significant
Inquiry-Based Learning	Assessment	0.606	0.353	0.000	Highly Significant
Digital Literacy		0.355	0.106	0.017	Significant

Scale: p-value – The significance level of the regression analysis:

The regression analysis results in Table 8, indicated by the multiple R values, examined the significant effects of the science teachers' profiles and the level of innovative teaching strategies on their levels of adaptation, considering content and performance. Standards, most essential learning competency (MELC), pedagogical technique, and assessment. All statistical results were generated using SPSS version 26. In the succeeding discussions, the p-value of 0.000 indicates a value below 0.0005, since the software prints only three decimal places. Inquiry-based learning, as an innovative strategy, moderately relates to performance standards (R=0.533, p=0.000) and assessment (R=0.606, p=0.000). The relation is highly significant, as evidenced by the p-value of 0.000. The level of adaptation, taking into account performance standards and assessment, is significantly affected by the inquiry-based strategy at 26.7% (R^2=0.267) and 35.3% (R^2=0.353), in that order. Performance standards serve as benchmarks that define the expected levels of student work and teacher performance for specific learning goals.

Another strategy, contextualized and localized teaching, has a highly significant effect on the level of adaptations to content standards, although the regression coefficient is moderate (R=0.533, p=0.000). The adjusted R^2 of 0.336 suggests that 33.6% of the effect on content standards is likely contributed by contextualized and localized teaching. Content standards serve as guidelines that specify what students should know and be able to do at different grade levels within a specific subject. In support of this, Tytler et al. (2022) examined how content standards were revised to balance scientific rigor with accessibility. They found that science teachers appreciated the updated standards that allowed greater flexibility to contextualize content while ensuring conceptual coherence across grade levels. This helped accommodate diverse student populations without compromising quality. Pedagogical technique is affected by differentiated instruction to a moderate degree (R=0.457, p=0.002). An

effective pedagogy considers students' diverse needs and uses a variety of approaches to maximize learning outcomes. Differentiated instruction is well-suited, as it involves tailoring teaching methods to accommodate students' diverse learning needs, interests, and readiness levels. In terms of the most essential learning competency, the combined contributions of inquiry-based learning (p=0.007), teachers' rank (p=0.003), and contextualized and localized teaching (p=0.026) have emerged, yielding a high multiple R of 0.774. This combined contribution also represents a significant 57% effect on the most important skills and knowledge that students need to acquire at each grade level. These competencies are crucial for future learning and success, and they help educators focus on what truly matters in the curriculum.

Table 9

Professional Development Plan for Science Teachers: Integrating Innovative Teaching Strategies for Enhanced Student Learning

Components Innovative Teaching Strategies	Objectives	Activities/ Strategies	Timeline	Expected Outcome	Assessment/ Evaluation
Contextualized and Localized Teaching	To equip teachers in designing and implementing contextualized and localized teaching approaches.	Workshop on Contextualized and Localized Teaching	September 2025	Increased use of Contextualized and Localized Teaching in the classroom.	Lesson plan review, Classroom observation
Differentiated Instruction	To capacitate teachers in implementing differentiated instruction effectively in diverse classrooms.	Focused Group Discussion/ Workshop	October 2025	Effective implementation of Differentiated Instruction in the classroom.	Lesson plan review, Classroom observation
Inquiry-Based Learning	Enhance teachers' capability in using Inquiry-Based Learning.	Coaching and Mentoring/ Workshop	November 2025	Impactful use of Inquiry-Based lessons inside the classroom.	Lesson plan review, Classroom observation

4. Conclusions

Based on the summary of the findings presented, the following conclusions are drawn: Science educators in the secondary schools of Sablayan District actively apply a range of innovative teaching strategies, including blended learning, contextualized and localized teaching, differentiated instruction, game-based teaching, inquiry-based learning, and ICT tools. They respond effectively to learners' varied needs and the evolving demands of science education. Regarding the respondents' profiles, the data show that most hold only a bachelor's degree, indicating they meet the minimum qualifications but may have limited opportunities for further academic and professional growth. Most of the respondents are in the early to mid-stages of their careers, with over half having 10 years or less of teaching experience. This suggests a relatively young workforce with growth potential but also sees a need for continued professional development and mentorship. The dominance of the Teacher III position suggests that many of the district's science educators have already advanced beyond entry-level ranks, indicating accumulated teaching experience and likely completion of the necessary qualifications or training for promotion. However, the relatively low number of Master Teachers implies that while many teachers are progressing, only a small portion have reached higher levels of career advancement. The data indicate that while all science teachers have participated in professional development, nearly half have had limited exposure, attending only 1 to 2 science-related trainings. This highlights the need for more frequent and sustained training to deepen instructional expertise and support continuous improvement. The respondents demonstrate a generally high level of blended learning. Implementation: This indicates that, on average, teachers are confident and competent in using digital tools to support teaching, assessment, communication, and classroom management. The respondents demonstrate a generally high level of implementation of contextualized and localized teaching strategies. This suggests that teachers consistently incorporate local experiences, cultural relevance, and real-world applications into science lessons.

The level of innovative teaching strategies in differentiated instruction was generally high, reflecting teachers' strong commitment to meeting diverse learner needs through varied approaches. The level of innovative teaching

strategies in game-based teaching was interpreted as high, suggesting that they are practiced but may be less prioritized due to challenges such as time, training, or resource limitations. A very high level of implementing inquiry-based learning was rated, indicating that teachers are actively fostering critical thinking, problem-solving, and scientific inquiry among students. The respondents demonstrate a generally high level of ICT integration, indicating consistent use of technology in instruction. However, the results suggest a need to enhance teachers' digital skills further and improve access to technological resources. Science teachers in the Sablayan District possess a generally high level of digital literacy, with particular strength in creating and sharing digital instructional materials. Teachers demonstrated strong competence in integrating digital tools into their lessons, communicating and collaborating through digital platforms, and enhancing science instruction online.

The level of adaptation of the respondents in terms of content standards demonstrates a very high level of adaptation in terms of aligning instruction with Content Standards. This suggests that teachers are highly committed to ensuring that their instructional content aligns with curriculum expectations and is responsive to both contextual and learner-specific factors. The respondents exhibit a very high level of adaptation to Performance Standards, suggesting that they consistently align their teaching practices with expected learner outcomes, even amid varying instructional delivery modes. The respondents demonstrate a very high level of adaptation to the Most Essential Learning Competencies (MELCs), reflecting their strong commitment to aligning instruction and assessment with key learning outcomes despite instructional challenges. The respondents exhibit a very high level of adaptation in pedagogical techniques, reflecting their strong commitment to modifying teaching practices in response to evolving educational demands and learner needs. Findings indicate that respondents exhibit very little pedagogical knowledge. This reflects their strong commitment to modifying teaching practices in response to evolving educational demands and learner needs. The district was significantly affected by its profile, particularly current rank, innovative teaching strategies, and digital literacy level. The professional development plan seeks to enhance teachers' instructional capacity in employing innovative teaching strategies—particularly contextualized and localized teaching, differentiated instruction, and inquiry-based learning—and to strengthen their adaptability, ultimately improving the quality of science education in the secondary schools of the Sablayan District.

4.1 Recommendations

Based on the findings and conclusions presented, the following recommendations are stated for further development: School heads and master teachers are encouraged to provide strong instructional leadership by supporting continuous professional development, mentoring, and resource allocation that promote innovative teaching strategies. School heads and human resources may facilitate access to graduate studies for the continuous growth and development of teachers. School heads and Human Resources may encourage and support science teachers in pursuing a higher career position by offering clear promotion pathways, mentorship, and access to advanced training and graduate studies. DepEd Occidental Mindoro, in collaboration with the LGU, may increase the frequency and accessibility of science-related professional development programs to ensure all teachers receive sustained, in-depth training that enhances their instructional skills and keeps them up to date with the latest developments in scientific teaching. The level of innovative teaching strategies in terms of blended learning, contextualized and localized teaching, differentiated instruction, game-based teaching strategies, ICT integration, and inquiry-based education. The Curriculum Implementation Division may provide targeted training and support to enhance teachers' blended learning practices. Administrators, master teachers, and school heads may strengthen support for contextualized and localized teaching by developing resources and providing continuous training to sustain its very high implementation level. School heads may incorporate game-based teaching strategies into LAC sessions and in-service training for teachers. The human resource office may provide targeted training and resources to enhance inquiry-based learning practice, addressing barriers and promoting wider implementation in science classrooms. The Schools Division office and school administrators may strengthen digital literacy programs and ensure equitable access to technological tools to support more effective and advanced ICT integration in science teaching. School heads are encouraged to provide regular hands-on training, allocate time for peer mentoring, and fund to ensure the availability of necessary digital resources. Curriculum planners are

encouraged to continue supporting and reinforcing alignment with content standards by providing clear guidelines, exemplar lesson plans, and localized curriculum materials that address diverse learner needs and contextual realities. Curriculum planners may enhance support for performance standards implementation by using flexible assessment tools and teaching guides that align with diverse delivery modes, ensuring consistent learner outcomes across various contexts. The Curriculum Implementation Division, School heads, and master teachers are encouraged to provide continuous support and clear guidance in contextualizing MELCs to ensure that science teachers can sustain effective instruction and assessment practices, even in diverse or constrained learning environments. The Curriculum Implementation Division, School heads, and master teachers may continue to support adaptive pedagogy by integrating training modules on innovative teaching methods and encouraging the use of flexible instructional models tailored to diverse learning environments. Curriculum implementers and school leaders may continue supporting teachers with targeted training on flexible, performance-based, and technology-integrated assessment strategies to maintain and further enhance their adaptability in diverse learning environments. The Curriculum Implementation Division, School administrators, and Human Resources are encouraged to implement professional development plan initiatives aligned with science teachers' current ranks, promote innovative teaching strategies, and enhance digital literacy to improve their level of adaptation. School heads and Human Resources may implement targeted professional development and career growth opportunities based on teacher rank and need. The Curriculum Implementation Division (CID) may develop focused training, contextualized and localized teaching, differentiated instruction, game-based teaching strategies, inquiry-based learning, and ICT integration, ensuring improved instructional quality and relevance. School heads and ICT experts may conduct advanced training on emerging educational technologies and innovative digital pedagogy. This will help sustain and elevate their ability to create, share, and integrate digital instructional materials to enrich science teaching and learning. School heads and administrators are encouraged to implement the proposed professional development plan to enhance teachers' instructional capacity in employing innovative teaching strategies—particularly in contextualized and localized teaching, differentiated instruction, and inquiry-based learning—and to strengthen their level of adaptation, ultimately improving the quality of science education in the secondary schools of the Sablayan District. Future researchers may explore the long-term impact of innovative teaching strategies on student performance and engagement or conduct comparative studies across different regions or subject areas to identify broader trends and contextual differences in teacher adaptations.

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Level of administrative support and school environment in relation to the teachers' performance in Rizal District

Aguirre, Mary Joy L. ✉
Divine Word College of San Jose, Philippines (mary.aguirre003@deped.gov.ph)
Rayton, Maria Pura C.
Divine Word College of San Jose, Philippines (maria.pura.crayton@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

The research aimed to provide a comprehensive understanding of how administrative factors and environmental conditions affect teacher effectiveness. Specifically, it described the level of administrative support and the school environment and determined their effects on teachers' performance. Using an exploratory-sequential design, the qualitative phase precedes the quantitative phase. For the qualitative phase, this study involved in-depth interviews with 15 elementary school teachers. These insights guided the development of a researcher-made instrument in the quantitative phase, which was administered to 194 teachers from 22 public elementary schools in the Rizal District. The study revealed that administrative support, particularly in areas such as feedback, resources and materials, professional development, and school leadership, plays a crucial role in enhancing teacher performance. The performance of elementary school teachers is notably high. This indicates that most teachers consistently exceed expectations, demonstrate strong instructional competence, and contribute effectively to achieving their schools' educational goals. Teachers rated all components of the school environment—school facilities and the psychosocial environment—as very good. Similarly, a positive psychosocial environment—characterized by strong interpersonal relationships, staff morale, and emotional support—was found to correlate with higher instructional effectiveness. Findings underscore the importance of collaborative leadership and a nurturing school climate in improving teaching outcomes. Therefore, the proposed action plan can be implemented and regularly monitored to ensure its effectiveness in enhancing teacher performance. Future researchers are encouraged to explore broader contexts using longitudinal or experimental designs to uncover deeper relationships and long-term impacts of administrative and environmental variables on teacher performance.

Keywords: administrative support, feedback and coaching, school environment, teachers' performance, psychosocial environment

Level of administrative support and school environment in relation to the teachers' performance in Rizal District

1. Introduction

Quality education remains a central pillar of the Philippine government's strategic development agenda, strongly emphasized in both the Philippine Development Plan and the Education Roadmap under Executive Order No. 4, series of 2024. At its essence is the pivotal role of teacher quality in shaping student learning outcomes amid persistent learning poverty—reported at 90.9% among Filipino learners in 2019 by international assessments such as PISA and the World Bank, and only slightly improved in more recent studies (DepEd, 2021; Luzano, 2023). In January 2025, EDCOM II's Year Two Report titled "Fixing the Foundations: A Matter of National Survival" reaffirmed that poor foundational learning is primarily driven by gaps in teacher competence, high rates of out-of-field teaching, limited PPE (pay, preparation, and evaluation), and chronic understaffing of school leadership posts (EDCOM, n.d.).

Despite these national initiatives, a gap persists between policy and practice, particularly in rural areas such as the Rizal District in Occidental Mindoro. Teachers in these schools often face challenges such as a lack of instructional materials, limited access to professional development, inadequate school infrastructure, and insufficient administrative feedback or mentoring. These conditions may contribute to stagnation in teaching performance and decreased motivation among educators (Dağgöl, 2024). While existing literature has acknowledged the positive influence of administrative support, such as feedback and coaching, resources and materials, school leadership and professional development, and the school environment, such as school facilities and psychosocial environment, on teacher performance, many studies are broad in scope or focused on urban contexts (Venista & Brown, 2022; Martinez & McAbee, 2020). There is limited empirical research specifically examining how these factors interplay to affect teacher performance in a small, rural district like Rizal. Moreover, while DepEd policies exist, their implementation and localized effectiveness remain under-evaluated. This study sought to bridge that gap by analyzing how the level of administrative support and the prevailing school environment in the Rizal District influence teachers' performance. Grounded on the provisions of the Philippines Professional Standards for Teachers (PPST) and aligned with DepEd Order No. 2, s. 2015 (Guidelines on the Establishment and Implementation of Result-based Performance Management System), this research aims to examine how institutional support mechanisms are realized on the ground. Specifically, the study investigated the level of administrative support and school environment in relation to performance. The purpose of this study is to generate evidence-based recommendations for enhancing teacher performance by strengthening administrative support systems and improving school environments in the Rizal District. It aims to contribute to the effective localization of DepEd mandates and support the continuous professional growth and well-being of teachers, who are instrumental in shaping the future of Filipino learners. Considering the presented scenario, the researcher also wanted to explore and discover the level of administrative support experienced by teachers and the school environment in Rizal District.

Statement of the Problem - This paper aims to investigate the level of administrative support and school environment in relation to the teachers' performance in Rizal District. Specifically, it aimed at answering the following questions: (1) What are the experiences of elementary teachers regarding the administrative support provided by the school heads in Rizal District? (2) What are the overall experiences of the elementary teachers regarding the school environment in Rizal District? (3) What is the level of administrative support as assessed by elementary school teachers in Rizal District, Rizal, Occidental Mindoro, in terms of feedback and coaching, resources and materials, professional development, and school leadership? 4. What is the level of school environment for elementary school teachers in Rizal District, Rizal, Occidental Mindoro, in terms of school facilities and psychosocial environment? (5) What is the level of teachers' performance based on IPCRF for

elementary school teachers in Rizal District? (6) Is the level of teachers' performance significantly affected by Administrative Support and School Environment? (7) Based on the findings, what plan of action can be proposed to enhance the teachers' performance?

Significance of the Study - This study will be significant for the following: First, teachers will benefit from a better understanding of how their performance is shaped by administrative support and their working environment. This knowledge may empower them to seek collaborative solutions, engage in professional development, and communicate their needs effectively with school leaders. For the students, though indirectly involved, they are the ultimate beneficiaries of improved teacher performance. A well-supported and motivated teacher can provide better instruction, create engaging classroom experiences, and foster a more effective learning environment—leading to enhanced student outcomes. For master teachers, as instructional leaders and mentors, they play a crucial role in guiding fellow educators. The study emphasizes the importance of leadership and support, allowing master teachers to align their mentoring strategies with factors that significantly impact teaching performance. It also highlights the need for their involvement in creating a more positive and productive school culture. For School Administrators, they can use the study's findings to reflect on their management practices, particularly in providing administrative support such as mentorship, performance feedback, and access to teaching resources. It reinforces the importance of creating a supportive school climate that enables teachers to perform at their best. For education program supervisors, the results of this research could serve as a basis for developing a training framework and services to enhance every teacher's educational skills in the department on an ongoing basis.

For the Department of Education (DepEd), the results of this study provide valuable data to inform the development of policies and programs that strengthen administrative systems and improve school environments. These findings can inform training, resource allocation, and support services to elevate teacher performance and, consequently, student achievement. For policymakers, the study can serve as a guide for decision-makers at the division, regional, and national levels. By recognizing the interconnectedness of leadership, school environment, and teacher performance, policymakers can create more responsive and equitable policies, particularly in underserved districts—school Administrators. The study's findings can help school managers address teachers' concerns and needs regarding their personal and professional growth. Lastly, for future researchers, this serves as a guide or reference for somewhat similar studies.

Scope and Delimitation of the Study - This study aimed to investigate the level of administrative support and school environment in relation to teachers' performance in the Rizal District, Occidental Mindoro. It employed both quantitative and qualitative research methods to provide a holistic understanding of the variables involved. The study focused on determining how administrative support—such as feedback and coaching, resources and materials, professional development, school leadership, and the school environment, including school facilities and the psychosocial environment — affected the performance of elementary school teachers. A total of 194 elementary school teachers from 22 public elementary schools in the Rizal District served as respondents for the quantitative part of the study. These teachers answered structured survey questionnaires designed to measure levels of administrative support, school environment, and their corresponding performance during the 2024–2025 school year. The study was limited to elementary school teachers only. High school teachers, school heads, students, and other educational stakeholders were omitted, although their perspectives might also be relevant. Furthermore, the geographical scope was limited to the Rizal District in Occidental Mindoro; therefore, the results might not be generalizable to other districts or regions with different administrative and environmental contexts. Despite these limitations, the study could provide a valuable foundation for understanding how administrative support and the school environment could contribute to teacher performance.

2. Methodology

Research Design - To obtain necessary data, this study employed a mixed-methods, sequential, exploratory design to investigate administrative support and school environment in relation to teachers' performance in the Rizal District. The mixed-methods approach integrated qualitative and quantitative data to provide a

comprehensive understanding of the phenomenon. The study was initially exploratory, with qualitative data gathered through interviews to generate insights and identify key variables (Castro et al., 2010). These findings led to the development of the quantitative instrument used to collect numerical data from a broader population. The rationale for using a mixed-methods, sequential, exploratory design lies in its ability to build from qualitative exploration toward quantitative generalization. The qualitative phase helped capture in-depth perspectives and lived experiences of selected teachers regarding administrative support and the school environment. Meanwhile, the quantitative phase validated these insights across a larger sample, enabling the researcher to identify patterns and statistical relationships among administrative support, the school environment, and teachers' performance.

Respondents of the Study - The study employed complete enumeration because the number of teacher populations in elementary schools in the Rizal District was small. Moreover, the respondents in the study were 194 elementary teachers from 22 elementary schools in Rizal District, Rizal, Occidental Mindoro. Out of a total population of 239, 15 teachers participated in the qualitative phase, while 30 teachers were involved in reliability testing. Thus, the remaining 194 teachers participated in the quantitative phase. Table 1 below shows the respondents' distribution per school.

Research Instrument - The research utilized two primary instruments aligned with the mixed-method approach: an interview guide for the qualitative phase and a structured questionnaire for the quantitative phase. The interview guide used in the qualitative phase consisted of open-ended questions designed to elicit participants' insights, experiences, and perceptions regarding support, the school environment, and teacher performance. Based on themes and patterns that emerged from the qualitative data, a researcher-made questionnaire was developed for the quantitative phase. This instrument contained several parts: items measuring administrative support, school environment, and teacher performance. The instrument employed a 5-point Likert scale ranging from "Never" to "Always" to capture the degree of agreement or satisfaction. To establish expert validity, the structured questionnaire used in the quantitative phase was reviewed and evaluated by a team of three graduate school professors from Divine Word College of San Jose. Each item in the instrument was examined for relevance, clarity, and alignment with the research questions. The experts provided feedback on the appropriateness and comprehensiveness of the items measuring administrative support and school environment. Based on their recommendations, modifications were made to improve item formulation and eliminate redundancy or ambiguity. This process helped confirm the questionnaire's validity by ensuring that respondents clearly understood the items and that the instrument measured what it was intended to measure. Furthermore, thirty (30) teacher-respondents from the schools of Rizal District were asked to respond to the sixty-item questionnaire about the level of administrative support and school environment. Each component consists of ten items. The instrument's reliability was tested using the split-half method, with coefficients calculated using the Spearman-Brown formula based on equal-length halves. The results yielded a generally very high level of reliability, as reflected in reliability coefficients ranging from 0.768 to 0.967. Thus, the questionnaire is accepted for its administration to the final group of teacher-respondents.

Table 1
Reliability Analysis Results

Item	Reliability Coefficients*	Number of Items	Interpretation
I – Administrative Support			
1. Feedback and Coaching	0.768	10	High Reliability
2. Resources and Materials	0.967	10	Very High Reliability
3. Professional Development	0.932	10	Very High Reliability
4. School Leadership	0.924	10	Very High Reliability
II - School Environment			
1. School Facilities	0.958	10	Very High Reliability
2. Psycho-Social Environment	0.960	10	Very High Reliability

Data Gathering Procedure - The data-gathering procedure was conducted in two distinct phases, following a sequential exploratory design. Permission was first secured from the school principals, Public School District Supervisor, and the Division Office of the Department of Education. For the qualitative phase, face-to-face

interviews were exclusively used. Fifteen teachers out of the total 239 in the Rizal District participated in these in-person interviews for a week. During the sessions, interviews were audio-recorded with permission; observational notes were taken to capture non-verbal cues (e.g., facial expressions, pauses); interviews were transcribed verbatim; and manual coding was conducted to extract themes systematically. A thematic analysis was then performed on the coded data to identify recurring patterns. These patterns helped shape and inform the development of the subsequent quantitative questionnaire. Moreover, in the quantitative phase, the researcher used Google Forms as the online survey platform, linked to Google Sheets to enable real-time data collection and seamless synchronization of responses. The target sample comprised 194 public elementary teachers from Rizal District who were not part of the pilot test or the qualitative interviews. The survey remained open for 10 consecutive days to accommodate teacher availability and drive a high response rate. Within the form, teachers were presented with an orientation section explaining the purpose of the study, estimated completion time (5 minutes), confidentiality assurances, and a consent checkbox granting permission to link their anonymous IPCRF rating (Individual Performance Commitment and Review Form) with their survey responses—IPCRF data being the official instrument used by DepEd under the PMES framework to evaluate teacher performance for SY 2023–20224. A reminder notice was dispatched on Day 10 to encourage those who have not yet responded to participate. Upon completion of data gathering, IPCRF records provided by the Rizal District Administrative Office were de-identified and matched to survey responses using coded IDs. The holistic dataset comprised 239 teacher cases—15 face-to-face interview participants, 30 pilot-tested, and 194 survey respondents—which facilitated rigorous mixed-methods analysis.

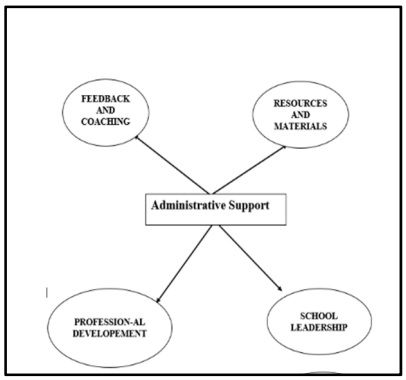
Statistical Treatment of Data - The qualitative data were generated through interviews with the teacher-respondents and underwent thematic analysis. Recording, transcription, tabulation, and coding were conducted to extract the themes. The initial, developing, and final thematic maps were illustrated to identify the final themes. The quantitative data were processed using SPSS version 26. For the inferential problems and to test the proposed hypotheses, Partial Least Squares–Structural Equation Modeling (PLS-SEM) was used, and results were generated using WarpPLS version 7.0. The level of administrative support, school environment, and teachers' performance in the Rizal District were examined through a survey questionnaire.

Ethical Considerations - The researcher asked permission from the school district supervisor and school heads/principals of the respective schools in the Rizal District to gather the data. Trust in the teacher-respondents was given, considering their complete understanding of the objectives and the research process. The research instrument was also properly explained to ensure accurate and valid results. During the administration of the instrument, the survey questionnaire was given and served personally at a specified time. The confidentiality of respondents' data was maintained throughout the collection, analysis, and reporting of findings. It was guaranteed that all data and results gathered were used exclusively for the study. The content of this study was an original paper and was not copied from any existing study. The researcher used the American Psychological Association (APA) style to give credit to other research studies used as references. Previous studies and resources used as the basis for this study were cited correctly and acknowledged. This study was intended solely to advance education and did not cause any harm to anyone involved in its conduct.

3. Results and Discussions

The final themes emerged from the teacher-participants in the elementary schools as they shared their experiences with the administrative support provided by school heads in Rizal District schools. The administrative support, as shown in Figure 1, is characterized by four themes: feedback and coaching, resources and materials, professional development, and school leadership. Organizational support and administrative support are closely related concepts. For organizational support to develop, employees' perceptions of administrative support must be well-developed (Gordon et al., 2019). In the literature related to the concept of administrative support, many definitions can be found. Sebullen and Jimenez (2024) define administrative support as managers valuing employees' contributions to the organization. Moreover, the final theme, as shown in Figure 2, is that teachers found it challenging to deliver technology-based lessons and maintain class discipline in overcrowded or poorly

lit classrooms. Furthermore, Ibrahim et al. (2023) defined school plants and facilities as "engines of growth in learning," which support teachers and learners in effective and efficient teaching and learning to achieve educational goals and objectives. Hence, school plants and facilities are no doubt an essential part of educational planning, without which students' academic achievement cannot be enhanced. The psychosocial environment includes relationships among staff, emotional safety, student behavior, and overall school well-being. A positive psychosocial climate improves teacher retention, job satisfaction, and performance. Greenberg (2023) emphasized that emotionally supportive school climates protect teachers from burnout and support student development. Social support from colleagues and school heads helps reduce teacher stress and enhances coping mechanisms (Hidayat & Patras, 2024). Schools that encourage collaboration and mutual respect cultivate a stronger sense of community and professional identity. Its facilities and psychological environment characterize the school environment.



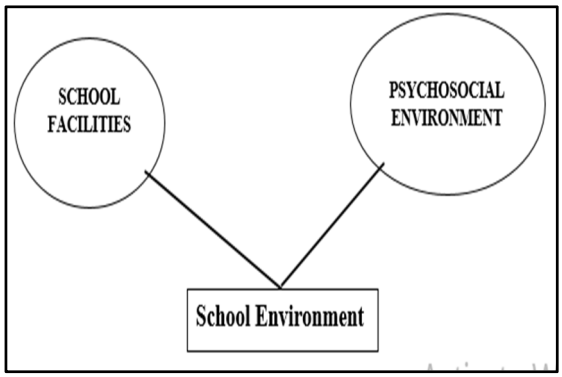


Figure 1. Final Thematic Map of Administrative Support Figure 2. Final Thematic Map of School Environment

Table 2 presents the mean level of administrative support for elementary school teachers in terms of feedback and coaching and resources and materials. In the context of education, school administrators represented by the principals, head teachers, and district supervisors provide the needed administrative support in the form of assistance, feedback and coaching, resources and materials, teachers' professional development, and generally, school leadership. Ten indicators of feedback and coaching have been assessed by the elementary teachers at a very high level, as indicated by weighted means ranging from 4.57 to 4.84 and a composite mean of 4.71. The overall mean indicates the very high level of supervision and support provided by school heads. Including feedback and coaching for their teachers. Teachers generally acknowledge strong support from their school heads, particularly in feedback and coaching. This finding corroborates the importance of feedback and coaching. In the study by Gan et al. (2021), it was underscored that regular coaching and feedback from school heads have increased teachers' confidence in classroom management. In coaching, focusing on the teachers' strengths rather than their deficiencies becomes more effective. In addition, the correlation between the two is evident: coaching and feedback intertwine, with feedback serving as an educational tool and coaching as an educational philosophy dedicated to helping learners realize their potential. In fact, Knight and van Nieuwerburgh's (2012) findings emphasize that effective instructional coaching creates a collaborative environment in which teachers can reflect on and improve their teaching practice, especially when feedback is constructive, continuous, and personalized.

Furthermore, the administrative support, considering the schools' provision of resources and materials, was viewed by teachers at a very high level and indicated by a composite mean of 4.58. All item indicators recorded weighted means from 4.39 to 4.84. In the context of resource and material provision, it is vital for promoting quality education, enabling teachers to create engaging and inclusive learning environments that support student success. These findings on the need for sufficient resources and materials are supported by Okongo et al. (2023), who conclude that quality education is ensured through access to up-to-date and sufficient teaching resources. In fact, Ordu (2021) found that teachers benefited from the administration's efforts to provide modules, projectors, and visual aids, and that the Department of Education's efforts through the DepEd's Learning Resource Portal

improved access. However, it faced limitations, including internet connectivity issues. The effect of resource inequality is particularly evident in developing countries, according to a UNESCO (2021) report, which confirmed limitations in educational outcomes and teacher effectiveness.

Table 2
Mean Level of Administrative Support for Elementary School Teachers in Terms of Feedback and Coaching and Resources, and Materials

Indicators (Feedback and Coaching)	Mean	Verbal Description
1. My school head provides constructive feedback to improve my teaching practices.	4.84	Very High
2. My school head regularly observes my classes for coaching and mentoring.	4.79	Very High
3. My school head's post-observation conferences are helpful and motivating.	4.92	Very High
4. My school head acknowledges my strengths and helps me identify areas for growth.	4.66	Very High
5. My school head acts as a coach, offering practical suggestions for my instructional challenges.	4.66	Very High
6. My school head is accessible for discussions about my teaching methods and student performance.	4.61	Very High
7. The evaluation of my performance is fair, transparent, and based on clear criteria.	4.57	Very High
8. My school head acknowledges and celebrates my teaching successes and improvement.	4.72	Very High
9. My school head helps me set realistic and meaningful professional goals.	4.64	Very High
10. I feel comfortable seeking advice from my school head about classroom management.	4.73	Very High
Composite Mean	4.71	Very High
Indicators (Resources and Materials)		
1. My school head ensures that basic teaching supplies (e.g., chalk, markers, and paper) are consistently available.	4.45	Very High
2. I have adequate access to essential instructional materials (e.g., textbooks, modules) for my students.	4.39	Very High
3. My school head supports requests for modern teaching technologies (e.g., projectors, internet access).	4.49	Very High
4. The school administrators effectively manage the procurement and distribution of learning resources.	4.54	Very High
5. My school head actively seeks ways to acquire additional resources for our school.	4.84	Very High
6. My school head supports the acquisition of materials for co-curricular activities like school events and contests.	4.71	Very High
7. My school head communicates openly about the status of the school's resources and budget (e.g., MOOE).	4.59	Very High
8. The school library hub, or learning resource center, is well-stocked and accessible.	4.52	Very High
9. My school head supports the use of school funds for curriculum-relevant materials.	4.63	Very High
10. My school head maintains the school budget allocated to resources and materials for teachers.	4.61	Very High
Composite Mean	4.58	Very High

Table 3 presents the mean level of administrative support for elementary school teachers in professional development and school leadership. As defined by Balta et al. (2023), effective professional development is job-embedded, collaborative, and aligned with instructional goals, which leads to lasting changes in teaching practices. In this study, the teacher-respondents reported a very high composite mean of 4.81 for administrative support in line with professional development. At the elementary schools in Rizal District, teachers gave a very high perception as far as administrative support to professional development is concerned, which are characterized by the presence of peer-to-peer Learning Action Cells-LAC sessions facilitated by the school head (4.90), offering of professional development programs aligned with school's overall goals and providing opportunities to take on new roles or leadership responsibilities (4.86), identifying professional development opportunities that match the teachers' needs and interests and administrative support to teachers' effort in trying new teaching strategies (4.81), being given opportunities to leadership responsibilities (4.75), school head's encouragement in teachers' participation in seminars, workshops and trainings, and providing financial/logistic support for teachers' professional activities (4.71). While these findings on professional development have been highly rated, effective professional development is grounded in principles of adult learning. This means it should be self-directed, draw on learners' existing experiences, be relevant to their immediate professional challenges, and be problem-centered rather than content-oriented (Pappas, 2025). Central to professional development, according to Darling-Hammond et al. (2017), is the direct improvement of professional practice, informed by extensive research on improved instructional techniques that lead to better student outcomes.

Table 3

Mean Level of Administrative Support for Elementary School Teachers in Terms of Professional Development and School Leadership

Indicators (Professional Development)	Mean	Verbal Description
1. My school head encourages my participation in relevant seminars, workshops, and trainings.	4.71	Very High
2. The school provides financial or logistical support for professional development activities. Opportunities that match my needs and interests.	4.71	Very High
3. My school head identifies professional development opportunities that match my needs and interests.	4.81	Very High
4. The school organizes relevant and high-quality in-service training (INSET) for teachers.	4.80	Very High
5. I am encouraged to pursue further studies or advanced degrees.	4.85	Very High
6. My school head facilitates opportunities for peer-to-peer learning in Action Cells-LAC sessions.	4.90	Very High
7. The professional development programs offered are aligned with the school's overall goals.	4.86	Very High
8. My school head provides opportunities to take on new roles or leadership responsibilities.	4.86	Very High
9. I am given opportunities to take on new roles and leadership responsibilities.	4.75	Very High
10. The administration supports my efforts to head in and try new teaching strategies learned from my professional development.	4.81	Very High
Composite Mean	4.81	Very High
Indicators (School Leadership)		
1. My school head fosters a climate of trust and respect among staff.	4.83	Very High
2. I feel that my opinions and suggestions are valued by the school administrators.	4.89	Very High
3. My school head is approachable and willing to listen to my personal and professional concerns.	4.84	Very High
4. The school head communicates school policies and decisions clearly and effectively.	4.76	Very High
5. My school head defends the staff from unreasonable criticism from parents or the community.	4.60	Very High
6. The school head is fair and impartial in dealing with all faculty members.	4.70	Very High
7. I feel motivated and inspired by my school head's leadership.	4.78	Very High
8. My school head effectively resolves conflicts that arise within the school.	4.76	Very High
9. The administrator shows genuine concern for my well-being.	4.81	Very High
10. My school head actively involves teachers in the decision-making process.	4.83	Very High
Composite Mean	4.78	Very High

School leadership basically comprises instructional supervision. Supervision in the context of instruction has been defined as the maximum development of the teacher into the most professionally efficient and effective person he is capable of becoming (Okorj & Ogbo, 2013), a task of improving instruction (Seo et al., 2022). It is all about promoting leadership and teacher growth in educational practices (Hilton et al., 2015). Teachers in Rizal District elementary schools perceived administrative support, considering school leadership, with a registered composite mean of 4.78. The highest rating of 4.89 is accorded to the teachers' opinions and suggestions being valued by the school administrators. This is closely followed by other evident characteristics of school heads, such as being approachable and willing to listen to teachers' personal and professional concerns. While elementary teachers of Rizal District very highly considered and noted the importance of school leadership heads, as revealed in the ratings, school leadership still ranks second only to classroom instruction among all school-related factors contributing to student learning, as confirmed in the study of Leithwood et al. (2020).

Table 4 underscores the mean levels of the school environment for elementary school teachers regarding school facilities and the psychosocial environment. As earlier defined, the school environment refers to how conducive the school is to learning and teaching and how good the facilities it provides are. It includes school facilities and the psycho-social environment. The teacher-respondents gave a very good rating to school facilities, with a composite mean of 4.23. Half of the ten indicators of school facilities were rated very good, with means ranging from 4.20 to 4.52, while the other half were rated good, with weighted means ranging from 3.96 to 4.18. These ratings suggest that schools generally feature clean, safe, well-equipped environments. Accessible and spacious physical facilities. Moreover, these findings corroborate the study by Yangambi (2023), which highlighted that schools with well-maintained facilities reported higher levels of teacher morale and reduced absenteeism. The findings show similarity with the expectations about the school environment revealed in the study by Baafi (2020). School facilities such as classrooms, libraries, laboratories, and sanitation facilities significantly impact not only student learning but also teacher performance. Teachers who work in schools with adequate lighting, ventilation, and space tend to have better morale and are more effective in delivering instruction. Disclosing the significant role of school environment in shaping teacher performance, having a positive school environment characterized

by a supportive and collaborative culture, as emphasized by Adeoye et al. (2025).

Table 4
Mean Level of School Environment for Elementary School Teachers in Terms of School Facilities and Psychosocial Environment

Indicators (School Facilities)	Mean	Verbal Description
1. The school has clean, accessible, and well-maintained comfort rooms for teachers and students.	4.46	Very Good
2. The school provides safe and adequate recreational areas and playground facilities for students.	4.38	Very Good
3. Specialized facilities like the library, science laboratory, and ICT room are functional and well-equipped.	3.96	Good
4. My classroom is well-ventilated and provides a comfortable space for teaching and learning.	4.08	Good
5. The school grounds and overall physical plant are clean, orderly, and conducive to an effective learning environment.	4.20	Very Good
6. The cleanliness and accessibility of school restrooms contribute to a healthy and hygienic environment, minimizing class interruptions due to health and sanitation concerns.	4.18	Good
7. The availability and condition of spaces like the school court or grounds support the effective conduct of my Physical Education classes and other school-wide activities that I lead.	4.14	Good
8. The faculty room is a conducive and properly equipped space for me to prepare instructional materials, accomplish reports, and collaborate professionally with my colleagues.	3.96	Good
9. The availability and good condition of students' desks, chairs, and the teacher's table support the smooth implementation of various learning activities.	4.45	Very Good
10. The quality and condition of the blackboard or whiteboard in my classroom enable me to present lessons clearly and legibly to all students.	4.52	Very Good
Composite Mean	4.23	Very Good
Indicators (Psychosocial Environment)		
1. My school administrator has a positive and supportive relationship with teachers.	4.42	Very Good
2. Teachers in my school have a positive and collaborative relationship with each other.	4.56	Very Good
3. My school has a positive and inclusive culture that promotes teachers' well-being and job satisfaction.	4.35	Very Good
4. I feel overwhelmed and burnt out by my work as a teacher in my school.	*1.35	Very Poor
5. I am satisfied with my job as a teacher in my school.	4.69	Very Good
6. My school provides resources and support to promote teachers' well-being and mental health.	4.61	Very Good
7. I feel motivated and engaged in my work as a teacher in my school.	4.50	Very Good
8. Teachers in my school are respected and appreciated by administrators, colleagues, and students.	4.49	Very Good
9. There is an open and honest communication among teachers, administrators, and staff in my school.	4.44	Very Good
10. I feel a sense of community and belonging in my school.	4.57	Very Good
Composite Mean	4.20	Very Good

The school environment, across all psychosocial aspects, was rated very good by the teacher-respondents, with weighted means ranging from 4.35 to 4.69, except for statement 4, which received a very poor rating (mean = 1.35). The psychosocial environment is characterized by the quality of interpersonal relationships within the school community, which comprises the relationships between teachers and principals and between teachers and students. Taking into account the level of the school environment for elementary school teachers in terms of psychosocial environment (4.20), as assessed by the teachers, exists in Rizal District elementary schools. The feeling of being overwhelmed and burnt out at work, as the respondents perceive a teacher as very poor. This suggests that, as far as the teaching job and workload are concerned, the teacher-respondents rarely experience feelings of burnout at work, as they maintain a high level of professional efficiency and remain well motivated to teach despite the given workload. The findings of the studies by Cassaretto et al. (2024) and Casanova et al. (2023) revealed that social support from peers, leaders, and family was closely linked to improved teacher resilience and classroom functioning. Moreover, the studies by Greenberg (2023) and Hidayat & Patras (2024) showed that an emotionally supportive school climate protects teachers from burnout and that social support from colleagues and the school head helps reduce teacher stress and enhances their coping mechanisms.

In this study, the teachers' performance is measured by the results of the Individual Performance Commitment and Review Form (IPCRF) ratings. This document is used within the Department of Education in the Philippines to assess the performance of individual schools, particularly teachers, as part of the Results-Based Performance Management System (DepEd Order 2 s. 2015; Urbano & Gurat, 2023). The adjectival rating includes outstanding, very satisfactory, satisfactory, unsatisfactory, and poor, with the corresponding numerical rating from 5 to 1. In the

Rizal District, 70.6% of the elementary school teachers achieved a very satisfactory level of accomplishment in the school year 2023-2024. This suggests that, garnering a rating from 3.500 to 4.499, their performance exceeded expectations and all the goals, objectives, and targets were achieved above the established standards.

Table 5
Level of Teachers' Performance in Rizal District

IPCRF	Frequency	Percent
Outstanding (4.500–5.000)	57	29.4
Very Satisfactory (3.500 – 4.499)	137	70.6
Total	194	100.0

Also disclosed in Table 5, 29.4% of teachers achieved a rating of 4.500-5.000, indicating outstanding performance. This means that they reached an extraordinary level of achievement and commitment in terms of quality and time, technical skills and knowledge, ingenuity, creativity, and initiative. Moreover, they have demonstrated exceptional job mastery in all significant areas of responsibility. In addition, Semacio et al. (2024) mentioned that the IPCRF Rating of Teachers, as mandated by the Department of Education (DepEd), is employed to evaluate a teacher's performance, highlighting a systematic framework for assessing teaching effectiveness. The IPCRF evaluates teachers' performance by identifying their strengths and weaknesses across Key Result Areas, which, in turn, informs professional development and intervention programs aimed at enhancing teaching effectiveness (Junio-Sabio & Manalo, 2020). It serves as a performance appraisal tool that aligns individual teachers' tasks with organizational goals (DepEd Order 019 s. 2022; Espinosa et al., 2023). Through the IPCRF, teachers commit to their deliverables at the beginning of the school year and are reviewed and rated based on their performance at the end of the school year.

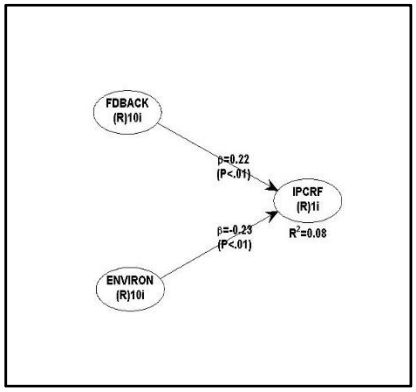


Figure 3. The Emerging Model for Administrative Support, School Environment, and Teaching Performance

The structural model reflecting the links between administrative support, school environment, and teaching performance presents only two exogenous variables that directly connect to IPCRF. Figure 3 was generated from structural equation modeling using the partial least squares method in WarpPLS version 7.0. As shown in the new model, feedback, coaching, and the psychosocial environment have the most significant effect on teachers' performance. Although to a very small degree (or 6%), the teachers' performance, as indicated by the IPCRF rating, is found to be contributed by the combined feedback and coaching and the level of the psychosocial environment. The beta coefficients, ranging from 0.22 to 0.23, are also shown, along with the corresponding p-values or significance levels. Below 0.01, as a result of the structural equation modeling.

The emerging model identifies two paths with low *beta* coefficients that are still significant, as evidenced by *p*-values less than 0.001. Between these paths, the psychosocial environment showed the greater effect on teaching performance, with an effect coefficient of 0.041, compared with feedback and coaching, with an effect coefficient of 0.038. Feedback and coaching showed a low but significant correlation with IPCRF, as indicated by a *beta* coefficient of 0.222. However, the psychosocial environment shows a negative correlation with the IPCRF rating (β = -0.229, $p < 0.001$). This denotes an inverse relationship between the psychosocial environment and the teachers' performance. While a positive psychosocial environment is expected to foster effective teaching and

learning, a negative one may undermine the learning process, classroom management, and discipline, as well as students' and teachers' well-being. A strong psychosocial climate reduces stress and improves collaboration, while a weak psychosocial environment may increase stress in teaching. One study has disclosed the impact of the psychosocial work environment, considering job demand and support from colleagues and supervisors, on the employee's mental health and well-being, according to Bodin Danielsson and Theorell (2024). It showed the association between psychosocial work environment factors and depression treatment. The significant effect of feedback and coaching and psychosocial environment on teaching performance is supported by the very small standard error value of 0.069. The abovementioned results lead to the rejection of the null hypothesis. Thus, the feedback and coaching and psychosocial environment significantly affect the performance of the teachers in their respective schools. The findings appear similar to Karousiou et al.'s (2025) study, which found that a respectful, inclusive psychosocial environment, with structures for emotional support and conflict resolution, has significantly improved teaching performance in teacher attendance and lesson planning consistency.

Table 6

Path coefficients, p-values, and Effect size for Ho

Path	*Beta* (β) Coefficients	*p*-values*	Effect Coefficient**	Standard Errors	Effect Size
FDBACK→IPCRF	0.222	<0.001	0.038	0.069	Small
ENVIRON→IPCRF	-0.229	<0.001	0.041	0.069	Small

*Significant at p < 0.01 ** Effect size coefficient: 0.02 – small, 0.15 – medium, 0.30 – large

Table 7

Proposed Action Plan to Enhance Teachers' Performance

Key Focus Area 1: Feedback and Coaching

Objectives	Activities	Responsible	Timeline	Fund Source	Expected Outcome
1. Establish a Formal Feedback System	Develop clear criteria for teacher performance and structured feedback templates. Include self-assessment tools.	School leadership, HR	Month 1–2	MOOE 5000	Teachers receive consistent, structured, and relevant feedback that clarifies performance expectations and growth areas.
2. Train School Leaders in Effective Feedback	Provide workshops on giving constructive, timely, and actionable feedback.	External consultants / Local education office	Months 2–3	MOOE 5000	School leaders deliver more effective, constructive, and motivating feedback, thereby improving teaching practices.
3. Implement Peer Coaching Programs	Pair teachers for mutual observation, feedback, and professional support.	Department heads	Months 3–4	MOOE 5000	Increased collaboration and professional sharing among teachers, leading to reflective practice and continuous improvement.
4. Schedule Regular Coaching Sessions	Assign mentors/coaches to provide one-on-one support at least once a month.	Academic Coordinators	Ongoing	MOOE 3000	Teachers experience personalized support, resulting in enhanced confidence, skills, and classroom performance.
5. Monitor and Evaluate Feedback Effectiveness	Use surveys and performance data to assess if feedback leads to improvement. Adjust accordingly.	Quality Assurance Team	Bi-annually	MOOE 5000	Feedback systems are refined based on teacher input, making them more relevant, responsive, and results-oriented.

Key Focus Area 2: Psychosocial Environment

Objectives	Activities	Responsible	Timeline	Source Funds	Expected Outcome
1. Conduct a Psychosocial Climate Audit	Survey staff on stress, morale, support systems, and workplace satisfaction.	School counselors/HR	Month 1	MOOE 2000	School leadership gains a clear understanding of staff well-being and can tailor interventions accordingly.
2. Promote Work-Life Balance	Implement manageable workload policies,	School administration	Monthly	MOOE 1500	Reduced burnout and stress levels among teachers, leading

	flexible hours where possible, and discourage work during off-hours.				to higher energy and engagement in the classroom.
3. Establish Support Groups or Wellness Programs	Provide regular teacher wellness sessions (e.g., mindfulness, stress management).	School counselor External partner	Monthly	MOOE 1500	Improved emotional and mental health of teachers, leading to better resilience and overall job satisfaction.
4. Foster Positive Staff Relationships	Organize team-building activities, social events, and collaborative planning time.	Staff committee	Monthly	MOOE 1500	Enhanced collegiality, communication, and collaboration among staff members, fostering a supportive work culture.
5. Recognize and Celebrate Teacher Efforts	Create formal and informal recognition systems (e.g., "Month of the Month" and thank-you notes).	Principal / Leadership team	Weekly/Monthly	MOOE 3500	Increased motivation, morale, and retention due to a sense of appreciation and value within the school community.

The action plan developed aims to enhance teachers' performance in the Rizal District by addressing two significant variables identified in the research: administrative support and the school environment (Leithwood et al., 2020). In the Philippine context, Cagape and Magayo (2019) found that schools implementing peer coaching and school head observation programs significantly improved classroom instruction and teacher confidence. Teachers appreciated feedback that was objective and came with actionable suggestions. Effective feedback and coaching enhance instructional quality and promote continuous professional growth. Knight and van Nieuwerburgh (2012) emphasized that ongoing, non-evaluative coaching builds trust and improves teaching practice. A study by Torres et al. (2025) in Metro Manila revealed that when school heads regularly gave constructive feedback, teacher morale and student outcomes improved notably. Effective instructional coaching creates a collaborative, non-evaluative environment where teachers feel safe to reflect on and improve their practice (Knight & van Nieuwerburgh, 2012). A psychosocial environment refers to the social and psychological factors that influence an individual's behaviors, well-being, and mental health. It encompasses various aspects, including family dynamics, peer relationships, school environment, neighborhood and community, and societal perceptions. The psycho-social environment refers to the social and psychological factors that influence an individual's behavior, well-being, and mental health (Kirkbride et al., 2024).

4. Conclusions

Based on the summary of the findings, the following conclusions are drawn: School heads provided consistent feedback and coaching, encouraged professional growth, and were generally supportive of teachers' needs. However, there were also concerns about limited resources and inconsistent communication in some schools. Overall, teachers emphasized that when school heads are approachable, responsive, and involved in academic matters, their confidence and teaching effectiveness improve significantly. The school environment in the Rizal District is moderately conducive to teaching and learning. While some schools have well-maintained facilities and supportive psychosocial environments, others face challenges such as inadequate classrooms, limited instructional materials, and overcrowded spaces. Teachers noted that a positive school culture, mutual respect, and safety are present in most schools. However, there is still a need to improve infrastructure and address environmental concerns to create an optimal learning environment. The high rating suggests that teachers are consistently guided and supported in refining their instructional practices through regular observations, performance reviews, and constructive dialogue. Teachers rate the availability and accessibility of instructional resources and materials highly. This indicates that schools are successful in providing essential tools and materials that aid in effective teaching and learning. Professional development opportunities are highly relevant and empowering. Teachers feel that the training and capacity-building efforts support their growth and enhance their competencies. School leadership is strongly appreciated by teachers, reflecting effective decision-making, empowerment, and clear communication from school heads. Teachers recognize and value their leaders' capacity to inspire and guide. Level of school environment for elementary school teachers in Rizal District—Teachers rated the condition and availability of school facilities as very good, indicating that the physical environment is conducive to teaching and

learning. The facilities are generally well-maintained. functional, and supportive of various instructional activities. The psychosocial environment in schools is perceived positively by teachers, reflecting strong interpersonal relationships, high staff morale, positive student behavior, and strong emotional support systems. A collaborative and respectful culture appears to be present in the school setting. The performance of elementary school teachers in Rizal District for the school year 2023–2024 is notably high. This indicates that most teachers consistently exceed expectations, demonstrate strong instructional competence, and contribute effectively to achieving their schools' educational goals. The level of a teacher's performance is significantly affected by:

The study found that administrative support significantly affects the performance of elementary school teachers in Rizal District, albeit with minimal statistical significance. Teachers rated all components of administrative support—feedback and coaching, resources, professional development, and leadership—as very high. The study found that the school environment significantly affects the performance of elementary school teachers in Rizal District, albeit with a minimal statistical effect. Teachers rated all components of the school environment—school facilities and the psychosocial environment—as very good. The proposed Action Plan is a strategic and comprehensive response that directly addresses the areas identified as influencing teacher performance. It incorporates structured interventions in feedback and coaching, resource provision, professional development, school leadership, school facilities, and psychosocial environment. Grounded in educational best practices and research-based principles, the plan aims to create a more supportive, equipped, and emotionally healthy working environment for teachers. By targeting both structural and administrative variables and the psychosocial environment, the plan fosters a culture of collaboration, continuous improvement, and teacher well-being—factors essential to enhancing instructional quality and educational outcomes.

Recommendations - In view of the foregoing findings and conclusions, the following recommendations are hereby suggested: School heads can strengthen classroom support through regular observations and mentoring, ensure the timely provision of teaching resources, enhance professional development aligned with teacher needs, and promote participatory leadership to foster collaboration and shared accountability within the school community. School leaders can continue to maintain and improve physical facilities while also fostering a positive psycho-social environment. Efforts should focus on promoting collaboration, emotional support, and inclusivity to enhance teacher motivation, satisfaction, and overall instructional effectiveness. Moreover, school leaders may continue mentoring programs, peer coaching, and post-observation conferences to maintain and improve instructional quality. School heads can institutionalize regular feedback and coaching sessions, including classroom observations and performance dialogues, to continuously support and enhance teachers' instructional practices and professional growth. School heads can sustain and further improve the provision of instructional resources by regularly assessing teacher needs and ensuring timely access to updated teaching materials and technologies, especially in resource-limited settings. School leaders and the Department of Education can continue to invest in targeted and needs-based professional development programs that align with the actual teaching contexts and career goals of educators. School heads can continue to strengthen their leadership practices by maintaining transparent communication, empowering teachers in decision-making, and consistently demonstrating supportive and visionary leadership to sustain a positive and motivated school culture. School administrators may maintain and further improve school facilities by ensuring regular maintenance and upgrades to support diverse instructional needs. School leaders may continue to cultivate a positive psychosocial environment by promoting collaboration, mutual respect, and emotional support among staff and students. This can be achieved through regular team-building activities, open communication channels, and the integration of mental health and well-being programs to sustain high staff morale and a supportive school culture.

To sustain the high performance of elementary school teachers in Rizal District, it is recommended that schools continue recognizing and reinforcing effective teaching practices through incentive systems, professional growth opportunities, and platforms for sharing best practices across schools. Celebrating teacher accomplishments will help maintain motivation and excellence. Despite the minimal statistical influence, administrative support remains essential. School heads may further strengthen their engagement by institutionalizing consistent feedback mechanisms, timely resource provision, relevant professional development, and inspirational leadership to foster

continued teacher growth and instructional improvement. Schools may maintain well-functioning facilities and a nurturing psychosocial environment. Continued investment in physical infrastructure and emotional well-being initiatives—such as wellness programs and peer support networks—will help ensure sustained teacher effectiveness and satisfaction. The proposed action plan can be implemented and regularly monitored to ensure its effectiveness in enhancing teacher performance. Stakeholders—including school heads, district supervisors, and teachers—should actively collaborate in executing and evaluating the interventions. Continuous feedback, data-driven adjustments, and sustained support will be key to building a supportive, well-resourced, and emotionally healthy work environment that promotes instructional excellence and long-term educational success. Future researchers are encouraged to conduct broader and more in-depth investigations into the relationship between administrative support, school environment, and teacher performance. While the current research identified a significant but minimal statistical influence, further exploration is needed to uncover underlying factors, contextual variations, and long-term impacts that may affect these relationships. Specifically, future studies may expand the scope to include multiple districts or provinces to determine whether similar patterns persist across different educational settings.

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Purchase decision: Its mediating effect on the relationship between the marketing mix and choice of marketing strategies in Occidental Mindoro

Laceste, Ronnie P.
Divine Word College of San Jose, Philippines (fresalie.herrera@deped.gov.ph)

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Abstract

This study employed an exploratory sequential design to identify the marketing mix that influences senior high school students' decisions to purchase cosmetic products and to determine its effect on purchase decisions and on sellers' marketing strategies. Data were collected from 339 female SHS students from the seven schools in the SAMARICA area. Findings reveal that price, product, promotion, people, and place were the five factors that emerged during the qualitative phase. Moreover, the data reveal that respondents placed the most significant emphasis on product safety, as these products are directly applied to their bodies. Also, this reveals that the decision to purchase cosmetics is not only a rational, function-driven process but also heavily influenced by social and emotional factors. The extrinsic need for social acceptance and a sense of belonging is closely related to the intrinsic drive for self-improvement and confidence. Therefore, consumers will continuously patronize a product from a particular seller if they are consistently satisfied with its price and quality, thereby ensuring sustained sales and, eventually, profit. The data also reveal that the purchase decision mediates the relationship between the marketing mix and choice of marketing strategies. Thus, the indirect or mediating effect of the marketing mix on the choice of marketing strategy is significant. Understanding their needs, wants, and buying decisions determines the organization's success. Lastly, recommendations are enumerated to help manufacturers, marketers, distributors, and sellers determine and improve the processes, practices, procedures, and methodologies associated with cosmetic production and marketing.

Keywords: cosmetic products, market mix, purchase decision, Structural Equation Modeling (SEM), marketing strategies

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1. Introduction

Beauty and hygiene products, collectively known as cosmetics, are the fastest-growing consumer segment, compared with other categories, including food, beverages, and household products, according to a study conducted by Naseri et al. (2025). World Panel Philippines found that purchases of personal care products grew by 11% from June 2014 to June 2015. This figure is higher than the 7% growth in purchases of household care products, 6% for food products, and 5% for beverages. This growth is a clear manifestation of the Filipino shoppers' high regard for hygiene and beauty products (International Trade Administration, n.d.; Tariga et al., 2021). Within the personal care mega sector, Worldpanel (2015) and Inquirer.Net (2015) found that Filipinos are prioritizing skin care products (hand and body lotion, facial care, liquid soap, and bar bath soap), hair care products (shampoo, conditioners, and treatment), and oral care (toothpaste and toothbrush). Based on the above information, it is clear that the cosmetics industry will continue to grow over the coming years.

However, it is a known fact that in the business world, the main problem confronting players, specifically manufacturers and sellers of commercial products, including cosmetics, is deciding which strategies to employ to maintain a high volume of sales and stay in business. The marketability of a product is always dependent on the consumers' decision to buy it. Thus, analysis of the buying behavior of consumers is very important in order to formulate good and effective marketing strategies that would ensure stable sales. To be competitive, cosmetics manufacturers and sellers need to identify and understand their consumers' buying behavior. Consumer's buying behavior is the total of a consumer's attitudes, preferences, intentions, and decisions regarding a marketplace when purchasing a product or service. The decision to buy, as one of its components, determines sales of a particular cosmetic product (Oberoi & Oberoi, 2018). Students, particularly those in Senior High School, occupy a large share of the cosmetics market. Moreover, Slabá (2019) mentioned that people between the ages of 17 and 24 take more effort and care of their physical selves. Thus, senior high school students belonging to this age bracket are believed to be more inclined to buy cosmetic products. Udayanga et al. (2024) found that the majority of those who purchase cosmetics are teenagers and young adults, mainly aged under 25. This supports an earlier study by Zebrowitz et al. (2013), who found that younger people are more open-minded and concerned about their appearance. In the Philippines, according to The World Bank (2020), the 15-24 age bracket, which includes senior high school students, comprises 19.16% of the population and is the third-largest age group in the population structure. In the consumer market, this figure would be a very significant number for consumer goods consumption.

A review of previous studies showed that there is really a lack of literature that specifically addresses the buying behavior of senior high school students regarding cosmetics. Therefore, this study aimed at identifying the marketing mix that may influence their decision to purchase cosmetic products and to examine the relationship between marketing mix, purchase decision, and choice of marketing strategies to come up with more generalizable results that would be beneficial to the players of the cosmetic industry in planning their future activities and marketing strategies, as well as to its consumers.

Statement of the Problem - This research aimed to identify the different marketing strategies that affect the purchase decisions of female senior high school students when buying cosmetic products. Specifically, this study sought answers to the following questions: (1) What are the different marketing strategies affecting the purchase decisions of female students in buying cosmetic products? (2) What is the level of the marketing mix as influenced by purchase decision in terms of price, product, promotion, people, and place? (3) What is the level of the respondents' decisions in buying cosmetic products? (4) What is the level of sellers' choice in marketing strategy? (5) Does the purchase decision mediate the relationship between market factors and choice of marketing strategies? (6) Is the level of sellers' choice of marketing strategy significantly affected by the marketing mix and purchase

decision?

Significance of the Study - Cosmetics, by becoming part of people's everyday lives, have grown into one of the world's biggest industries. Thus, this study is envisioned to generate practical as well as theoretical significance among the key players of this industry to make it more profitable and sustainable. Practical, since the information to be generated would be helpful to the stakeholders of the cosmetic industry, specifically in the improvement of the process, practices, procedures, and methodologies associated with cosmetics production and marketing. Specifically, the findings would be practically beneficial to the following: Manufacturers would benefit from the study by identifying products that would further propel market demand. For Distributors and Sellers, they can identify the factors that influence their consumers' buying behavior, in this case, Female Senior High School students. They would be able to modify and enhance their marketing strategies, which would eventually increase their profits. For Future market researchers, the information generated in this study would provide additional reference specifically for those dealing with studies related to youth and students, one of the largest groups of product consumers.

Teachers, specifically those teaching business management courses, would benefit from the results of this study. They will be provided with vital information they can use to enhance their students' knowledge and practical skills, which are essential for the establishment and sustenance of any business endeavor. The students, the focus of the study, will receive helpful information on the types of cosmetics that would be best for them. They will also learn the importance of good grooming and body hygiene. Moreover, since parents are the ones most affected by school expenses, they will also benefit from the findings of this study. Through this study, they will gain important information that explains why their children sometimes ask for extra allowance. Aside from that, they will also learn what to advise their children about when making buying decisions. The government will also benefit from this study. If the cosmetics industry continues to prosper, it will generate more jobs and tax revenue. For the Department of Education, the government agency tasked with managing the country's education sector, this study will yield benefits. The design of the curriculum specializing in business or livelihood will be strengthened by the study's findings, which identify the factors that influence consumer buying behavior, specifically among youth. For the youth at large, not only will the female Senior High School students benefit from this study, but the whole youth sector will as well. They will be provided with information to help them choose the cosmetic products best suited to them, which will enhance their personality. As to its theoretical significance, the study is envisioned to generate knowledge that would provide an in-depth understanding and explanation of the findings regarding the variables investigated and ultimately contribute to refining the theories used in the study. Hopefully, it will contribute to the scientific body of knowledge.

Scope and Delimitation of the Study - The study focused on the female senior high school students from private and public schools in the SAMARICA Area, Occidental Mindoro. The independent variable investigated was the marketing mix, with indicators such as price, product, promotion, place, and people. The mediating variable examined was the purchase decision of female senior high school students. The dependent variable examined was the choice of marketing strategies. An analysis of the relationship among the identified variables was also part of this study. Three hundred and thirty-nine (339) copies of the validated researcher-made questionnaires were distributed to the identified respondents to gather the needed information that would provide answers to the research problems presented earlier. This study was conducted from August to November 2025. Moreover, this study was limited to cosmetic products only and does not include other products.

2. Methodology

This study utilized a sequential exploratory research design. This type of research combines qualitative and quantitative approaches (Berman, 2017). This study began with qualitative research and continued with the quantitative research after the qualitative phase was completed. A qualitative research approach is explicitly used to identify the marketing mix that affects purchase decisions. Qualitative Method is the best for researching many of the why and how questions of human experience (Crossman, 2019). The researcher used the qualitative research

results to develop a survey questionnaire on the different marketing mixes, purchase decisions, and the choice of marketing strategies. There were 2,862 senior high school students officially enrolled in 7 secondary schools in the SAMARICA Area, including both public and private schools. Using the Raosoft calculator with a 5% margin of error and a 95% confidence level, out of 2,862, the sample size was three hundred thirty-nine (339) students. They were chosen using stratified random sampling by year level and school type.

To facilitate data gathering, the researcher prepared two sets of instruments: one for qualitative research (an interview guide) and the other for quantitative research (researcher-made). An interview guide in essay form was used in the qualitative phase. The results of the thematic analysis in identifying the marketing mix/strategies were used to formulate the first variable of the quantitative survey instrument. For the quantitative phase, the researcher-made instrument was divided into three (3) parts; the first part was composed of 5Ps in the marketing mix in terms of price, product, promotion, people, and place, which consisted of six (6) items each, which was the result of the qualitative research. The second part is the reasons for purchasing cosmetic products, composed of six (6) items. The last part identified the level of the choice of marketing strategies, consisting also of six (6) items.

Moreover, the researcher-made instrument was examined using expert validity. The researcher sought the assistance of five (5) experts in the field of research from the graduate school professors at Divine Word College of San Jose to determine the accuracy and the relevance of the items in the instruments. Recommendations and suggestions from the experts were considered to improve the instrument. After the final instrument had been prepared, it was given and administered once to thirty (30) female senior high school students of Tanyag National High School for reliability testing. The reliability test was conducted using the split-half method. The Cronbach's alpha coefficients of reliability of all sets of constructs were 0.798, while all composite reliability coefficients are 0.800, 0.799, 0.801, 0.796, 0.796, 0.800, and 0.797, respectively. It covers the five sub-variables of the marketing mix with six items each, the reasons for purchasing cosmetic products, composed of six (6) items, and the choice of marketing strategies, which also consists of six indicators. These results indicated that the sets of constructs are reliable and internally consistent.

Letters requesting permission were sent to the principals of the schools where the respondents were enrolled during the study period. Upon approval of the request, the researcher immediately distributed the survey questionnaires. Instructions were clarified among the respondents, including the time for retrieving the completed questionnaires. Respondents were given 1 week to complete the questionnaires, after which the researcher personally collected the completed questionnaires. Moreover, the data gathered were processed through tabulation. Data were analyzed statistically using the regression analysis. Descriptive data were analyzed using descriptive statistics, such as percentages and means, to characterize the respondents. Mean and standard deviation were used to identify the level of agreement of the respondents to the statements used to measure the level of influence of the different marketing mix, such as price, product, promotion, and people, on their purchase decision using a 5-point Likert scale and verbal descriptions. The relationship between dependent and independent variables was analyzed using SEM software. An analysis of the mediation effect of the purchase decision between the marketing mix and the choice of marketing strategies was also conducted using the said software. Lastly, to uphold proper norms and ethical standards in research, the researcher has provided citations for the different materials reviewed and presented in this paper. Permission from the principals of the respective schools was secured prior to conducting the research. After reaching an agreement with the relevant participants, the researcher personally distributed the questionnaires and explained the procedures for completing the instruments to the respondents to ensure accurate and reliable data. The respondents' privacy was respected at all times, and everything they shared or disclosed was treated as confidential. To organize the data correctly, the responses were checked, tallied, and tabulated as the basis for this research.

3. Results and Discussions

Figure 1. Final Thematic Map for Marketing Strategies/Mix

Figure 1 shows a thematic map illustrating the marketing strategies/mix of 15 female senior high school students that influenced their decision to purchase cosmetic products. It is the result of the qualitative research analysis conducted by the researcher. The illustrated results were derived from the qualitative questions that were asked during the interview. The data gathered were recorded, transcribed, tabulated, and coded to extract the themes. The identified themes derived from the analysis are as follows: price, product, promotion, people, and place. The theme of the marketing mix for female senior high school students was included in the quantitative item questions. Furthermore, the results showed that the marketing mix influences the decision to purchase cosmetic products among female senior high school students: price, product, promotion, people, and place (Wijaya et al., 2025).

Table 1

Summary Level of Marketing Mix in terms of Price, Product, Promotion, People, and Place

Indicators	Weighted Mean	Interpretation
Price	4.62	Very High
Product	4.68	Very High
Promotion	4.54	Very High
People	4.62	Very High
Place	4.61	Very High
OVERALL MEAN	4.62	Very High

Scale: 4.20-5.00 Very High Level; 3.40 -4.19 High Level; 2.60-3.39 Moderate Level; 1.80-2.59 Low Level; 1.00-1.79 Very Low Level

Table 1 summarizes the marketing mix at the macro level, including price, product, promotion, people, and place. The overall mean of 4.62, interpreted as very high, indicates that the respondents strongly agreed that all the marketing mix variables investigated affect their decision to purchase cosmetic products, and the influence was further interpreted as very high. When ranked by degree of agreement and influence, Product is first, followed by people and price; place is ranked fourth, and promotion is ranked fifth or last. This finding is supported by Assidiki and Budiman (2023), who found that pricing, promotion, and advertising, product quality, and product delivery influence consumers' purchase decisions. This was further supported by Zhao et al. (2021) and Albari and Kartikasari (2019), who stated that price also significantly influences consumer buying behavior. This finding proves that the majority of consumers still place a high premium on the price of the product they usually buy.

In addition, the data reveal that the respondents place the greatest consideration on the safety of the products, as these are directly applied to their bodies. Furthermore, the data also indicates their concern about protecting their bodies from harm that may be caused by the cosmetics they apply to different parts of their bodies. This finding aligns with Chandon's (2020) finding that people consider safety from allergenic ingredients. It is noteworthy that the originality and popularity of the products received the lowest rating of 4.65. The findings corroborate the findings of Faisal-E-Alam (2020). who discovered that quality was the most important factor influencing consumers' purchase of cosmetics. These findings are supported by Chandon (2020), who also found that quality is a major motivating factor in preferring one cosmetic brand over another. In terms of promotion, Zhao et al. (2022) concluded that advertising and promotion significantly influence consumer buying behavior. Their findings strongly support this study's findings regarding promotion as a factor that influences purchase

decisions. While the overall mean of 4.62 under the indicator of people reveals that the respondents strongly agree that people have very high influence on the decision of respondents to purchase cosmetic products, this implies that the respondents are encouraged to buy cosmetic products based on the sellers' ability to inspire the buyers in terms of the products' ability to enhance the specific physical attribute buyers wanted to improve. Lastly, regarding place, the data closely align with respondents' responses to the question of where they buy cosmetics (mean = 4.61). This implies the respondents' preference for the ease of buying products. In retail stores, anyone can buy products without the hassle of queuing at the payment counters or searching through the shelves. Likewise, products sold by ambulant vendors easily reach consumers, which explains the high rating. This is supported by Udayanga et al. (2024), who found that consumers prefer one cosmetic product over the other because of its easy availability. Furthermore, they also found that the majority of the respondents that they studied prefer to purchase cosmetic products in transit or at flea markets.

Table 2

Mean Level of the Respondents' Decisions in Buying Cosmetic Products

Indicators	Mean	Interpretation
I decided to purchase a cosmetic product to enhance my looks.	4.65	Very High
I decided to purchase a cosmetic product to improve my confidence.	4.66	Very High
I decided to purchase a cosmetic product to make me more sociable	4.52	Very High
I decided to purchase a cosmetic product to make me more acceptable to different peer groups	4.60	Very High
I decided to purchase a cosmetic product to maintain body hygiene	4.69	Very High
I decided to purchase a cosmetic product to attract the opposite or the same sex	4.66	Very High
COMPOSITE MEAN	4.63	Very High

Table 2 presents the data on respondents' mean levels of decision-making when buying cosmetic products. The composite mean of 4.63 suggests that psychological and social factors, including self-enhancement, social interaction, and confidence, influence respondents' reasons for buying cosmetics. This demonstrates that the decision to purchase cosmetics is not only a rational, function-driven process but also heavily influenced by social and emotional factors. The extrinsic need for social acceptance and a sense of belonging is inextricably linked to the intrinsic drive for self-improvement and confidence. This implies that methods that emphasize social proof, self-identity, and emotional benefits will be significantly more successful for marketers than those that only concentrate on functional features (such as price, quality, or packaging). The findings are similar to those of Yuliandari et al. (2023), who found that both intellectual and emotional factors heavily influence purchase decisions. Customers consider how they feel about the products in addition to the advantages. However, preferences and favorable emotional expectations frequently take precedence over risk aversion. While Almudimeegh et al. (2025) and Ma (2024) discovered that people wear makeup to reflect a preferred identity and satisfy their demand for self-expression. Higher self-esteem and confidence are associated with the use of reliable brands and high-quality products, suggesting that these products confer psychological benefits beyond functionality (Mobil et al., 2019).

Table 3

Mean Level of Sellers' Choice in Marketing Strategy

Indicators	Mean	Interpretation
The seller's pricing strategy is based on customers' cost sensitivity.	4.64	Very High
The seller's product strategy is based on customers' quality preferences.	4.68	Very High
The seller's choice of promotion strategy should capture the target market.	4.65	Very High
The seller's choice of distribution strategy is based on the product's availability.	4.66	Very High
The seller's choice of marketing strategy is based on customers' purchasing power.	4.62	Very High
The seller's choice of marketing strategy is based on the target customer's needs or wants.	4.54	Very High
COMPOSITE MEAN	4.63	Very High

Table 3 shows the mean level of sellers' choice in marketing strategy. With an overall mean of 4.63, the data consistently demonstrates a "Very High" level of agreement across all parameters evaluating the seller's marketing plan. This strongly implies that, from the respondents' point of view, the seller (probably in the context of the earlier discussion of cosmetic products) uses a highly customer-centric approach, directly basing their core

marketing mix decisions (Product, Price, Place/Distribution, Promotion) on important characteristics of the target customer, including their needs, preferences, cost sensitivity, and purchasing power. Shirai (2015) stated that people believe there is a strong relationship between the price and quality of cosmetic products. It is a given that consumers are willing to buy products of good quality, even if they are more expensive than the same product with inferior quality. This insight is supported by Ganguly and Roy (2021), who stated that price satisfaction is important and influential in maintaining buyer-seller relationships. Therefore, consumers will continuously patronize a product of a particular seller if the buyer is always satisfied with the price of that product as well as the product's quality, thereby ensuring sustained sales and eventually profit. The information suggests the seller is using a marketing strategy that emphasizes external customer factors rather than internal organizational factors. Because it guarantees that the Marketing Mix (4Ps) is strategically aligned with the customer's mind, wallet, and convenience—the ultimate source of revenue—customer-centricity is a crucial factor in determining market success.

Table 4
Path Coefficients and P-values for Hypothesis Testing

Path	Path Coefficient	P-value	Interpretation	Effect Size	Effect Size Interpretation
Hypothesis 1: Marketing Mix→ Choice of Marketing Strategy	0.078	0.02	Significant	.024	Small
Hypothesis 2:					
Marketing Mix→ Purchase Decision	0.637	<0.001	Highly Significant	.104	Small
Purchase Decision → Choice of Marketing Strategy	0.123	0.011	Highly Significant	.050	Small
Marketing mix→ Choice of Marketing Strategy	0.239	<0.001	Highly Significant	.020	Small

Effect Size: **0.02 – small, 0.15 – medium, 0.30 – large**
p-value: p < 0.001 Highly Significantp <.05 Significant p >.05 Not Significant

Table 4 shows the path coefficients and p-values for hypothesis testing. The data reveal that the purchase decision mediates the relationship between the marketing mix and the choice of marketing strategies (β = .078, p = 0.02), as shown in the Table. The p-value of .02 suggests that the rejection of the null hypothesis about purchase decision mediates the relationship between marketing mix and choice of marketing strategies. Hence, the purchase decision mediates the relationship between the marketing mix and the choice of marketing strategies. It can be noted that the Indirect or mediating effect of the path from marketing mix to choice of marketing strategy is significant. This result is reinforced by the studies conducted by Xiao et al. (2022) and Musumali (2019), which point out that the key to the success of any business organization lies in the hands of customers. Understanding their needs, wants, and buying decisions determines the organization's success.

Moreover, statistical analysis indicates that the marketing mix affects the purchase decision (p<0.001), the purchase decision affects the choice of marketing strategy (p<0.011), and the marketing mix affects the choice of marketing strategy (p<0.001). (β=.637, p-value=<0.001). This therefore reveals that the second hypothesis is rejected. Thus, the marketing mix (such as price, product, promotion, people, and place) positively affects the respondent's purchase decision and the seller's marketing strategy choice; the path coefficients (total effects) and probability values must be considered. This implies that an increase in the marketing mix score leads to an increase in the likelihood of purchase. The marketing mix provides companies and businesses with meaningful insights into how to improve their marketing strategies to capture their customers better (Sudarman & Lailla, 2023). Okumu (2015) substantiates this hypothesis that the marketing mix was proven to influence the consumer's decision in the purchase of cosmetic products. A business is more likely to succeed if it designs a tailored marketing mix for a group of customers with similar needs (Wichmann et al., 2022). Moreover, the marketing mix is consistently perceived as important to the performance of any organization. It is the bridge between the production and consumption of goods and services. It provides links between customers' needs and the means of satisfying them. This entails efficiently planning and executing the conception, distribution, promotion, and pricing of goods,

services, and ideas, and creating exchanges that satisfy individual and organizational consumer objectives (Grönroos, 1994, as cited in Zhang et al., 2024).

4. Conclusions and Recommendations

In light of the study's findings, the following conclusions are forwarded: The marketing mix that influences the decision to purchase cosmetic products by female Senior High School students is price, product, promotion, people, and place. The marketing mix significantly affects purchase decisions. The purchase decision has a significant and direct effect on the choice of marketing strategy, with only a small effect. The marketing mix significantly affects the marketing strategy. Purchase decision mediates significantly between the marketing mix and the choice of marketing strategy. Based on the results and conclusions derived from the study, the researcher highly recommends the following: cosmetic companies may develop their best market mix, giving priority to factors such as price, promotion, product, and place, which influence customers' purchase decisions. The marketing mix must be appropriately aligned and operate effectively to achieve organizational objectives and ensure the provision of the right product, at the right price, in the right place, thereby enabling more effective and efficient resource utilization. The researcher recommends that both cosmetic product manufacturers and sellers carefully modify and improve their marketing programs in order to formulate sound and effective marketing strategies that further propel market demand. The researcher recommends that marketing managers attend or provide training and seminars specifically on market mix to enrich them with techniques being used by the marketing department to provide practical techniques and powerful strategies to their retailers and wholesalers in promoting their products, and how to compete in the market to make consumers purchase their products and build brands and loyalty. The researcher recommends that marketers introduce some uniqueness to their product. Intense promotion through various forms of advertising may be used to reach a large number of customers. The Department of Trade and Industry (DTI) and the Food and Drug Administration (FDA) must fully monitor the operation of the cosmetic industry to ensure the provision of safe and quality cosmetic products. The study's results must be presented to cosmetic companies to provide them with the information they need for future planning and marketing strategies. To arrive at a more effective and efficient marketing strategy, which is the ultimate goal of this study, it is suggested that future researchers focus on other factors, specifically various promotional approaches, to identify which is best.

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Determinants of hiring contract of service workers in the LGU of San Jose, Occidental Mindoro

Galam, Lie Catherine C. ✉
Divine Word College of San Jose, Philippines (lie.catherine.galam@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

This study examined the key determinants influencing the hiring of 240 randomly selected Contract of Service (COS) workers in the Local Government Unit (LGU) of San Jose, Occidental Mindoro. Using an exploratory-sequential design, the qualitative phase was conducted through interviews to identify the determinants and qualifications of hiring COS. In contrast, the quantitative phase was conducted through a validated researcher-made questionnaire. The data were analyzed using thematic analysis and structural equation modeling in WarpPLS version 7.0. Findings revealed that the qualifications required for COS workers focus on three significant areas: educational attainment, technical skills, and work ethics, reflecting a balance of foundational knowledge, job competency, and professional behavior. Leadership and Management Skills are identified as the primary determinants of the need for COS workers, indicating that, beyond qualifications, their ability to lead and manage tasks effectively is crucial to workplace productivity. In addition, through Structural Equation Modelling, work ethics had the most significant influence on both leadership and management skills. In contrast, technical skills had a smaller yet significant effect on management skills. However, educational attainment and worker classification showed no significant influence. A set of targeted training and development programs was recommended to strengthen the competencies of COS workers, with a focus on ethics, leadership, management, and technical capabilities. The research offers valuable insights for LGU administrators to refine recruitment strategies and align them with organizational goals. The study encouraged future researchers to explore other institutional factors and compare COS hiring practices across different LGUs for a broader understanding.

Keywords: contract of service, work ethics, hiring determinants, leadership skills, Local Government Unit

Determinants of hiring contract of service workers in the LGU of San Jose, Occidental Mindoro

1. Introduction

The Civil Service Commission defines a Contract of Service (COS) as the engagement of an individual, private firm, non-governmental organization, or international entity to carry out a specific task or project that requires specialized or technical expertise and is to be completed within a defined period of not more than one (1) year. The engaged party is responsible for delivering the work independently, with minimal supervision from the contracting agency. In the Joint Circular Memorandum no. 2 series of 2020 issued by the Commission on Audit and Department of Budget and Management, it was stated that government agencies may contract the services of other government offices, private firms, NGOs, or individuals to perform tasks related to or supportive of their functions and day-to-day operations, regardless of whether such services are needed full-time or part-time (COA - DBM, 2020).

Under Section 77 of the Local Government Code of 1991, the local chief executive may hire emergency or casual employees authorized by the concerned sanggunian, without approval or attestation from the Civil Service Commission. Based on the Inventory of Government Human Resource (IGHR) report, a total of 939,771 government workers were on contracts of service or job orders as of June 30, 2024 (CSC, 2024). Out of the total, 679,427 government workers are employed by local government units. Region IV, however, contributes a total of 113,615 contracts of service, or job orders. The increasing number of contract service workers raised concerns among Philippine lawmakers in early 2022, who stated that government contractualization has worsened over the years. In its discussion on ending 'endo' at a private firm (2018), the Senate also stated that ending contractualization in the private sector will not be feasible if contractualization is also practiced in the government. However, in recognition of those in contract of service for 10 years and above, the Civil Service Commission extends eligibility for job orders and contract of service by issuing the Career Service Eligibility – Preference Rating (CSE-PR). This aims to strengthen the skills and capabilities of COS and JO workers to pass the Civil Service Exam and qualify for permanent positions (CSC, 2024). Recently, President Marcos extended the employment contract of service from December 31, 2024, to December 31, 2025, and instructed the development of the skills and capabilities of COS and JO workers by reeducating and training them and supporting them in passing the civil service examination.

On the other hand, the recruitment process in the public sector remains standard: receiving applications from the closing date through screening and ranking candidates, inviting them to interviews, and then extending a job offer (Mendelsohn, 2024). The initial screening is very cut-and-dried, as the minimum qualifications are assessed at this stage. However, qualifications for open positions typically apply to permanent roles. Qualifications for hiring contract-of-service workers remain undefined and not standardized. Moreover, political influence significantly affects recruitment and selection in the public sector. As noted by Fathmath et al. (2022), some leaders use their authority to appoint relatives and close friends. These issues contribute to the broader challenges surrounding contractualization in government service. Although previous studies have examined the extent of contractualization and the conditions faced by COS workers (Pamis & Edralin, 2020), limited research has focused on the actual qualifications and key determinants of COS employment in the local government sector. There remains a significant gap in understanding how local hiring decisions are made, what criteria are prioritized, and how these practices affect the quality, efficiency, and fairness of public service delivery. This study aims to fill that gap by understanding the qualifications and key determinants in hiring COS workers in the local government of San Jose, Occidental Mindoro.

Statement of the Problem - This study aimed to identify the determinants of hiring contract service workers in LGU San Jose, Occidental Mindoro. The researcher sought to answer the following questions: (1) What are the

needed qualifications in the hiring contract of service workers in the LGU of San Jose, Occidental Mindoro? (2) What are the determinants of the necessity of contract of service workers in the workplace? (3) What is the status of qualifications of the contract of service workers in terms of educational attainment, technical skills, and work ethics? (4) What are the classifications of contract of service workers in LGU San Jose, Occidental Mindoro? (5) What is the extent of the determinants of hiring contract of service workers in terms of leadership skills and management skills? (6) Are the determinants of contract of service workers significantly affected by their qualifications and classifications? (7) What training and development programs may be proposed to help contract of service workers improve their skills, knowledge, and abilities?

Significance of the Study - The study's results will benefit contract service workers in the public sector. This study may help them assess their knowledge and capabilities to maximize their potential in their duties and responsibilities, thereby supporting the execution of their agencies' functions. For department heads and supervisors, this study may help them assign functions to contract-of-service workers effectively. For local government units, this study will assist the Human Resource Department in determining the need to hire contract-of-service workers to perform local government functions. It will help them assess the required qualifications and the functions to be assigned to contract service workers. For future researchers, the insights presented in this study may serve as a reference or to validate related findings. Additionally, this study can serve as a supplementary source, providing background and an overview of the importance of hiring contract service workers to perform functions within local government units.

Scope and Delimitation of the Study - The purpose of this research was to identify the key factors that engage contract-of-service workers in the workplace. This study aimed to identify the determinants of hiring contract service workers in the LGU of San Jose, Occidental Mindoro. It focused on the qualifications considered in hiring COS, such as Educational Attainment, Technical Skills, and Work Ethics, as well as the determinants of hiring COS, namely Leadership and Management Skills. The respondents in this study were limited to employees of the LGU San Jose. During the qualitative phase, participants included department heads and contractual and job-order workers; in the quantitative phase, only contractual and job-order workers were involved. It was conducted from January to July 2025, with data collection between March and June. A limitation of the study was the refusal of some prospective respondents to participate. However, the researcher made every effort to ensure a reasonable scope was covered to enhance the study.

2. Methodology

Research Design - The study used a mixed sequential exploratory design. This is a combination of qualitative and quantitative research aimed at achieving a deeper understanding and higher-level evidence of results (Kurtaliqi et al., 2024). The researcher conducted the qualitative phase, followed by quantitative data collection and analysis. A qualitative method was used, using an interview schedule to identify the determinants of hiring contract service workers in the workplace. The quantitative method, however, was implemented through data collected from the administered survey instruments. This method enabled the researcher to identify the relationships among the qualifications, classifications, and determinants of hiring COS in the LGU of San Jose, Occidental Mindoro.

Respondents of the Study - As of April 2025, the respondents of the study were contract service workers from the Local Government Unit of San Jose, Occidental Mindoro. For the qualitative method, the respondents were 15 permanent employees and contract-of-service workers of the LGU of San Jose who were not included in the final administration of this study. For the quantitative method, the respondents were the contract service workers of the LGU of San Jose. As of April 30, 2025, the agency has 634 contract-of-service workers. Across the 17 participating departments, the Sangguniang Bayan Office had the most significant number of COS workers, with 104 and 39 respondents, respectively. This was followed by the Municipal Environment and Natural Resource Office (MENRO) with 126 personnel, from which 48 respondents were drawn. The Public Market Office and the Municipal Agriculture Office also had notably large job order populations, contributing 17 and 26 respondents, respectively. On the other hand, departments with moderate COS workforce sizes included the Municipal Health

Office (17 respondents out of 44), the Municipal Social Welfare and Development Office (14 out of 38), and the Municipal Engineering Office (22 out of 58). Meanwhile, smaller departments such as the Municipal Treasurer's Office, Municipal Budget Office, and Municipal Human Resource Management Office each had relatively few COS workers, reflected in their correspondingly smaller respondent counts. In several departments, such as the Municipal Accounting Office, Municipal Environment and Natural Resource Office, and Public Market Office, only Job Order workers were present, with no contractual personnel. However, the Municipal Planning and Development Office had a predominantly contractual workforce, with 22 of 23 workers in this category.

From the total population, the Mayor's Office was excluded because it was included in the instrument's reliability testing. The Administrator's Office was also excluded from the list because there was no contract of service for workers currently employed in that office at the time the study was conducted. Out of 634 contract of service workers, the sample size was 240, which was determined through Raosoft's calculation with a 5% margin of error and a 95% confidence level.

Research Instrument - The first instrument used in this study was the interview guide for the qualitative phase, administered to 15 permanent employees and contract service workers of the LGU of San Jose. For the quantitative phase, the main instrument was a researcher-made questionnaire, specifically designed to correspond with the interview results and the relevant literature of this study. The questionnaire items were structured as follows: twenty-one items measured the qualifications of COS workers; one item measured the classification of contract-of-service workers; and twenty items assessed the determinants of hiring COS workers. Respondents rated each item on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

The validity of the questionnaire was ensured through the help of experts from the Graduate School professors of Divine Word College of San Jose and Occidental Mindoro State College. The validators' suggestions and comments on the instructions, question clarity, and relevance were incorporated into the final instrument. Revisions were made to improve clarity and ensure that each question was directly aligned with the construct being measured before proceeding to the reliability testing phase and the final field administration of the instrument. Thirty respondents (30) from the Mayor's Office were asked to answer the 42 items of the researcher-made questionnaire. These respondents were not included in the final administration of the instrument. The instrument's inter-item reliability was assessed using the split-half method due to its one-time administration. The Spearman-Brown coefficient was computed using equal-length items to assess internal consistency. Reliability coefficients ranging from 0.896 to 0.961 indicate generally very high reliability for the questionnaire items; therefore, the questionnaire was recommended for administration to the final group of respondents.

Table 1
Reliability Analysis Results

Item	Reliability Coefficients*	Number of Items	Interpretation
Qualifications			
I. Technical Skills	0.951	10	Very High Reliability
II. Work Ethics	0.896	10	High Reliability
Determinants of Hiring			
I. Leadership Skills	0.926	10	Very High Reliability
II. Management Skills	0.961	10	Very High Reliability

*Based on Spearman-Brown coefficients of equal length

Data Gathering Procedure - The researcher obtained permission from the LGU of San Jose to conduct the study to identify the determinants of the hiring of contract of service in the local government unit of San Jose. A request letter was submitted and subsequently approved by the Human Resource Department Head, and she endorsed her good character to the department heads. The data-gathering process was carried out in two phases from March to June 2025. Initially, the researcher interviewed a random sample of 15 LGU workers who were not included in the final administration of the study, including permanent employees and contract-of-service workers. The results were then analyzed and used to develop the thematic map of the study. Following the initial phase, the researcher distributed and collected the validated questionnaires on the scheduled administration date. The researcher personally distributed and retrieved the questionnaires to maintain the confidentiality of responses. The

collected data were organized, coded, and analyzed using appropriate statistical methods to address the study's problem statements.

Statistical Treatment of the Data - For the qualitative method, thematic analysis was used to identify the determinants of hiring contract-of-service workers. To formulate the study's final thematic map, the gathered data were transcribed and familiarized, coded to identify initial themes, and refined and developed into the final set of themes. For the quantitative research, structural equation modeling was conducted using WarpPLS 7.0. Warp Partial Least Squares Structural Equation Modeling (PLS-SEM) software was used to analyze the collected data.

Ethical Considerations - The researcher obtained permission from the Local Government Unit of San Jose to collect data and explicitly stated the study objectives before administering the questionnaires. All respondents in both the quantitative and qualitative phases had the option to participate or not in the study. The confidentiality of respondents' data was maintained throughout the collection, analysis, and reporting of findings. It was guaranteed that all data and results collected were used exclusively for the study. This study is original and is not copied from any existing study. The researcher used the American Psychological Association (APA) style to give credit to the other research studies used as references. Proper citations for the previous studies and references were used to avoid plagiarism and give credit and acknowledgement to the proper authors.

3. Results and Discussions

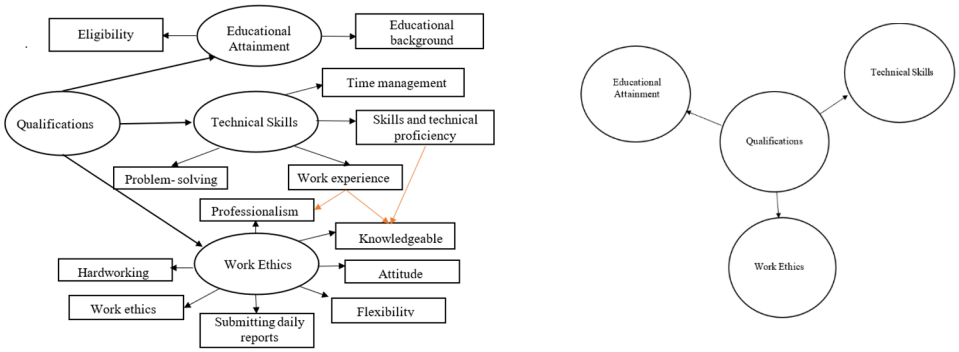

Figure 1. Developed and Final Thematic Map for Qualifications of Hiring COS

The participant responses regarding the qualifications of a Contract of Service (COS) worker were grouped into three dimensions: Educational Attainment, Technical Skills, and Work Ethics. These dimensions were developed by clustering 48 individual codes reflecting respondents' expectations and perceptions. Educational Attainment has two indicators, namely, eligibility and educational background. This includes 11 codes and reflects the foundational qualifications expected of COS workers. Codes such as Good educational background, Bachelor's degree, College graduate, and Civil Service Passer were frequently mentioned. These indicate that respondents view formal education as a non-negotiable requirement. Including civil service eligibility further reinforces the expectation that COS workers meet government standards of competence and credibility.

Language proficiency in both English and Filipino also underscores the importance of effective communication rooted in educational experience. The technical skills, however, have four (4) indicators, namely, time management, skills and technical proficiency, work experience, and problem-solving. This is the largest category, having 19 codes, highlighting the emphasis on job-related competencies. The codes, which include proficiency in MS applications (Excel and Word), problem-solving, technical capabilities, work experience, and Clerical duties, underscore the importance of both hard and soft technical skills. These skills ensure that a COS worker is not only technologically literate but also adaptable and capable of managing a range of operational tasks. The recurrence of the work experience code further suggests that prior exposure to relevant roles is highly valued. In terms of work ethic, seven (7) indicators were identified: professionalism, knowledge, attitude, flexibility, daily

report submission, work ethic, and hard work. Respondents considered these qualities as important as technical proficiency, as they ensured COS workers maintained a responsible and respectful presence in the workplace. The repetition of attitude-related terms across responses indicates that interpersonal behavior and personal integrity are considered crucial to fostering a professional and positive workplace culture. After a thorough understanding of the themes and sub-themes, the researcher identifies three final themes: Educational Attainment, Technical Skills, and Work Ethic. These findings support previous studies that, during the hiring process, most hiring practitioners considered candidates' skills and characteristics (Huber, 2018), gender (Protsch, 2021), educational attainment (Al Hatmi, 2022), and technical skills (Ibrayeva, 2025).

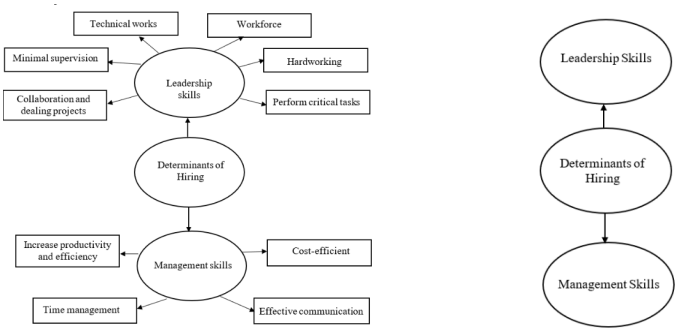

Figure 2. Developed and Final Thematic Map for Determinants of Hiring COS

Two final themes were derived from clustering 17 individual codes, reflecting respondents' expectations and perceptions. These themes are: Leadership Skills and Management Skills. The Leadership Skills were composed of six (6) indicators: informal supervision, technical work, Workforce, performing critical tasks, Hardworking, and Collaboration and project management. These indicators highlight the importance of being dependable, self-directed, and team-oriented—qualities that reflect informal leadership and initiative in the workplace. Management Skills, however, consisted of four (4) indicators: cost efficiency, Effective communication, Time Management, and increased productivity and efficiency. The results suggest that hiring decisions are not based solely on formal qualifications or experience but are primarily influenced by a candidate's capacity to lead and manage effectively. Developing the final themes of Leadership Skills and Management Skills, as shown in Figure 7, helped the researcher identify the key determinants of hiring COS. The final themes on the determinants of hiring COS suggest that leadership and management skills are essential to organizational performance and effectiveness. Leadership skills primarily focus on people, while management focuses on processes and resources (Azad et al., 2017). This distinction allows organizations to maximize efficiency by recognizing the specific contributions of each role

Table 2
Status of Respondents' Qualifications in Terms of Educational Attainment (n=240)

Educational Attainment	Frequency	Percent
With Master's degree units	3	1.3
Bachelor's Degree	174	72.5
College Undergraduate	33	13.8
Technical/Vocational	10	4.2
High School Graduate	20	8.3
Total	240	100.0

Table 2 presents the status of respondents' qualifications by educational attainment. A majority of the respondents, 174 individuals or 72.5%, hold a bachelor's degree. This is followed by 33 respondents (or 13.8%) who are college undergraduates, and 20 individuals (8.3%) are high school graduates. Additionally, 10 respondents, or 4.2%, have completed technical or vocational education. Only three (3) individuals, or 1.3%, have pursued postgraduate studies and earned units toward a master's degree. The data show that most contract service workers and job order workers have completed some higher education, with many holding a bachelor's degree. This result aligns with Al Hatmi (2022), who found that educational level influences a company's hiring decisions, as it is a

strong indicator of job applicants' trainability. It is essential for a country's growth and progress (Swamy, 2023). Kulkarni et al. (2015) further emphasized that hiring managers are willing to interview and hire candidates whose education or experience exceeds a job's requirements. However, a study by Bills (1988), as cited in Tholen (2020), emphasized that education credentials are only one of many factors influencing recruitment and selection, not the dominant factor.

Table 3
Mean Status of Respondents' Qualifications in Terms of Technical Skills

Indicators	Mean	Interpretation
1. I am proficient in MS Applications, e.g., Word, Excel, etc.	3.82	High
2. I can create effective presentations using tools like PowerPoint.	3.76	High
3. I am capable of using cloud storage services (e.g., Google Drive, Dropbox)	3.63	High
4. I am familiar with using tools such as printers and scanners.	4.07	High
5. I can collaborate with teams using technical tools.	3.71	High
6. I know how to manage digital files properly.	3.83	High
7. I can troubleshoot technical issues effectively.	3.50	High
8. I have the ability to generate structured reports.	3.58	High
9. I can quickly adapt to new technologies when required.	3.89	High
10. I regularly expand my knowledge in technical areas relevant to my career.	3.95	High
Overall Mean	3.78	High

Table 3 presents self-assessed ability across technical skills, measured by weighted mean scores. The results for all ten indicators fall within the high category, indicating strong overall technical competency among the respondents. The highest-rated skills include familiarity with tools such as printers and scanners (4.07), continuous learning in technical areas relevant to their careers (3.95), and adaptability to new technologies (3.89). These suggest that respondents are eager to gain new technical knowledge to adapt to emerging technologies for professional growth and effectiveness in the workplace. Other competencies, such as digital file management (3.83), proficiency with Microsoft applications (3.82), creating effective presentations (3.76), and collaborating with teams using technical tools (3.71), were also rated highly, indicating a strong foundation in commonly used digital tools. The lowest, yet still high, ratings were for troubleshooting technical issues (3.50), generating structured reports (3.58), and cloud storage service usage capability (3.63), indicating these may be slightly less developed areas within the group. With an overall mean of 3.78, the data suggest that respondents possess competent technical skills and are capable of supporting their professional tasks and responsibilities. The result supports Ibrayeva's (2025) findings, emphasizing the importance of technical skills as a basis for employers' hiring qualification requirements. Technological literacy is also among the top qualifications employers identified in the Future of Jobs Report (2025). Possessing strong technical know-how not only makes a candidate more competitive and appealing (Alexandria, 2019) but also contributes to organizational growth and innovation, as technical competencies are increasingly recognized as key drivers of success (Lartey, 2024). As the need for technical know-how grew, education adapted—unions and trade schools promoted vocational training, and society increasingly recognized the importance of technical education (Saari et al., 2021).

Table 4
Mean Status of Respondents' Qualifications in Terms of Work Ethics

Indicators	Mean	Interpretation
1. I treat all individuals without bias.	4.23	Very High
2. I treat colleagues with respect regardless of their position.	4.27	Very High
3. I listen to others' ideas even if they differ from mine.	4.22	Very High
4. I demonstrate punctuality.	4.02	High
5. I remain calm in stressful situations.	4.12	High
6. I am honest about my mistakes.	4.32	Very High
7. I maintain confidentiality when required by my role.	4.26	Very High
8. I take initiative without waiting to be told what to do.	4.05	High
9. I take full responsibility for the outcomes of my work.	4.27	Very High
10. I commit to maintaining high standards of professionalism in all interactions.	4.20	Very High
Overall Mean	4.20	Very High

Contract service workers' work ethic is generally perceived as very high, with a composite mean of 4.20, as shown in Table 4. The highest-rated indicator is honesty about mistakes, with a weighted mean of 4.32. This is

followed closely by respecting colleagues regardless of position and taking full responsibility for work outcomes, with weighted means of 4.27 and 4.26, respectively. These results reflect a high level of integrity, accountability, and respect for others—traits essential to fostering a culture of trust and professionalism in the workplace. Other indicators that received very high ratings, with weighted means ranging from 4.20 to 4.23, include treating all individuals without bias, listening to diverse opinions, and maintaining high standards of professionalism, reinforcing the idea that respondents uphold inclusivity and strong interpersonal ethics in their professional interactions. Although slightly lower, indicators such as punctuality, initiative, and stress management were still rated high, with means ranging from 4.02 to 4.12. These are still considered strong but slightly less prominent work ethic attributes. The findings indicate that respondents place great importance on workplace ethics. The likelihood of employment and access to better job opportunities increases when individuals possess a strong work ethic (Herrity, 2023). As noted by Miñon (2017), the educators in the study identified it as the guiding value system that influences their work and lives. The results are consistent with Simonsen et al. (2015), who found that general managers and human resource professionals ranked a candidate's ability to perform the job—classified as a characteristic of work ethic—as the most important factor in their hiring decisions. Similarly, Huber (2018) emphasized that strong work ethics, coupled with a positive attitude, stand among the most essential soft skills and are regarded as key determinants of employability

Table 5
Status of Respondents' Classification of Contract of Service Workers

Classification	Frequency	Percent
Contractual	82	34.2
Job Order	158	65.8
Total	240	100.0

The majority of respondents were classified as Job Order workers, accounting for 158 individuals (or 65.80 percent of the total), while 82 individuals (or 32.20 percent) were classified as Job Order workers. They were classified as Contractual. The results in Table 5 indicate that the LGU of San Jose chose a more cost-efficient JO arrangement, under which compensation is based on daily government wage rates plus a premium of up to 20%, compared with contractual workers, whose pay is aligned with prevailing market rates (COA - DBM, 2020). Both contractual and job order workers do not have an existing employer-employee relationship; thus, they do not receive the benefits granted to regular employees (Cristobal & Resurreccion, 2014, as cited in Pamis & Edralin, 2020; Respicio & Co., 2025).

Table 6
Mean Extent of Determinants of Hiring Contract of Service Workers in Terms of Leadership Skills and Management Skills

Indicators (Leadership Skills)	Mean	Interpretation
1. My colleague feels comfortable expressing their ideas to me.	4.02	High
2. I encourage input from others before doing tasks.	4.06	High
3. I handle criticisms without taking them personally.	3.98	High
4. I promote a positive working environment.	4.26	Very High
5. I manage interpersonal conflict calmly.	4.02	High
6. I am aware of how my emotions affect my behavior.	4.12	High
7. I embrace new ideas.	4.29	Very High
8. I analyze problems thoroughly before taking action.	4.10	High
9. I am capable of organizing tasks in the absence of direct supervision.	4.08	High
10. I promote teamwork over individual competition.	4.18	High
Overall Mean	4.11	High
Indicators (Management Skills)		
1. I allocate sufficient time to each task according to its priority.	4.05	High
2. I have the ability to manage time efficiently to meet task deadlines.	4.06	High
3. I minimize time spent on non-essential activities.	3.95	High
4. I ensure resources are used efficiently.	4.05	High
5. I monitor the progress of my work from time to time.	4.11	High
6. I can do basic task planning within the organization.	3.96	High
7. I support a culture of continuous learning.	4.18	High
8. I support the team in adapting to new processes.	4.20	Very High

9. I respond proactively to unexpected challenges.	4.02	High
10. I can coordinate issues in the workflow with supervisors promptly.	4.06	High
Overall Mean	4.06	High

Leadership skills focus on directing, aligning people, motivating, and inspiring (Thorpe, 2016). It is one of the organizational regulators (Halim et al., 2023). The results indicate that leadership skills are considered important and are generally assessed at a high level when hiring contract-of-service workers, with an overall weighted mean of 4.11. Consistent with the findings of John Richey & Rhia (2016), employers across various institutions recognize problem-solving and decision-making as key indicators of a competitive candidate. These competencies are integral components of effective leadership. Among all indicators, embracing new ideas and promoting a positive working environment were rated very high, with weighted means of 4.29 and 4.26, respectively. These findings highlight the premium placed on adaptability, innovation, and a positive workplace culture. This finding supports the studies of Amoah-Mensah & Darkwa (2020) and Amegayibor (2021) that leadership styles significantly affect the employee's performance. Moreover, although still rated high, the lowest-rated indicators were managing interpersonal conflicts calmly and making colleagues feel comfortable expressing their ideas, both with a weighted mean of 4.02. Overall, the results support that leadership competencies play a significant role in shaping hiring decisions for contract service workers, with particular emphasis on adaptability, collaboration, and a positive work environment.

The results in Table 6 indicate that management skills are given considerable weight in hiring Contract of Service (COS) workers, as reflected in an overall weighted mean of 4.06. Among the ten indicators, supporting the team in adapting to new processes was rated very high, with a weighted mean of 4.20. This suggests strong adaptability and support for change, which are critical skills in dynamic workplaces. Respondents also expressed high regard for a supportive culture of continuous learning, timely monitoring of work progress, efficient coordination of workflow issues with supervisors, and effective time management to meet task deadlines, with weighted means ranging from 4.06 to 4.18. The indicators that received the lowest ratings—though still within the High category—were basic task planning within the organization (3.96) and minimizing time spent on non-essential activities (3.95), suggesting areas for further improvement. The remaining indicators had weighted average means between 4.05 and 4.02, including allocating sufficient time to each task according to its priority, using resources efficiently, and responding proactively to unexpected challenges. Managers are frequently tasked with functions of planning and budgeting, organizing and staffing, problem-solving, and controlling (Thorpe, 2016). A study by Klus & Muller (2020) found that effective management also requires a combination of technical, human, and conceptual skills.

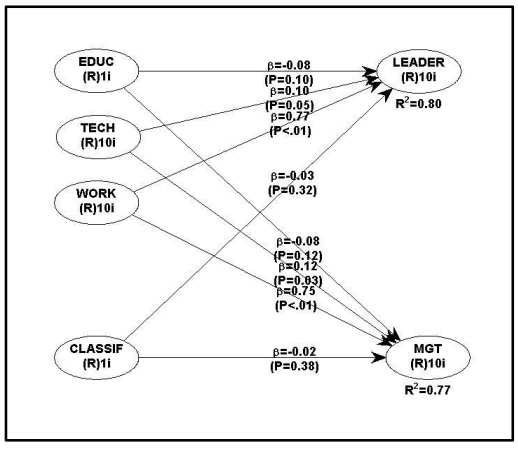

Figure 3. The Structural Model

The structural model of the hypothesized relationship between the two sets of exogenous variables and the endogenous variable, determinants of contract of service workers, is disclosed in Figure 3. The Structural Equation

Modeling (SEM) was conducted using WarpPLS version 7.0, with hypothesis testing set at the 0.05 significance level ($p < 0.05$). The status of qualifications of contract of service workers, considering Educational Attainment (EDUC), Technical Skills (TECH), and Work Ethics (WORK), is hypothesized to significantly affect the determinants of contract of service workers, specifically Leadership Skills (LEADER) and Management Skills (MGT). There are 10-item indicators for each of these determinant factors, as well as for technical skills and work ethic. The computed Beta coefficients (β) are reported in the model, with corresponding p-values shown to 2 decimal places. These coefficients indicate the strength of the association, as supported by the p-values, confirming its significance. The combined effect of service workers' qualifications and classifications on the mean extent of determinants of hiring for contract service workers shows high R2 values of 0.80 for leadership skills and 0.77 for management skills. These suggest that service workers' qualifications and classifications account for 80% and 77%, respectively. Thus, the remaining percentage is attributable to other variables not included in the study.

Table 7

Path Coefficients and p-values for Ho

Path	Beta (β) Coefficient	*p*-value*	Interpretation
Ho_1: A. Qualifications→Determinants of Hiring			
EDUC→LEADER	-0.083	0.097	Not Significant
TECH→LEADER	0.102	0.054	Not Significant
WORK→LEADER	0.775	<0.001	Highly Significant
EDUC→MGT	-0.076	0.116	Not Significant
TECH→MGT	0.122	0.027	Significant
WORK→MGT	0.752	<0.001	Highly Significant
B. Classifications→Determinants of Hiring			
CLASSIF→LEADER	-0.031	0.316	Not Significant
CLASSIF→MGT	-0.019	0.384	Not Significant

* Significant at p<0.05

Eight path coefficients, ranging from -0.031 to 0.775, are reported in Table 7, indicating the strength or weakness of the relationships between qualifications and classification and the determinants of hiring contract service workers. Work Ethic shows a strong positive association with Leadership Skills (β=0.775, p<0.001) and Management Skills (β=0.752, p<0.001). Considering service workers' qualifications in terms of their Technical Skills, the beta value indicates a low but significant association with Management Skills (beta = 0.122, p = 0.027). It is also clearly stated that the service workers' Educational Attainment, as one of the qualifications, does not constitute a determining factor in hiring contract service workers. This result suggests that while Educational Attainment is a significant factor in hiring, it is not a reliable indicator of an individual's ability to demonstrate Leadership or Management Skills in the workplace. This result was supported by Tholen (2020), who found that employees can be effective professionals and still acquire skills regardless of their educational attainment. Their findings suggest that while formal education provides foundational knowledge and theoretical understanding, it does not necessarily translate into improved workplace performance.

The significant connection between Work Ethics and Leadership and Management Skills, however, was supported by Miñon's (2017) study, which found that educators agreed that Work Ethics serves as a guiding value system that influences their work and lives. These findings suggest that ethical traits—such as responsibility, discipline, and integrity—promote a strong sense of accountability and initiative, both essential to effective team leadership and task management. Employees who consistently demonstrate ethical behavior are more likely to earn colleagues' trust, make sound decisions, and contribute positively to a healthy work environment. From an organizational perspective, cultivating a workforce with a strong work ethic enhances operational efficiency, promotes a culture of excellence, and reduces absenteeism, misconduct, and turnover. Thus, integrating work ethic as a key criterion in talent acquisition not only increases the likelihood of employment and better job opportunities (Huber, 2018) but also supports both individual and organizational growth.

The results above support rejecting the hypothesis that the determinants of hiring contract of service workers are not significantly affected by their qualifications and accepting the hypothesis that the determinants of hiring contract of service workers are not significantly affected by their classifications. The findings indicate a strong,

significant effect of work ethic and technical know-how on service workers' leadership and management skills, which helps explain how organizations make hiring decisions based on the skills, knowledge, and competencies prospective workers bring to the workplace (Becker, 1964, as cited in Weiss, 2015). Their Technical Skills are also important, particularly in how they manage their work. Meanwhile, the classification of service workers, whether contractual or on a job order status, does not affect how they apply their Leadership and Management Skills in the work environment.

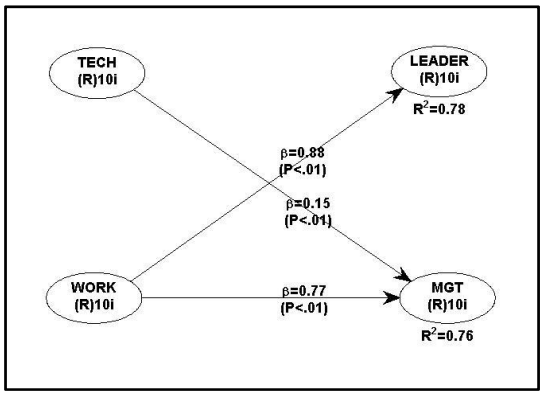

Figure 4. The Emerging Model

Given that five (5) connections showed no significant links between the variables, as revealed in the previous structural model, a new model emerges and is shown in Figure 4. This new model discloses the standardized estimates of the path (β), effect sizes (R^2), and p-values. A notable increase in the beta coefficients is evident: Work Ethic was associated with Leadership and Management Skills, and Technical Skills were associated with Management Skills. The new model also shows that Work Ethics accounts for a large share of the variance in both Leadership (R^2=0.78 or 78%) and Management skills (R^2=0.76 or 76%).

Table 8
Standardized Estimates of the Path in the Emerging Model

Hypothesis	Standardized Estimates (β)	Standard Error	*p*-value*	Effect Coefficient**	Effect Size
Ho_1: Qualifications→Determinants of Hiring					
WORK→LEADER	0.885	0.055	<0.001	0.783	Large
TECH→MGT	0.152	0.063	0.008	0.097	Small
WORK→MGT	0.769	0.056	<0.001	0.665	Large

*Significant at p<0.05
** Effect size coefficient: 0.02 – small, 0.15 – medium, 0.30 – large

The three standardized estimates of the path, Qualifications →Determinants of Hiring, are disclosed in the emerging model table, highlighting as well the effect sizes, standard error, a nd p-values. It can be noted that the path, Classifications→Determinants of Hiring, is not included anymore due to its negligible coefficients generated by the prior structural model. This result supports the null hypothesis that service workers' educational qualifications have no significant effect on the determinants of service worker hiring. Work Ethic had a strong effect on the determinants of hiring service workers, particularly Leadership Skills (0.783) and Management Skills (0.665). Management Skills show a small but significant influence from technical skills, with an effect coefficient of 0.097. These values favor the rejection of the null hypothesis and therefore ascertain that Work Ethics is a highly contributing factor to the determinants of hiring workers. This is confirmed by p-values < 0.001 and < 0.008, indicating strong significance for the relationship between the aforementioned variables. Moreover, standard errors of 0.055 to 0.063 are negligible, indicating the samples' accuracy relative to the conclusions drawn about the overall service population. The findings suggest that work ethic plays a significant role in hiring service workers, particularly in relation to Leadership and Management Skills. The strong effect coefficient of 0.783 between Work Ethics and Leadership Skills implies that individuals who demonstrate high ethical standards are more likely to exhibit leadership traits such as initiative, responsibility, and influence, which are highly valued by employers even in non-supervisory roles. Technical Skills also play a vital role in enhancing leadership and Management Skills.

These results were supported by Temelkova (2018), who states that, to achieve technological advancement, leaders and managers should also enhance their knowledge, capabilities, and skills. The Leadership and Management Skills were also significantly affected by Technical Skills (Klus & Muller, 2020) and Work Ethics (Sakr et al., 2022).

Table 9

Proposed Training and Development Programs for Contract of Service Workers

Focus Area	Program Title	Objectives	Suggested Content	Mode of Delivery	Budget	Success Indicator
Technical Skills	Digital Tools in the Digital Age	Improve MS Office, cloud services, file management, and reporting skills	MS Word, Excel, PowerPoint, Google Drive, file organization, and report templates	Hands-on training	P25,000	85% of participants have improved in the usage of digital tools
	Basic Troubleshooting & Tech Adaptability Bootcamp	Enhance problem-solving and adaptability to new technologies	Troubleshooting basics, software updates, and adaptive learning platforms	Simulation & webinars	P25,000	80% of participants can independently troubleshoot common technical issues
Work Ethics	Professionalism & Integrity in the Workplace Seminar	Promote ethical behavior, accountability, and respect in the workplace	Honesty, punctuality, confidentiality, responsibility, bias awareness	Workshop	P30,000	90% of participants have increased ethical awareness
	The Key to Effective Communication and Inclusivity Seminar	Enhance respectful dialogue and inclusive practices	Active listening, respectful discourse, handling conflict, and teamwork	Interactive seminar	P25,000	80% apply communication strategies in role-play exercises
	Emotional Intelligence at Work	Help manage emotions, stay calm under stress, and build better relationships.	Self-awareness, empathy, stress management, and interpersonal skills	Experiential learning	P20,000	80% report improved emotional self-management via the feedback form
Leadership Skills	Leadership Development	Build autonomy, initiative, and team collaboration skills	Team dynamics, motivation, conflict resolution, situational leadership	Blended learning	P30,000	85% demonstrate leadership traits in group tasks or simulations
	Innovation and Idea Generation Training	Enhance innovation and critical problem-solving skills	Idea pitching, design thinking, and feedback systems	Small group workshops	P30,000	70% of participants proposed new ideas and solutions
Focus Area	Program Title	Objectives	Suggested Content	Mode of Delivery	Budget	Success Indicator
Management Skills	The Art of Time Management	Enhance efficiency and task prioritization skills	SMART goals, scheduling tools, prioritization frameworks	Microlearning series	P5,000	85% were able to identify activities necessary in a time management plan
	Strategic Utilization of Resources	Promote cost-efficient and effective use of resources	Lean practices, resource planning, and minimizing waste	Case-based learning	P5,000	80% of the resources were used, and there was at least a 50% reduction in waste.
	Continuous Learning & Adaptability Program	Encourage lifelong learning and openness to new processes	Learning management systems (LMS), training feedback loops, and peer learning	Mentorship + eLearning	P15,000	80% register or engage in follow-up learning platforms
Educational Growth	Scholarship & Career Pathways Orientation	Inform about further education and upskilling opportunities	Scholarship options, career mapping, and professional certifications	Info session + counseling	P15,000	60% of participants pursue at least one education or training opportunity

Training and Development Programs play a crucial role in enabling organizations to fully maximize the potential of not only high-performing employees but also those who exhibit strong commitment and readiness to assume greater responsibilities (Rodriguez & Walter, 2017). Their study further highlights that such programs serve as powerful motivators, enhancing both individual growth and collective advancement toward short-term objectives and long-term strategic goals. In line with this, the proposed Training and Development Programs are designed to holistically improve the competencies of Contract of Service (COS) workers by focusing on five key areas: Technical Skills, Work Ethics, Leadership Skills, Management Skills, and Educational Growth. Programs such as The Digital Tools in the Digital Age and Basic Troubleshooting & Tech Adaptability Bootcamp are recommended under Technical Skills. These programs aim to enhance workers' proficiency in software applications, cloud platforms, and basic troubleshooting through hands-on and simulation-based learning. To promote ethical behavior, accountability, and interpersonal sensitivity, programs such as the Professionalism & Integrity in the Workplace Seminar, the Key to Effective Communication and Inclusivity Seminar, and Emotional Intelligence at Work are proposed, using workshops and experiential learning to cultivate a respectful and inclusive workplace culture. For leadership skills, programs should include Leadership Development and Innovation and Idea Generation Training, which aim to build initiative, collaboration, and creative problem-solving through blended and small-group learning formats. Three programs are proposed to address Management Skills, namely: The Art of Time Management, Strategic Utilization of Resources, and the Continuous Learning & Adaptability Program. These programs aim to equip workers with tools for efficiency, prioritization, and resource optimization, using microlearning and case-based strategies. These programs are important for cultivating the COS's managerial strength (Gutterman, 2023). Lastly, under educational growth, Scholarship & Career Pathways Orientation is suggested to support COS workers in preparing for long-term career advancement by informing them about further education, scholarships, and upskilling opportunities.

4. Conclusions and Recommendations

Based on the summary of findings, the study concludes that the qualifications required for hiring Contract of Service (COS) workers in LGU San Jose, Occidental Mindoro, center on Educational Attainment, Technical Skills, and Work Ethics, showing a balance of knowledge, competency, and professionalism. Leadership and management skills are the primary determinants of the need for COS workers, underscoring the importance of their ability to lead and manage tasks effectively. Most COS workers hold a bachelor's degree, possess strong technical skills, and highly value work ethics, reflecting their competence and professionalism. They also demonstrate strong leadership and management skills, indicating their capability to motivate others, organize work, and solve problems. The LGU employs more Job Order workers than Contractual workers, suggesting a preference for flexible staffing. The study further reveals that Technical Skills and Work Ethics significantly influence leadership and management performance, with Work Ethics being the most impactful, while Educational Attainment shows no effect. Employment classification—whether Contractual or Job Order—does not influence how workers apply leadership and management skills. Overall, the findings underscore the need for ongoing training and development programs to enhance COS workers' skills, knowledge, and abilities.

Based on the findings and conclusions, several recommendations are proposed. The Local Government Unit of San Jose, Occidental Mindoro, may strengthen the technical skills and work ethic of Contract of Service (COS) workers by developing targeted training and seminars and by integrating leadership and management development into its capacity-building programs. To further enhance COS qualifications, the LGU may invest in upskilling and specialization initiatives, offer advanced training and certifications, and recognize workers who consistently demonstrate a strong work ethic. Continuous development opportunities—such as leadership training, mentoring, and project management workshops—may also be provided, along with assigning COS workers to roles that require initiative and coordination. The LGU is likewise encouraged to review its workforce composition and hiring practices to ensure alignment with legal guidelines and service delivery needs. Additionally, competency-based assessments may be prioritized, and targeted training programs focusing on practical skills, ethical standards, and leadership competencies may be implemented for all workers regardless of employment status. For future

researchers, it is recommended to examine further the relationship between qualifications and hiring determinants across agencies and to explore additional factors that may influence hiring, such as project seasonality, funding availability, political dynamics, and varying departmental workloads.

5. References

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The effect of Physics Education Technology (PHET) Interactive simulations on improving the science achievement

Quimoyog, Jezzel Keyt O. ✉
Divine Word College of San Jose, Philippines (jezzelkeyt03@gmail.com)
Torres, Geraldine D.
Divine Word College of San Jose, Philippines (geraldine.torres@deped.gov.ph)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

Science education plays a crucial role in developing learners' critical thinking and problem-solving skills. Yet, the Philippines continues to struggle with low science performance, as reflected in recent PISA results. To address these challenges, digital tools such as Physics Education Technology (PhET) Interactive Simulations have been identified as promising alternatives for supporting inquiry-based learning. This study aimed to determine the effectiveness of PhET Interactive Simulations in improving the science achievement of Grade 8 students, particularly in the topic Particle Nature of Matter. A quasi-experimental non-equivalent pretest–posttest design was utilized with sixty Grade 8 students from Magsaysay National High School. Thirty students comprised the control group taught using a conventional teaching method, while thirty were assigned to the treatment group using PhET interactive simulations. Pre-test and post-test instruments from the DepEd Science 8 module were administered, and data were analyzed using descriptive statistics, paired-samples t-tests, and independent-samples t-tests. Findings revealed that both groups exhibited significant improvement from pre-test to post-test, indicating that learning occurred regardless of instructional approach. Although the PhET group attained a higher mean score, the difference in post-test performance between the groups was not statistically significant. The results suggest that while PhET Interactive Simulations effectively support learning, their impact is comparable to well-delivered conventional teaching. This highlights the tool's value as a supplementary resource rather than a replacement, offering meaningful insights for educators, school administrators, and curriculum developers seeking to enhance technology-supported science instruction. Therefore, the curriculum developers may integrate simulation-based activities within the science curriculum to promote inquiry-based and experiential learning.

Keywords: PhET interactive simulation, science achievement, conventional teaching, quasi-experimental research, Philippine science performance

The effect of Physics Education Technology (PHET) Interactive simulations on improving the science achievement

1. Introduction

To understand the natural world, think critically, and address complex real-life issues, science education is central to preparing learners with the competencies needed. As stated in the study by Pinar et al. (2025), to address global challenges in health, the environment, climate change, and sustainable development, enhancing creativity, innovation, and problem-solving skills is vital. For students, learning science enhances problem-solving abilities and prepares them to participate actively in a rapidly changing, knowledge-driven society. Despite its importance, the Philippines continues to face challenges in science education. According to DepEd (2019), the Philippines scored 357 in science on the 2018 Programme for International Student Assessment (PISA), which was significantly lower than the OECD average score of 489. During the PISA 2022, the Philippines' score slightly dropped to 356, indicating no improvement in science (OECD, 2023). This suggests that the junior high schools in the Philippines are approximately five to six years behind their global peers in terms of science learning. In DepEd's report on the Philippines' low performance in Science learning, several factors affect this issue. One reason is the lack of resources and facilities. According to OECD (2023), Filipino students have the lowest access to science laboratories and practical learning materials among OECD peers. The inadequate resources may limit the student's ability to learn and engage in hands-on and inquiry-based learning that is needed in science learning. Thus, the subject may often be taught in an abstract and lecture-based manner, which makes it difficult for the students to connect the theories to real-world problems.

According to the World Bank (2024), a lack of learning resources may prevent teachers from delivering quality instruction and from improving student engagement. Bernardo et al.'s (2023) study shows that insufficient resources may contribute to inequalities. Thus, students from low-resource backgrounds are less likely to participate in meaningful science activities. One promising intervention is the use of PhET Interactive Simulations (PhET Sims) developed by the University of Colorado Boulder. These are free, research-based digital simulations that allow students to manipulate variables, visualize abstract concepts, and actively engage with scientific phenomena in a safe, interactive environment (PhET, 2023). By integrating PhET simulations into classroom instruction, teachers can shift from rote memorization toward inquiry-based and experiential learning.

Several studies have demonstrated the effectiveness of PhET in improving students' science achievement and motivation. In the Philippines, Dy et al. (2024) reported that PhET-based instruction significantly enhanced learners' performance in science compared to traditional methods. Fuentes et al. (2025) likewise found that Grade 7 students showed marked improvement in understanding the phases of matter after exposure to PhET simulations. Similarly, Omoy (2022) observed positive effects on Grade 10 students' ability to balance chemical equations. However, not all findings are consistent; a study by De Torres et al. (2023) showed no significant difference between PhET-assisted and conventional teaching in specific topics, suggesting that its effectiveness may depend on contextual factors such as teacher facilitation and learner readiness. While evidence supports the benefits of PhET, studies in the Philippine context have mostly focused on specific topics and varying grade levels, leaving limited investigation into its effects on Grade 8 students' understanding of the particle nature of matter. Since this concept is foundational in physics and chemistry, exploring how digital simulations affect student achievement in these fields is crucial. Moreover, very few localized studies have been conducted in public secondary schools where resources are limited and class sizes are large, making the integration of innovative tools more challenging but potentially more impactful. In response to this gap, the present study seeks to determine the effect of PhET Interactive Simulations on the science performance of Grade 8 students about the particle nature of matter in Magsaysay National High School.

Research Objectives - The research objectives for this study were to (1) Determine the level of physics

education technology (PhET) interactive simulations in grade 8 students; (2) Assess the performance of grade 8 students in science using conventional teaching and interactive simulation; (3) Determine the significant difference between the performance of grade 8 students in science using conventional teaching and interactive simulation; and (4) Determine the significant relationship between the level of physics education technology (PhET) interactive simulations and the performance of grade 8 students.

Significance of the Study - The findings of this study will benefit various stakeholders in the field of education. Students will gain a deeper understanding of abstract concepts through interactive learning, while science educators will receive evidence of the effectiveness of creative approaches that enhance lesson engagement and impact. Parents may benefit indirectly, as improvements in students' learning outcomes contribute to better academic performance and future opportunities for their children. For school heads and DepEd officials, the study offers insights that may guide decisions on adopting technology-based strategies and integrating digital tools into classroom instruction. Likewise, curriculum developers may use the results to revise and enhance learning materials, aligning them more closely with 21st-century skills. Finally, future researchers can use this study as a reference for further exploration of simulations and other digital resources to advance science education.

Scope and Delimitation of the Study - This study examined the effect of Physics Education Technology (PhET) interactive simulations on the science achievement of Grade 8 students. Specifically, it compared the performance of students exposed to PhET-based instruction with that of students taught using conventional teaching strategies. The respondents were the Grade 8 students of Magsaysay National High School, located at Magsaysay, Occidental Mindoro, during the school year 2025–2026. The study utilized learning sessions, pre-tests, and post-tests as the primary tools in assessing student performance. The study was limited to one grade level, two sections, one subject area, and one campus, focusing only on the topic of Particle Nature of Matter. Other factors that may affect student performance, such as gender, socioeconomic status, and prior academic ability, were not included. The research employed a quasi-experimental design without random assignment of participants to groups, which may restrict the extent to which results can be generalized to other settings or populations.

2. Methodology

Research Design - This study employed a quasi-experimental design, specifically the non-equivalent groups pretest–posttest design. Similar to a real experiment, a quasi-experimental design is a research methodology that aims to establish a cause-and-effect relationship between an intervention (the independent variable) and an outcome (the dependent variable). The lack of random assignment of participants to the treatment (PhET Interactive Simulation) and comparison (traditional instruction) groups distinguishes it (Gopalan & Rosinger, 2020). The groups are frequently pre-existing or intact entities, such as the two Grade 8 sections at Magsaysay National High School. They are therefore assumed to be potentially different or "non-equivalent" at the beginning of the study due to the lack of randomization. They were used as the control group for conventional teaching and the other as the experimental group for the PhET Interactive Simulation. Both groups were given a pre-test and a post-test based on the DepEd Science 8 Self-Learning Module. The difference in the pre-test and post-test scores was analyzed to determine the effectiveness of PhET simulations compared to conventional teaching.

Respondents of the Study - The respondents in this study were Grade 8 students at Magsaysay National High School during the Academic Year 2025–2026. They were chosen because the topic Particle Nature of Matter was included in their science lessons for the mentioned school year. Their participation was considered appropriate since the subject matter was directly aligned with the objectives of this research. To select respondents, the researchers employed purposive sampling to identify groups relevant to the research focus. A total of sixty (60) students were included, with thirty (30) students assigned to each setup. The two groups were drawn from specific Grade 8 sections, and random sampling within these sections was used to ensure unbiased distribution of participants across the treatment and control groups.

Research Instrument - The main instrument used in this study was the pre-test and post-test adopted from the

Department of Education (DepEd) Science 8 Self-Learning Module (SLM). These tests measured students' prior knowledge and learning gains in the topic of Particle Nature of Matter. The pre-test, composed of fifteen (15) items, assessed the students' baseline understanding, while the post-test of corresponding items evaluated their academic improvement after the intervention. During the study, the treatment group was taught using the Physics Education Technology (PhET) interactive simulation developed by the University of Colorado Boulder. This tool provides visual aids, demonstrations, and interactive activities that promote engagement and deeper conceptual understanding (Makransky et al., 2017). On the other hand, the control group was taught using the conventional teaching strategy based on the same topic. Since the test items were adopted from the DepEd Science 8 SLM, they were already standardized and aligned with the K–12 curriculum, so no additional reliability testing or expert validation was required.

Data Gathering Procedure - Before conducting the study, the researcher sought formal approval from the Principal of Magsaysay National High School. Upon the grant of permission, the data-gathering process commenced with the administration of a pre-test adopted from the Department of Education (DepEd) Science 8 Self-Learning Module (SLM) to both the control and treatment groups. The purpose of the pretest was to assess the students' prior knowledge of the topic Particle Nature of Matter and to establish their initial competency levels. Subsequently, a two-day face-to-face learning session on the specified topic was implemented during the second grading period of the Academic Year 2025–2026. Both groups were provided with instructions using the same teaching method and facilitated by the same researcher to maintain consistency and minimize bias. However, the treatment group was further exposed to the Physics Education Technology (PhET) interactive simulation, which served as an additional instructional tool to enrich and reinforce the teaching-learning process. After the completion of the learning sessions, a post-test utilizing the same set of items as the pre-test was administered to both groups. The results of the pre-test and post-test served as the primary basis for evaluating and comparing the respondents' science achievement.

Statistical Treatment of the Data - The data gathered from the pre-test and post-test were tabulated, organized, and statistically analyzed to determine the effect of PhET interactive simulations on the science achievement of Grade 8 students. Descriptive statistics, specifically the mean and standard deviation, were computed to assess students' performance before and after the intervention and to compare results between the control and treatment groups. To test whether there was a significant difference between the pre-test and post-test scores of students within each group, a paired-samples t-test was employed. This test measured the improvement in performance after the intervention. Furthermore, an independent-samples t-test was used to determine whether there was a significant difference in post-test scores between the control group (conventional teaching) and the treatment group (PhET interactive simulation).

Ethical Considerations - This study adhered to the fundamental ethical standards in the conduct of educational research. Prior to data collection, formal approval was sought from the Principal of Magsaysay National High School to ensure compliance with institutional policies. Informed consent was obtained from the student-respondents and their parents or guardians, recognizing their voluntary participation in the study. Participants were assured that their responses would be kept strictly confidential and that the data collected would be used solely for academic and research purposes. The study guaranteed that no physical, psychological, or social harm would result from participation. Students were informed of their right to withdraw from the study at any point without penalty or adverse consequences. To ensure fairness, both groups received duplicate instructional content and learning opportunities, with the only difference being the instructional mode. These ethical safeguards were anchored on the principles of respect for persons, beneficence, and justice as outlined in the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). Furthermore, the conduct of this study complied with the provisions of the Data Privacy Act of 2012 (Republic Act No. 10173). All respondents' personal information was kept confidential and anonymized to protect their identities. Data was securely stored and accessed only by the researchers, ensuring compliance with national data protection and privacy standards.

3. Results and Discussions

This chapter presents the statistical results and interpretation of data gathered from the pre-test and post-test administered to both the control and treatment groups. The findings were analyzed to determine the effect of Physics Education Technology (PhET) Interactive Simulations on the science achievement of Grade 8 students.

Table 1
Mean and Standard Deviation of Pre-Test Scores of Control and Treatment Groups

Group	N	Mean	Std. Deviation	Interpretation
Control Group	30	8.17	2.451	Satisfactory
Treatment Group	30	9.10	1.971	Satisfactory

Legend: 0-4 = did not meet expectations; 5-7 = fair; 8-10 = Satisfactory ; 11-13 = Very Satisfactory 14-15 = Outstanding

Table 1 presents the mean and standard deviation of the pretest scores for the control and treatment groups, used to determine the level of prior knowledge of grade 8 students in science. The pre-test results revealed that both the control and treatment groups had satisfactory performance levels before the intervention, with mean scores of 8.17 and 9.10, respectively. The small difference in their mean scores indicates that the two groups had comparable levels of prior knowledge on the topic Particle Nature of Matter before the experiment. This finding suggests that both groups started from nearly the same baseline, ensuring that any difference in post-test performance can be attributed to the instructional method rather than pre-existing ability. According to Makransky et al. (2017), ensuring equivalence in pretest performance is crucial for validating the effects of educational interventions such as simulations. In this study, this equivalence enabled the researchers to reliably assess whether integrating PhET Interactive Simulations could produce measurable learning gains beyond what conventional teaching could achieve. Furthermore, the satisfactory pre-test performance indicates that students had a basic familiarity but limited mastery of science concepts, creating an opportunity for meaningful learning during the lesson sessions. This finding is similar to that of Dy et al. (2024), who reported that many junior high school students enter science lessons with only moderate understanding but show significant improvement after exposure to simulation-based instruction. Overall, the pre-test results indicate that students possessed the foundational knowledge necessary for learning but still required further conceptual reinforcement. The equivalence in prior knowledge between the control and treatment groups confirms that the study's comparison of learning outcomes is valid and that any improvement observed after instruction can be confidently attributed to the effect of the PhET Interactive Simulations.

Table 2
Mean and Standard Deviation of Post-Test Scores of Control and Treatment Groups

Group	N	Mean	Std. Deviation	Interpretation
Control Group	30	9.80	2.497	Satisfactory
Treatment Group	30	10.60	2.430	Satisfactory

Legend: 0-4 = did not meet expectations; 5-7 = fair; 8-10 = Satisfactory ; 11-13 = Very Satisfactory ; 14-15 = Outstanding

Table 1 presents the mean and standard deviation of post-test scores for the control and treatment groups to determine the level of performance of grade 8 students in science after the learning session. After the interventions were implemented, the post-test mean for the control group increased to 9.80, while the treatment group's mean rose to 10.60. Both groups maintained a satisfactory performance level, but the higher mean score in the treatment group indicates greater learning gains following the use of PhET Interactive Simulations. This improvement demonstrates that both teaching methods enhanced students' understanding, yet the PhET-based instruction yielded slightly greater gains. This is consistent with Dy, Lagura, and Baluyos (2024), who found that PhET-enhanced science lessons led to higher achievement and engagement compared to conventional instruction. Similarly, Fuentes et al. (2025) reported that interactive simulations helped learners visualize molecular and particulate concepts that are often difficult to grasp through lectures alone. Additionally, the treatment group's performance supports constructivist learning theory, in which learners engage in meaningful exploration and manipulation of variables. This allows students to adjust particle spacing, temperature, and motion in real time; the simulation likely helped them form more accurate mental models of matter's particulate nature. Makransky et al. (2017) similarly noted that simulation-based learning environments enhance conceptual understanding by making

invisible scientific phenomena more tangible and accessible. Thus, the results indicate that PhET Interactive Simulations enhanced learning and supported improved performance, but the traditional method also remained effective.

Table 3
Paired Sample t-Test of Pre-Test and Post-Test

Group	Mean Diff	t	df	Sig. (2-tailed)	Interpretation
Control Group	1.63	-7.924	29	<.001	Significant
Treatment Group	1.5	-5.385	29	<.001	Significant

Legend: Sig. (2-tailed) <0.05 = Significant

Table 3 shows the comparison of the Pre-test and Post-test Within the Control and Treatment groups. The paired sample t-test revealed that both the control and treatment groups showed significant improvement from pre-test to post-test ($p < 0.05$). This means that both conventional and PhET-assisted teaching effectively enhanced students' understanding of the topic. However, although both groups improved, the t-value was higher in the control group (-7.924) than in the treatment group (-5.385), but this does not directly imply better learning because the control group started at a lower pre-test mean. The significant improvement in both groups supports the conclusion that structured instruction, regardless of format, can increase science achievement. These results are consistent with Omoy (2022), who found that both conventional and simulation-based teaching approaches led to substantial improvements in science performance when supported by clear explanations and teacher guidance. This reinforces the teacher's key role in ensuring that students can connect new information with prior knowledge, regardless of the tools used during instruction. The significant increase in both groups' scores also reflects the importance of structured lessons in improving conceptual understanding. Makransky et al. (2017) similarly emphasized that simulations are most effective when combined with proper scaffolding, discussion, and guided exploration. This aligns with the findings, which show that both groups benefited from organized instruction delivered by the same teacher, reducing variability in teaching quality. In addition, Fuentes et al. (2025) highlight that students tend to perform better when instructional activities actively involve them in visualizing and exploring scientific concepts, whether through hands-on activities or carefully designed simulations. This supports the study in which learners from both groups, exposed either to traditional illustrations or to PhET visual models, showed improvement from their pretest scores.

Table 4
Independent Sample t-Test of Post-Test Scores Between Control and Treatment Groups

Group	Mean Diff	t	df	Sig. (2-tailed)	Interpretation
Control and Treatment Group	-0.800	-1.258	58	0.214	Not Significant

Legend: Sig. (2-tailed) <0.05 = Significant

Table 4 shows the post-test comparison between the control and treatment groups. The independent sample t-test comparing the post-test scores of the control and treatment groups yielded a p-value of 0.214, which is greater than 0.05. This indicates that there is no statistically significant difference in the post-test scores between the groups. Although the treatment group attained a slightly higher mean, the difference was not large enough to be considered statistically significant. This suggests that both instructional methods were comparably effective in improving students' understanding of the topic. The absence of a significant difference suggests that the impact of PhET simulations, while beneficial, may depend on additional factors such as the quality of facilitation, the time allotted for the intervention, and the students' familiarity with digital tools. In this study, the learning sessions were limited in duration, which may have reduced the potential advantage of simulation-based learning. This aligns with De Torres et al. (2023), who noted that PhET-assisted instruction does not consistently lead to significantly higher test scores, especially in short-term interventions or when an equally competent teacher teaches both groups. Furthermore, the results align with Bernardo et al. (2023), who emphasized that multiple variables, including resource availability, teacher guidance, and learner motivation, influence student achievement in science. Even when advanced tools such as PhET are introduced, learning effectiveness still relies heavily on how well teachers structure activities, address misconceptions, and support student inquiry. Thus, the findings show that while digital simulations enhance engagement and conceptual clarity, their measurable impact on achievement may vary

depending on instructional duration, learner readiness, and the overall learning environment.

4. Conclusions and Recommendations

Based on the study's findings, both conventional teaching and PhET Interactive Simulations significantly improved Grade 8 students' science achievement in the topic of Particle Nature of Matter. However, there was no significant difference in post-test scores between the control and treatment groups. This indicates that while PhET simulations effectively enhanced learning, their impact was comparable to that of traditional teaching when both were implemented correctly. Overall, the integration of PhET serves as a valuable supplementary tool to support science instruction and learner engagement. Regarding the findings and conclusions, the following recommendations are provided. Teachers may use PhET Interactive Simulations as a supplementary tool to make science lessons more interactive, visual, and engaging. School administrators may provide sufficient technological resources, such as computers, projectors, and stable internet access, to support the integration of PhET into classroom teaching. Curriculum developers may integrate simulation-based activities into the science curriculum to promote inquiry-based and experiential learning. Future researchers may replicate this study across different grade levels, topics, or more extended implementation periods to further assess the effectiveness of PhET simulations on students' learning outcomes and attitudes toward science.

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The moderating effect of demographic profile on students' capacity and willingness to invest in the Philippine Stock Market

Robles, Ernesto Jr. M. ✉
Divine Word College of San Jose, Philippines (ernestorobles12177276@gmail.com)
Echivarre, Jeremy B.
Divine Word College of San Jose, Philippines (Echivarre23@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

The Philippine Stock Exchange (PSE), established in 1927, is the major national financial exchange in the Philippines, providing a convenient market for trading all types of securities. Using a descriptive-correlational design, a validated researcher-made instrument, and 235 students from the Accounting Education Department, this study aimed to determine if the demographic profile in terms of sex, program, year level, and source of cash moderated the relationship between the capacity and willingness to invest in the Philippine stock market. This study reveals that respondents have moderate technical knowledge in accessing investing platforms, different trading patterns, investing without professional guidance, and starting investments in blue-chip companies. Respondents were moderately in agreement that they have enough money to meet the minimum investment requirement, as well as savings and other personal sources of income they can use to start investing. Thus, this study found that the technical knowledge, financial aspect, and risk tolerance of the respondents are still in the range of moderate, given that they are still studying, which results in them being reluctant to start investing, especially since having a basic background about the stock market or average learning is not enough to engage in the stock market totally. Moreover, there is a significant relationship between students' capacity and willingness to invest in the PSM. Thus, students have a moderate capacity to invest, while their desire to invest in the PSM is high. Therefore, schools may consider incorporating stock market investing, under the guidance of knowledgeable persons, into students' output-related tasks.

Keywords: accounting students, financial literacy, risk tolerance, stock market, Philippine stock exchange

The moderating effect of demographic profile on students' capacity and willingness to invest in the Philippine Stock Market

1. Introduction

The stock market is an essential component of the financial sector in promoting economic development because it provides market liquidity, enabling long-term projects with long-term payoffs to be implemented and thereby promoting a country's economic growth (Ho & Odhiambo, 2016). Its key functions and importance to the economic development of emerging sectors, such as the Philippines, cannot be overlooked. The Philippine Stock Exchange (PSE) is a major national financial exchange in the Philippines, established in 1927 with the primary goal of creating and sustaining a convenient and appropriate market for the purchase, sale, and trading of all types of securities and other instruments. According to Leverkuhn (2022), the Philippine Stock Exchange serves as an essential regional exchange and the primary exchange of its kind in the country. Balaba (2017) stated that the performance of the PSEi is argued to reflect the financial health of the Philippine economy. From an economic performance perspective, especially regarding its impact on economic growth, it could be argued that stock market performance mirrors the economy's outlook. Financial investment services are now more diverse than ever. As a result, there is a broader range of investment instruments available and more options for investors to invest their money. On the other hand, several key factors influence investors' investment behaviors and decision-making processes. Investor behavior changes in response to the information they receive. Significant factors and events can affect stock market returns (Al-Awadhi et al., 2020). In this regard, the present study explores the relationship of students' demographics to their capacity and willingness to invest in the Philippine stock market.

Many factors influence willingness to invest, such as family size, number of earning family members, family nature, life-cycle stage, investment experience, educational level, family income, occupation, lifestyle, and personality characteristics (Khanam, 2017). Past studies have shown that a person's decision to invest in the stock market depends on different factors (Elmassri et al., 2016; Shah et al., 2018). Furthermore, several studies have shown that financial literacy or capacity influences investment decisions (Kumari, 2020). A study by Lusardi & Mitchell (2017) found that financial literacy was positively associated with financial decision-making among males but not among females. There are links among gender, financial literacy, and financial decisions, but the nature of those links is unclear. Understanding the underlying relationship between capacity and willingness to invest in the stock market will provide more information for presenting trading opportunities to support economic development.

According to Simbre et al. (2019), a progressive development of the stock market will, in turn, strengthen the Philippine economy by creating new industries and jobs and fostering price stability, thereby benefiting the entire country. They also concluded that a light awareness is sufficient as a starting point since everything starts with a point. Financial literacy and awareness of investment areas are mostly, if not primarily, attained at school. Thus, studying students' demographic factors in relation to their investing capacity will contribute to a better understanding of their investment decisions and their impact on the progressive development of the stock market. The study of students' demographic factors in relation to investment decisions has implications for the financial development of the economy, fund managers, issuing companies, and markets. This study will help investors, organizations, financial institutions, and consultants understand and identify the effects of the main demographic factors that influence students' decisions to invest in different investment schemes and their decision-making processes.

Research Objectives - The main purpose of the study was to identify the capacity and willingness of Accounting Education Department students in Occidental Mindoro State College – Main Campus to invest in the Philippine stock market. Specifically, the objectives of the study were the following: (1) To determine the demographic profile of the Accounting Education Department Students in terms of sex, course, year level, and

source of cash; (2) To determine the capacity of the respondents to invest in terms of technical knowledge, financial aspects, and risk tolerance of the students; (3) To determine the extent of the willingness of the students to invest in the Philippine stock market; (4) To identify the significant relationship between capacity and willingness of students to invest in the Philippine stock market; (5) To determine if the demographic profile of Accounting Education Department students, such as sex, program, year level, and source of cash, moderated the relationship between the capacity and willingness to invest in the Philippine stock market.

Significance of the Study - This study aims to determine students' capacity and willingness to invest in the Philippine stock market, and its findings may benefit various groups. For students, it can help them assess their qualifications, financial capacity, and investment interests. For schools, it may serve as a tool to evaluate students' capacity and guide them in learning more about the stock market. Consultants can use the information to better advise their clients about starting investments, while financial institutions can gain a deeper understanding of the factors that influence investor capacity and willingness. Investors may also benefit by gaining more knowledge about investing in the Philippine stock market, and future researchers can use this study as a reference for related research. Overall, this study will provide knowledge and insight into students' capacity and willingness to try and invest in the Philippine stock market.

Scope and Delimitation of the Study - The general intent of this study was to determine the capacity and willingness of Accounting Education Department students to invest in the Philippine stock market, as moderated by their demographic profiles. The study also aimed to determine the profile of Accounting Education Department students in terms of sex, program, year level, and their source of funding. The researchers investigated students' capacity to invest in terms of technical knowledge (course curriculum, seminars/webinars, social media platforms, family, and peers), financial aspects, and risk tolerance, as well as the extent of their willingness to invest in the Philippine stock market. The study also investigated whether demographic variables moderated the relationship between capacity and willingness of students to invest in the Philippine stock market, as well as the significant relationship between capacity and willingness of students to invest. The study included 235 randomly selected students from 490 enrollees in the Accounting Education Department at the College of Business, Administration, and Management of Occidental Mindoro State College, Main Campus, San Jose, Occidental Mindoro. Other campuses of Occidental Mindoro State College that offer accounting courses were not included in the study. The study will be conducted during the first semester of the Academic Year 2022-2023.

2. Methodology

Research Design - The researchers employed the descriptive-correlational research design. Correlational research examines the statistical relationship between two or more variables to determine how one variable relates to the others. This study describes the variables and the correlational relationships among the main variables, namely the students' capacity and willingness to invest in the Philippine stock market. Moreover, moderation was also used to provide a better understanding of the direction and/or strength of the relationship between the two main variables when a moderator variable is considered (Hair et al., 2021). Using moderation analysis, researchers can determine whether demographic variables moderate the relationship between students' capacity and willingness to invest.

Respondents of the Study - The researchers considered the students from the Accounting Education Department of Occidental Mindoro State College – Main Campus. According to the Program Heads of the Accounting Education Department, the total enrollment for A.Y. 2022-2023 was 490. Based on the given ratio, the respondent was divided into twelve sections. A Raosoft calculator was used to get the number of respondents. From the total population of 490 students, the minimum sample size was 216. A slight change happened to the number of populations in this study. This is after the consultation with our data analyst, who suggested raising the target number of respondents to 240, if possible, to achieve a 10 percent response rate per question. However, only 235 responses were included after data collection because five responses had incomplete answers. The researchers used stratified random sampling to obtain a representative sample. Stratified random sampling is a type of

probability sampling that involves dividing the population into smaller groups—called "strata"—and randomly choosing members from various strata. Since the total population of the Accounting Education Department at OMSC-Main Campus is 490, stratified random sampling was used, as it involves dividing the population into smaller groups that share the same characteristics as the sample size and the respondents in the study.

Research Instrument - This study used a researcher-made questionnaire, which is based on a specific research topic and served as the research instrument in gathering data that was used for the study. The instrument was validated by three experts in research and business from Occidental Mindoro State College. The questionnaire was composed of two parts. The first part was used to determine the respondents' demographic profile. In contrast, the second part used a 5-point Likert scale to assess students' capacity and willingness to invest in the Philippine stock market. The respondents were instructed to respond to the degree of their agreement with the statement in the instrument. After validating the questionnaire by three experts, the reliability analysis was conducted. The participants in this analysis are 15 BSA students, three males and 12 females. The technical knowledge parameter consists of 7 questions and yielded a score of 0.715. One indicator of technical knowledge was removed to achieve a higher value, resulting in a score of 0.753. The parameters, financial aspect, and risk tolerance still have the same seven questions, as they yielded high values (0.909 and 0.885, respectively). For the willingness, the five questions yielded a Cronbach's alpha of 0.820. Overall, only the technical knowledge one was removed, and all the remaining indicators are acceptable.

Data Gathering Procedure - The researchers used a questionnaire as an instrument, and it was distributed through an online platform, which is Google Forms, and a face-to-face survey. Before conducting the survey, the instrument was put through a reliability test. After passing the test and securing a permit to conduct the survey, the researchers asked the randomly selected respondents for their time and effort in completing the instrument. The collected data were categorized, analyzed, and interpreted to determine whether students' demographic profiles moderate the relationship between capacity and willingness to invest in the Philippine stock market.

Statistical Treatment of the Data - To analyze the data, Microsoft Excel was used to encode it. Frequency and percentage distributions were used to present the demographic profile of the respondents, while mean and standard deviation were used to describe the respondents' capacity and willingness to invest. Moreover, IBM SPSS version 23 was utilized to examine the relationship between capacity and willingness to invest. Lastly, a path analysis in IBM AMOS version 23 was used to test whether the demographic variables moderated the relationship between capacity and willingness to invest.

Ethical Considerations - The researchers strictly adhere to the ethical considerations and Republic Act 10173, or the Data Privacy Act of 2012, in conducting this research. Informed consent was obtained from all participants, and the researchers explained well the contents of the study, the risks in gathering the data, and the purpose of conducting the research. The name and other personal information obtained from the participants are kept confidential and processed solely for academic purposes. The research findings were presented in accordance with established ethical research standards.

3. Results and Discussions

The demographic profile of the respondents, by sex, course, year level, and source of cash, for Accounting Education Department students at Occidental Mindoro State College – Main Campus is shown in Table 1. The demographic profile of the respondents in terms of sex comprises 20.85 percent and 79.15 percent for male and female, respectively. As for the programs, BSA has the smallest percentage response of 20.85 percent, given that it has the smallest population in the department; BSMA has 25.96 percent, and BSAIS, which has the largest population in the department, comprises 53.19 percent because the required percentage rate in BSA is higher than the non-BSA programs. According to the study by Zacharai (2019), most students enrolled in accounting courses are female. The first-year and second-year respondents have 47.66 percent, while the third- and fourth-year respondents have 52.34 percent. The population of respondents in the first and second years is smaller than that of

the third and fourth years because of the limited enrollment in the academic year 2022-2023. According to the study, 77.45 percent of respondents have a single source of cash, while 22.55 percent have multiple sources.

Table 1

Demographic Profile of the respondents (n=235)

Demographic Profile		Frequency (f)	Percentage (%)
Sex	Male	49	20.85
	Female	186	79.15
	Total	235	100.00
Program	BSA	49	20.85
	BSAIS	125	53.19
	BSMA	61	25.96
	Total	235	100.00
Year level	1st year & 2nd year	112	47.66
	3rd & 4th year	123	52.34
	Total	235	100.00
Source of Cash	Single Source	182	77.45
	Multiple Sources	53	22.55
	Total	235	100.00

The three (3) sub-variables of students' investing capacity in the PSM were presented in Table 2 to present the results from the gathered data clearly. Data show the extent of students' investment capacity in terms of technical knowledge, financial aspects, and risk tolerance in relation to the Philippine stock market. This part of the survey yielded only moderate to high values on the 5-point Likert Scale used. Four indicators of technical knowledge (indicator 1, indicator 3, indicator 5, and indicator 6) yielded a mean range of 2.79 to 3.43 and an SD range of 0.88 to 1.10, interpreted as moderate. This implies that the respondents have moderate technical knowledge in accessing investing platforms, different trading patterns, investing without professional guidance, and starting investments in blue-chip companies. Consequently, indicators 2 and 4 of technical knowledge were interpreted as high on the Likert Scale used. This suggests that the respondents have strong technical know-how for identifying legitimate platforms to avoid scams, as evidenced by their use of online resources such as YouTube and Google. Likewise, Bollampelly (2016) emphasizes that social media and websites are, in fact, providing investors with more current financial news and information, thereby rationalizing their willingness to invest. However, indicator 5 has the lowest mean, indicating that most students still prefer to seek guidance from investment professionals when making investment decisions.

Generally, Table 2 shows that the overall mean for technical knowledge is 3.41, and the SD is 0.69. This result implies that students' technical knowledge is moderate, indicating that the respondents have a basic understanding of the stock market as a result of their business and accounting-related program. Hasanah & Kurnia (2019) claim that knowledge of the investment is expected to help investors determine the extent of their investment. Interestingly, all the indicators of the financial aspect had mean scores ranging from 2.51 to 3.50 and SDs ranging from 1.01 to 1.18, all interpreted as moderate. This implies that the respondents have a moderate investing capacity in the PSM in terms of their Financial Aspect. Indicator 4 has the lowest mean, suggesting that most students lack other sources to start investing. However, given that indicator 5 has the highest mean, respondents agree that cutting a portion or any excess of their school allowance is one of the ways to begin investing. To explain further, the respondents moderately agree that they have enough money to meet the minimum investment requirement, as well as savings and other personal sources of income they can use to start investing. As a result, the extent of students' investing capacity in the financial aspect had an overall mean of 2.96 and was also interpreted as moderate. This means their financial capacity to invest is limited, given their current status as students. Loke et al. (2015) stated that financial capacity covers both the financial literacy and external opportunity components through financial inclusion. Thus, financial capacity comprises knowledge development and access to financial services.

Table 2

Extent of students' capacity in the Philippine stock market in terms of technical knowledge, financial aspects, and risk tolerance.

Indicators (Technical Knowledge)	Mean	SD	Interpretation
1. I know how to access investing applications/websites (e.g., Investa, Binance, etc.)	3.33	1.09	Moderate
2. I know how to distinguish legitimate platforms to avoid investment scams and other fraudulent investment activities.	3.84	0.89	High
3. I can identify trading opportunities in price trends and patterns seen on charts.	3.43	0.88	Moderate
4. I read, watch, and search for information about investing to gain knowledge (e.g., Google, YouTube).	4.08	0.91	High
5. I can begin investing without the help of an investing coach, broker, financial advisor, etc.	2.79	1.10	Moderate
6. I have targeted blue chips stock companies to begin investing in (Coca-Cola, McDonald's, Jollibee, etc.)	3.00	1.02	Moderate
Composite Mean	3.41	0.69	Moderate
Indicators (Financial Aspects)			
1. I have enough money to meet the minimum investment requirement.	2.77	1.01	Moderate
2. I have savings that I can use to start with the investment.	2.88	1.06	Moderate
3. I can get a portion of my school allowance in order to meet the minimum investment requirement.	3.15	1.01	Moderate
4. I have a personal source of income that I can use to start investing (e.g., Online selling, part-time job, etc.)	2.66	1.18	Moderate
5. I can use the excess allowance that my parents/guardians give to begin investing.	3.43	1.00	Moderate
6. I can use a portion of my scholarship grant for investing.	2.98	1.17	Moderate
7. My parents can provide me with money to use for investing.	2.83	1.10	Moderate
Composite Mean	2.96	0.75	Moderate
Indicators (Risk Tolerance)			
1. I can handle any degree of risk associated with investing.	3.16	1.00	Moderate
2. I can handle fraud or scam risk.	3.27	0.97	Moderate
3. I can tolerate unexpected stock price changes.	3.11	0.95	Moderate
4. I can handle the greater risk associated with investments with higher returns.	3.17	0.98	Moderate
5. I can handle risks associated with highly volatile stocks.	3.03	0.97	Moderate
6. I prefer low-risk investments with low returns.	3.13	0.98	Moderate
7. I can resort to borrowing in order to start investing	2.87	1.08	Moderate
Composite Mean	3.10	0.75	Moderate
OVERALL MEAN	3.16	Moderate	

The results on the extent of students' investing capacity in the Philippine stock market, in terms of risk tolerance, have an overall mean of 3.10 and are interpreted as moderate. There are seven indicators for this sub-variable, all with mean scores ranging from 2.51 to 3.50 and interpreted as moderate. To explain in detail, the respondents' risk tolerance is relatively moderate, indicating they can manage investment risks, handle scam threats, tolerate price fluctuations, and prefer low-risk investments. Indicator 2 has the highest mean, indicating that respondents have some basic knowledge of fraud or scams, which helps them identify whether it is safe or not. This also implies that the respondents have a moderate to high risk tolerance, as the students' responses indicate they can handle fraud or scams. Risk tolerance is influenced by financial literacy: students with less financial knowledge tend to be risk-averse (Bajo et al., 2015), a finding supported by Mishra (2018). Indicator 6 has the lowest mean for risk tolerance, indicating that students are least likely to borrow money to start investing. According to Lusardi (2019), effective and influential learning helps students understand, assess, and act in their own financial interests. Since students still lack sufficient knowledge about investing and have limited sources, they are more hesitant and not entirely confident in investing, as well as in the risk of not being able to repay the borrowed money. As shown by the general result of this sub-variable, the respondents in this study have a moderate risk tolerance for investing in the PSM, given their current status as students.

The extent of investing capacity of the students in the Philippine stock market comprises a grand mean of 3.16, and interpreted as moderate. This means that the technical knowledge, financial aspect, and risk tolerance of the respondents are still in the range of moderate, given that they are still studying, which results in them being reluctant to start investing, especially since having a basic background about the stock market or average learning is not enough to engage in the stock market totally. Before engaging in the stock market, investors need adequate

knowledge, and this is supported by the study of Hidayat et al. (2020).

Table 3

The extent of students' willingness to invest in the Philippine stock market.

Indicators	Mean	SD	Interpretation
1. I am willing to invest in the Philippine Stock Market (PSM) given my current financial capacity.	3.37	1.02	Moderate
2. If I had enough money now, I would start investing in the Philippine Stock Market (PSM).	3.69	0.97	High
3. I am willing to take a risk investing in the Philippine Stock Market, though there is a chance of losing my money.	3.46	0.94	Moderate
4. I am very eager to explore investing.	3.87	0.96	High
5. Investing in the Philippine Stock Market (PSM) is another way of gaining financial freedom.	3.77	0.88	High
COMPOSITE MEAN	3.63	0.77	High

Table 3 shows the extent of students' willingness to invest in the PSM, with an overall mean score of 3.63 and an SD of 0.77, indicating a high level of willingness. Five indicators have been formulated for this variable. Apparently, indicators 1 (mean = 3.37, SD = 1.02) and 3 (mean = 3.46, SD = 0.94) are interpreted as moderate. This means that the extent of the willingness of respondents is moderate, given their current financial capacity as well as their willingness to take the risk associated with investing. Meanwhile, indicators 2 (mean 3.69, SD 0.97), 4 (mean 3.87), and 5 are among the highest individual mean scores and are interpreted as high. This means that respondents' willingness to invest is high and that they view PSM as a means to achieve financial freedom. Indicator 1 has the lowest mean for students' willingness to invest, given their current financial capacity. The higher the students' financial capability, the greater their interest in the stock market (Herawati & Dewi, 2020). Meanwhile, indicator 4 has the highest mean value among the five indicators of willingness. This shows that students are interested and eager to explore the stock market while still studying, as Thapa (2018) also supports. Study. In general, the extent of willingness to invest in Accounting Education students is excellent (Gi, 2018). self-assessed capacity. This was supported by the study of Ahinful et al. (2021). Attitudes towards money, financial risk, and financial literacy are factors that influence students' willingness to invest in the Philippine stock market.

Table 4

Correlation between capacity to invest and willingness to invest

Capacity to Invest	Willingness to Invest			
	N	*r*	*p-value*	Interpretation
Technical Knowledge	235	0.311	<0.001	Highly Significant
Financial Aspects	235	0.428	<0.001	Highly Significant
Risk Tolerance	235	0.542	<0.001	Highly Significant

The results of the correlation analysis, performed to determine which sub-variables of capacity to invest are significantly correlated with willingness to invest in the stock market, are presented in Table 4. As shown in the table, all three sub-variables of capacity to invest, which are technical knowledge ($r= 0.311$, $p<0.001$), financial aspects ($r= 0.428$, $p<0.001$), and risk tolerance ($r= 0.542$, $p<0.001$), are highly significantly related to willingness to invest. Moreover, the positive correlation indicates that as students' capacity increases, their willingness to invest in the PSM also rises, supporting previous studies' findings. These findings are supported by Jariwala (2015), who emphasizes that knowledge plays a crucial role in investment decisions and that financial literacy significantly influences them. Those with low literacy show a much less keen interest in investing in stocks. Likewise, Thapa's (2018) study also demonstrates the significance of stock market education for undergraduate students. Lack of knowledge hinders students' interest and willingness to participate in the stock market. As for Financial Capacity, previous research (Junaeni, 2020) found that income affects investment decisions. People with high incomes are likely to invest, while those with just enough to cover day-to-day expenses are unlikely to invest. Meanwhile, the study by Ahinful et al. (2021) shows that students' financial risk attitudes and willingness to invest in stock markets are significantly related. This suggests that students with a low risk tolerance are less willing to invest.

Table 5 presents the results of a multi-group path analysis to determine whether the demographic profile of the respondents moderates the relationship between the three sub-variables of capacity to invest and willingness to invest in the stock market. In terms of sex, as shown in the table comparing technical knowledge and willingness, the positive relationship was found to be significant only for females and not for males. This means that technically knowledgeable females are more willing to invest in the PSM than males. Lusardi & Mitchell (2017) claim that women are financially illiterate compared to men, resulting in a gender gap in financial literacy. However, explaining the differences between men and women is difficult, as Bucher-Koenen et al. (2016) note.

Table 5

The moderating effect of demographic profile on the relationship between capacity and willingness to invest in the stock market

SEX					
Path Name	Male	Female	Difference in Betas	P-Value for Difference	Interpretation
Technical Knowledge → Willingness	0.123	0.362*	-0.239	0.175	Not Significant
Financial Aspects → Willingness	0.513*	0.409*	0.104	0.176	Not Significant
Risk Tolerance → Willingness	0.579*	0.534*	0.046	<0.001	Highly Significant
PROGRAM					
Path Name	BSA	Non-BSA	Difference in Betas	P-Value for Difference	Interpretation
Technical Knowledge → Willingness	0.322	0.349*	-0.027	<0.001	Highly Significant
Financial Aspects → Willingness	0.317	0.454*	-0.137	0.293	Not Significant
Risk Tolerance → Willingness	0.329	0.593*	-0.264	0.080	Not Significant
YEAR LEVEL					
Path Name	1st & 2nd Year	3rd & 4th Year	Difference in Betas	P-Value for Difference	*Interpretation*
Technical Knowledge → Willingness	0.237	0.304*	-0.066	<0.001	Highly Significant
Financial Aspects → Willingness	0.457*	0.328*	0.129	<0.001	Highly Significant
Risk Tolerance → Willingness	0.566*	0.422*	0.144	0.229	Not Significant
SOURCE OF CASH					
Path Name	Single Source	Multiple Sources	Difference in Betas	P-Value for Difference	
Technical Knowledge → Willingness	0.296*	0.300	-0.004	<0.001	Highly Significant
Financial Aspects → Willingness	0.439*	0.322	0.117	<0.001	Highly Significant
Risk Tolerance → Willingness	0.523*	0.569*	-0.046	<0.001	Highly Significant

Meanwhile, between financial aspects and willingness to invest, it was found that there is no significant difference in the positive relationship between financial aspects and willingness to invest between males and females. This is in contrast to the results presented by Lusardi & Mitchell (2017), who found that males' higher financial literacy makes them more likely to invest than women, regardless of income. Furthermore, between risk tolerance and willingness to invest, the positive relationship between risk tolerance and willingness to invest is stronger for males. Bannier & Neubert (2016) claim that females are less risk-tolerant than males, as they are reluctant to invest in higher-risk assets and prefer low-risk investments.

Table 5 also presents the results of a multi-group path analysis to determine whether the program moderates the positive relationship between the three sub-variables of capacity to invest and willingness to invest in the stock market. As shown in the table, the positive relationship between technical knowledge and willingness was significant only for non-BSA. This significant positive relationship means that the higher the technical know-how of Non-BSA students, the more likely they are to invest in the PSM. However, that is not the case for BSA students. Differences in the curriculum and specialization in accounting subjects between BSA and non-BSA students affect their investment in technical knowledge. According to the study by Dong et al. (2022), students enrolled in business

education have a higher participation rate. However, students who like subjects such as accounting and finance have a higher participation rate than other students, even though the curriculum was the same. Meanwhile, between financial aspects and willingness to invest, it was found that there is no significant difference in the positive relationship between financial aspects and willingness to invest between BSA and non-BSA.

Furthermore, between risk tolerance and willingness to invest, the positive relationship between risk tolerance and willingness to invest is also stronger for non-BSA. This means that the higher the non-BSA's investing capacity in terms of risk tolerance, the more likely they are to invest in the PSM, even though both BSA and non-BSA show a positive relationship between risk tolerance and willingness to invest. Similarly, Yong & Tan (2017) found that financial literacy level had significant effects on the financial behavior and investment willingness of business faculty students.

To determine the results of a multi-group analysis through path analysis, if year levels moderate the positive relationship between the three sub-variables of capacity to invest and willingness to invest in the Philippine stock market, Table 5 also presents the results. As shown in the table, the positive relationship between technical knowledge and willingness to invest was significant only for the third and fourth years, not for the first and second years. Baihaqqy et al. (2020) found that the higher a person's education level, the greater their financial literacy. The different levels of education investors have can affect their level of understanding of financial literacy. However, between financial aspects and willingness to invest, the positive relationship was significant only for the first and second years, not for the third and fourth years. Meanwhile, it was found that there is no significant difference in the positive relationship between risk tolerance and willingness to invest between the first and second years and between the third and fourth years. The results of the source of cash, if it moderates the positive relationship between the three sub-variables of capacity to invest and willingness to invest in the Philippine stock market, using multi-group analysis through path analysis, are presented. As shown in the table, between technical knowledge and willingness to invest, the positive relationship was found to be significant only for multiple sources and not for a single source. However, between financial aspects and willingness to invest, the positive relationship was found to be significant only for a single source and not for multiple sources. Meanwhile, it was found that the positive relationship between risk tolerance and willingness to invest was significant for multiple sources only and not for a single source. High-income people tend to invest and have a higher risk tolerance than those who have low income (Dickason-Koekemoer & Ferreira, 2019). In college, or in business or finance courses, students have a much more positive attitude towards financial risk-taking, resulting in a higher risk tolerance.

4. Conclusions and Recommendations

Based on the research findings, the following conclusions were drawn: The majority of respondents from the Accounting Education Department are females who come primarily from non-BSA programs and are in their third and fourth years. Most of them have a single source of cash, mainly coming from parents' support. Accounting Education Department students have a moderate capacity to invest in terms of technical knowledge, financial aspects, and risk tolerance. The extent of the Accounting Education Department students' willingness to invest in the PSM is excellent, given their current capacity. There is a significant relationship between all three sub-variables (technical knowledge, financial capacity, and risk tolerance) of capacity and willingness to invest in the PSM among Accounting Education Department students. Risk tolerance has the strongest relationship among the three. Sex, program, year level, and source of cash moderate the capacity (but vary across its three sub-variables) and the willingness of Accounting Education Department students to invest in the Philippine stock market.

Based on the study's results, findings, and conclusions, the following was recommended: a single source of cash can be achieved if students do not have to spend their whole day at school teaching minor subjects that are not directly related to the field they are trying to learn. The researchers therefore suggest to the Commission on Higher Education (CHED) that it consider reducing the number of minor subjects taken by Accounting Education students to make way for seeking another possible source of cash, i.e., a part-time job, to meet the minimum investment requirement in the Philippine stock market. The Commission on Higher Education (CHED) may

consider increasing the number of subjects related to stock market investing to enhance students' capacity to invest in the PSM in terms of technical knowledge, while decreasing the number of minor subjects unrelated to the accounting profession. Schools may consider incorporating stock market investing, under the guidance of knowledgeable persons, into students' output-related tasks, similar to other simulation activities conducted during undergraduate studies, e.g., business simulation, opening a savings account, etc. Increasing students' risk tolerance will also increase their willingness. This can be done by increasing students' confidence in detecting and preventing fraud and scams related to stock investing. In this regard, schools may consider conducting seminars or webinars to briefly discuss how to handle scams and fraud in investing in the PSM. The programs under the Accounting Education Department (AED) differ only slightly in the subjects they cover, focusing on financial instruments and investing. Therefore, further studies and observations can be conducted, such as selecting programs outside the Accounting Education Department to test whether the program actually moderates students' capacity and willingness to invest in the PSM.

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The rise of nomophobia and its effect on the learning behavior of senior high school students

Valero, Alvin Joseph M. ✉
Divine Word College of San Jose, Philippines (alvinjosephvalero@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

The rise of nomophobia poses a multi-faceted challenge to the educational and psychological well-being of senior high school students. Thus, this study explores the prevalence of Nomophobia (No-Mobile-Phone Phobia), the anxiety and distress experienced when an individual is unable to use or access their smartphone, among 164 senior high school students in Divine Word College of San Jose and its subsequent impact on their learning behavior and academic performance. Using a descriptive-correlational design and an adapted questionnaire, this study found a high prevalence of severe nomophobia among senior high school students. Contrary to common belief, the same group displayed high scores across key indicators of effective learning behavior, including collaborative learning, task completion, and active classroom participation. Critically, the correlational analysis revealed no statistically significant relationship between the prevalence of nomophobia and any measured criterion of learning behavior. These results challenge the prevailing idea that high phone attachment automatically indicates a decline in academic focus. This study suggests that students may have adopted effective coping strategies to manage their mobile usage without compromising their academic performance. The study recommends further qualitative research into these coping strategies and other factors, such as school policy and parental monitoring, that may mediate the negative educational impact of high nomophobia.

Keywords: nomophobia, learning behavior, mobile phone addiction, senior high school students, academic performance

The rise of nomophobia and its effect on the learning behavior of senior high school students

1. Introduction

As the Philippine education system innovates and employs new and relevant techniques using smartphones, the internet, and AI, signs of nomophobia have emerged in high school students. Nomophobia, derived from the wordplay NO MO(bile) PHO(ne) (pho)BIA (Yilmaz et al., 2023), is a condition of uneasiness or irrational fear of being unable to use one's smartphone, being disconnected from the Internet, or having a low-battery-charged phone (Dixit et al., 2010). This situational condition arises when a smartphone is detached from its owner in a challenging scenario. As King et al. (2013) stated, "Smartphones play the role of a protective shield when used to avoid direct personal connections." Therefore, social interactions (Bragazzi & Del-Puente, 2014) are often compromised by this condition. This overreliance on smartphones increased one's screen time. It can later lead to nomophobia and can affect students' learning behavior. This can threaten a student's academic performance (Felisoni & Godoi, 2018). Although smartphones have become highly useful, senior high school students face challenges related to their learning behavior due to prolonged smartphone use.

The problematic use of mobile phones significantly influenced students' engagement in schoolwork (Ogbuabor, 2022). As Marsepa et al. (2025) noted, there are adverse effects of students' smartphone use, such as regularly neglecting schoolwork and losing awareness of time when using smartphones for prolonged periods. However, Buctot et al. (2021) suggested that Filipino high school students who used smartphones frequently perceived their academic performance as better. This study focused on the implications of nomophobia for the learning behavior of Divine Word College of San Jose senior high school students, thereby making it more specific and smaller in scale.

Research Objectives - The research objectives for this study were to: (1) determine the profile of Senior High School Students in terms of sex, age, grade level, academic strand, social network sites (SNS) use, and duration of smartphone use; (2) assess the prevalence of nomophobia among senior high school students of Divine Word College of San Jose; (3) determine the extent of learning behavior of Senior High School Students; and (4) determine the significant relationship between the rise of nomophobia and the learning behavior of senior high school students in Divine Word College of San Jose.

Significance of the Study - The results of this study will be greatly beneficial to the following. Divine Word College of San Jose senior high school students will be aware of the effects of nomophobia on their learning behavior. The Divine Word College of San Jose administration and teaching staff will have a clear understanding of the impact of nomophobia on senior high school students' learning behavior. It can implement an intervention program based on the assessed level of nomophobia. The community will have clear knowledge of nomophobia, can dispel myths about phone use, destigmatize the mental health struggles associated with nomophobia, and develop a deeper understanding of students' struggles with phone use. Lastly, future researchers will have a point of reference when undertaking such a study.

Scope and Delimitation of the Study - This study evaluated whether a relationship exists between nomophobia and learning behaviors among Senior High School Students at Divine Word College of San Jose. This study was limited to the currently enrolled 412 Grade 11 and 12 Senior High School Students of Divine Word College of San Jose, A.Y. 2025-2026, at General Lukban St., Barangay 8, San Jose, Occidental Mindoro. This study was conducted during the second quarter period of the first semester of the Senior High School Department. The researcher opted to exclude students with disabilities such as legal deafness, manifesting autism, and diagnosed personality disorders. The researcher also excludes the junior high school population of Divine Word College of San Jose, as this would only lengthen the study duration. Extraneous variables not included in the study are gender,

socioeconomic status, parental involvement, smartphone experience, and academic achievement. The study assessed only the level of nomophobia and did not propose an intervention program. The data gathered from this study informed the development of an intervention program, if applicable.

2. Methodology

Research Design - This research used a quantitative method (descriptive-correlational design) to collect and evaluate numerical data to identify the patterns and correlations within the collected data. Descriptive design was used to determine the profile of senior high school students in terms of age, sex, grade level, academic strand, duration of smartphone use, and social network sites (SNS) use; to assess the prevalence of nomophobia; and to determine the extent of learning behavior of senior high school students. Moreover, a correlational design was used to assess the significant relationship between the rise in nomophobia and the learning behavior of senior high school students.

Respondents of the Study - There were 412 senior high school students currently enrolled in Divine Word College of San Jose. A sample size of 164 was calculated using the Raosoft Sample Size Calculator, with a 5% margin of error and a 95% confidence level. Using the stratified random sampling method based on their grade level, the distribution is as follows: St. Agatha: 13, St. Francis: 13, St. Isidore: 13, St. Angela: 12, St. Louise: 12, St. Matthew: 16, St. Catherine: 17, St. Roch: 15, St. Barbara: 13, St. Teresa: 12, St. Vincent de Paul: 10, and St. Hubert: 18. It allowed the researcher to statistically assess a subset of individuals selected from a large group/population to create a response from the entire group.

Research Instrument - The main instrument for this study was an adapted questionnaire. The first part established the respondents' profiles by identifying their age, sex, grade level, duration of smartphone use, and use of social networking sites (SNS). In the second part, respondents selected the level of perceived prevalence of nomophobia in school. The adapted "Nomophobia Questionnaire (NMP-Q) tool," developed by Yildirim and Correia (2015), was used. The last part assessed the extent of learning behaviors among senior high school students, and an adapted questionnaire, "Learning Behavior Questionnaire in the Classroom" by Wati et al. (2025), was used to collect data. In addition, the adapted questionnaires were validated by three experts from the graduate school department of Divine Word College of San Jose. The experts' comments and suggestions were incorporated into the final versions of the questionnaires.

Data Gathering Procedure - The study was initiated by securing the necessary approvals from the Basic Education Principal and the Senior High School Academic Coordinator to ensure compliance with the school's institutional and ethical protocols. Once approval was granted, informed consent forms containing the Data Privacy statement were distributed to respondents. The researcher handled the distribution and administration of surveys for four nonconsecutive days. All data from completed surveys were carefully collected, coded, and tabulated for statistical analysis to assess the correlation between nomophobia and learning behavior.

Statistical Treatment of the Data - Data was evaluated using both descriptive and inferential statistics. Descriptive Statistics (mean, frequency, and percentage) were utilized to describe the prevalence of nomophobia among senior high school students and students' learning behavior. Inferential Statistics (Pearson's Product-Moment Correlation Coefficient (r)) was used to test the relationship between the prevalence of nomophobia among senior high school students and students' learning behavior. Significance was assessed at the 0.05 level.

Ethical Considerations - This study was conducted to protect the privacy and rights of the respondents as prescribed by the principles outlined in the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979) and the Declaration of Helsinki (World Medical Association, 2013). Informed consent was given to students. The respondent's identities were protected from disclosure by using codes rather than personal names to ensure privacy. Data collected was kept in a secure place, and information shall be used only for academic purposes. Additionally, the Data Privacy Act of 2012 ensured the proper handling of data, including its deletion and modification.

3. Results and Discussions

Table 1
Demographic Profile of the Respondents (n=164)

Demographic Profile		Frequency (f)	Percentage (%)
Sex	Male	67	40.85
	Female	97	59.15
	Total	164	100.00
Age	15-17	152	92.68
	18-20	12	7.32
	BSMA	61	25.96
	Total	164	100.00
Grade level	11	79	48.17
	12	85	51.83
	Total	164	100.00
Strand	STEM	84	51.22
	ABM/BAE	34	20.73
	HUMSS/ASSH	46	28.95
	Total	164	100.00
Social Media Sites	Facebook	11	6.71
	X	0	0.00
	Instagram	16	9.76
	TikTok	38	23.17
	Telegram	9	5.49
	Multiple	90	54.88
	Total	164	100.00

Table 1 presents the demographic profile of the respondents with respect to sex, age, grade level, and social media sites among Senior High School students at Divine Word College of San Jose. The demographic profile of the respondents, by sex, comprised 40.85 percent male and 59.15 percent female. The population of Senior High School Students is predominantly female. By age, the majority (92.68 percent) were aged 15-17, while the remaining 7.32 percent were aged 18-20. As for the grade level, 48.17 percent were grade 11 students and 51.83 percent were grade 12 students, making the sample an almost perfect halfway split. Additionally, within the academic strand or cluster, STEM, comprising 51.22 percent, has the largest share of responses because it has the largest population in the department; HUMSS/ASSH, which has 28.95 percent, and ABM/BAE, which has the smallest population in the department, comprise 20.73 percent. ABM/BAE has the fewest respondents, with only two sections, whereas the other two strands have four to six sections. As Malaguial et al. (2023) stated, most students prefer the STEM strand because of greater personal interest and because it can lead to more job opportunities and positions with higher socioeconomic value. In terms of social media sites used, most of the respondents, 54.88 percent, used multiple social media sites, followed by TikTok having 23.17 percent of users, then by Instagram having 9.76 percent of users, Facebook having 6.71 percent of users, Telegram having 9.76 percent of users, and finally, the study did not yield any response from users who solely use X, formerly Twitter. TikTok, the most recently developed application in the selection, yielded the highest number of solo users, as Xu et al. (2019) argue that TikTok became popular due to its diverse marketing strategies, advanced artificial intelligence, and its ability to meet user needs.

Table 2
Profile of the Respondents in terms of Duration of Phone Usage per Hour

Time of Use		Frequency (f)	Percentage (%)
During Class	<=3hrs	151	92.07
	>3hrs	13	7.93
Before Class	<=3hrs	131	79.88
	>3hrs	33	20.12
After Class	<=3hrs	68	41.46
	>3hrs	96	58.54
Upon Waking Up	<=3hrs	155	94.51
	>3hrs	9	5.49

Before Going to Sleep	<=3hrs	73	44.51
	>3hrs	91	55.49
During Study Hours	<=3hrs	139	84.76
	>3hrs	25	15.24
During Free Time	<=3hrs	49	29.88
	>3hrs	115	70.12
	Total	**164**	**100.00**

Table 2 presents the demographic profile of the respondents in terms of duration of phone usage per hour of the Senior High School Students in Divine Word College of San Jose. A large majority of respondents (92.07%) used their phones for 3 hours or less during class time. Only 7.93% of participants used their phones for more than 3 hours. Students are more focused on learning than on their phones during class. Most respondents (79.88 percent) used their phones for 3 hours or less, while 20.12 percent used their phones for more than 3 hours before class. Although most limit their pre-class phone use, a fifth of respondents use their phones. A majority (58.54%) use phones after class for more than 3 hours, whereas 41.46% limit their phone use to 3 hours or less. Respondents have more time on the phone immediately after class. Predictably, the vast majority (94.51 percent) use their phones upon waking, while 5.49 percent use them for more than 3 hours. Phone use upon waking is typically a glance, not a sustained period. A majority (55.49 percent) use phones before going to sleep for more than 3 hours, whereas 44.51 percent limit their phone use to 3 hours or less. Similar to the results from phone use after class, extended phone use before going to sleep increases, as students use phones for entertainment or communication to lull themselves to sleep. However, disconnecting from social media and phone use affected people's physical health, with sleep and physical rest being critical (Nguyen, 2021). As expected, 84.76 percent use phones for less than 3 hours during study hours, while 15.24 percent use their phone for more than 3 hours. Students successfully limit their phone use and remain focused during study sessions. As Nguyen (2021) stated, reducing social media use helped students be more productive during activities and at work and more mindful of the task at hand. Lastly, a minority (29.88 percent) use their phones during free time, while 70.12 percent use them for more than 3 hours. Notably, free time is the primary opportunity for prolonged heavy phone use.

Table 3 presents the mean prevalence of nomophobia among Senior High School Students at Divine Word College of San Jose. The overall mean score is 2.83, indicating a high level. There is a high level of nomophobia in senior high school students. Senior high school students might experience anxiety or discomfort when unable to access their phones. The majority of indicators displayed a High level, the highest with a weighted mean of 3.24 being Indicator 7: "If I did not have a data signal or could not connect to Wi-Fi, then I would constantly check to see if I had a signal or could find a Wi-Fi network," or connectivity fear. Maintaining stable online access is a key concern for students. As Anastasya et al. (2022) stated, internet use becomes more consistent in adulthood. The individuals would explore and experiment online by trying new things or having new experiences. Only two indicators fell into the Low category, the lowest being Indicator 11: "I would be nervous because I would be disconnected from my online identity," with a weighted mean of 2.31. The student's online identity was the least concerning factor. This contrasts with the study by Huang et al. (2021), in which people tend to use the ideal self and the ought self as self-guides to regulate their behavior. This self-discrepancy can be addressed through a reconstruction of one's online persona.

Table 3
Mean Level of Prevalence of Nomophobia

Indicators	Weighted Mean	Interpretation
1. I would feel uncomfortable without constant access to information through my smartphone.	3.02	High
2. I would be annoyed if I could not look up information on my smartphone when I wanted to do so.	2.91	High
3. Being unable to get the news (e.g., happenings, weather, etc.) on my smartphone would make me nervous.	2.83	High

4. I would be anxious if I could not use my smartphone whenever I wanted to do so.	2.98	High
5. Running out of battery in my smartphone would scare me.	2.85	High
6. If I were to run out of credits or hit my monthly data limit, I would panic.	2.45	Low
7. If I did not have a data signal or could not connect to Wi-Fi, then I would constantly check to see if I had a signal or could find a Wi-Fi network.	3.24	High
8. If I could not use my smartphone, I would be afraid of getting stranded somewhere.	3.09	High
9. If I could not check my smartphone for a while, I would feel a desire to check it.	2.95	High
10. I would feel nervous because I would not be able to receive text messages and calls.	2.76	High
11. I would be nervous because I would be disconnected from my online identity.	2.31	Low
12. I would be anxious because I could not keep in touch with my family and/or friends.	3.02	High
13. I would be uncomfortable because I could not stay up-to-date with social media and online networks.	2.55	High
14. I would feel uncomfortable because I could not check my notifications for updates from my connections and online networks.	2.66	High
15. I would feel anxious because I could not check my private messages or group chats.	2.80	High
OVERALL MEAN	2.83	High

Legend: 3.26 – 4.00 Very High, 2.51 – 3.25 High, 1.76 – 2.50 Low, 1.00 – 1.75 Very Low

Table 4 presents the mean level of learning behavior among Senior High School students at Divine Word College of San Jose. The overall mean score is 2.77, indicating a high level. Senior high school students have a high inclination toward traditional, in-person, and teacher-led learning behaviors. Students were also aware that smartphones have disruptive roles in education. Indicator 5, "I enjoy group work with classmates inside the classroom rather than virtually," was the only indicator rated Very High, with a weighted mean of 3.43. Students exhibited a strong preference for in-person or face-to-face classes. Students valued face-to-face instruction, in-person class discussions, and organic bonding (Singh et al., 2021). The majority of the indicators fell into High, suggesting a strong preference for structured and in-person learning. Students highly valued learning in a physical classroom and teacher guidance (Indicators 1, 4, and 5). They were likely to regulate their phone use and to cultivate mindfulness and awareness in the classroom (Indicators 3, 6, 13, 15). Face-to-face interaction and participation had a better motivating effect on students than online teaching (Marco-Fondevila et al., 2022). Two indicators scored Low, Indicators 7 and 8. Students are least likely to study independently without the use of internet-connected devices. As supported by Vu et al. (2023), in the digital environment, knowledge is readily accessible, and those with stronger self-learning competence can acquire it more quickly.

Table 4

Mean Extent of Learning Behavior of Senior High School Students

Indicators	Weighted Mean	Interpretation
1. I learn more from teachers than from the Internet.	2.96	High
I find that using smartphones during face-to-face sessions in class is not useful for my learning.	2.56	High
I believe that using smartphones during class distracts my learning.	2.96	High
I can learn more by sharing ideas with other friends in class rather than in online chats.	3.23	High
I enjoy group work with classmates inside the classroom rather than virtually.	3.43	Very High
I prefer school subject matters to be announced during school hours rather than in chat messages during outside school hours.	3.12	High
I study most of the subject matter myself without the use of my smartphone or gadgets.	2.39	Low
I study most of the subject matter myself without the Internet.	2.18	Low
I am interested in developing ideas about the subject matter taught by the teacher in class rather than looking up the ideas online.	2.84	High

I fully participate in all of my daily subjects without the help of my smartphone.	2.60	High
After school, I immediately finish the school assignments given by the teacher without any form of distraction from my smartphone.	2.47	High
I do not feel the need to use my smartphone to compete with other students for good grades.	2.77	High
I take notes on the lecture the teacher displays on the TV. rather than taking a picture of it.	2.68	High
I prefer to be closely supervised by the teacher when doing schoolwork so I am not distracted by my smartphone.	2.82	High
I often sit where the teacher can see if I am using my smartphone.	2.59	High
OVERALL MEAN	2.77	High

Legend: 3.26 – 4.00 Very High, 2.51 – 3.25 High , 1.76 – 2.50 Low, 1.00 – 1.75 Very Low

Table 5 presents the results of the correlation analysis between the two variables: the prevalence of nomophobia and learning behavior. As shown in the table, the correlation coefficient (*r*) is 0.034, which is extremely close to zero. This indicates a very weak, positive linear relationship between the prevalence of nomophobia and the learning behavior of the senior high school students. A positive correlation means that as the level of Nomophobia increases slightly, the level of the measured Learning Behavior also increases slightly; however, the effect is nonexistent. The *P*-value is 0.666. In hypothesis testing, if the *P*-value is greater than the significance level, the null hypothesis cannot be rejected. Since 0.666 > 0.05, the relationship between the two variables is Not Significant. This is further supported by the t-value of 0.433, which is much smaller than the Critical Value of 1.975. Although there is no significant correlation between the two variables, it is necessary to inform students that learning suffers when a smartphone is used in class and to raise awareness of how one's phone use may adversely affect other students' learning. Educators must know when attention during lectures decreases so that they can prepare their lessons accordingly (Mendoza et al., 2018).

Table 5
Correlation Coefficients and p-values for H_0

Variables	Correlation Coefficient	Effect Size (r^2)	Critical value	t-value	*P-value*	Interpretation
Prevalence of Nomophobia → Learning Behavior	0.034	0.001	1.975	0.433	0.666	Not Significant

Legend: p-value < 0.05 Significant

4. Conclusions and Recommendations

Based on the research findings, the following conclusions were drawn. The majority of the respondents from the Senior High School Students were females of ages ranging from 15-17 who came mainly from the Grade 12 STEM strand/cluster who use multiple social media sites upon waking up for less than 3 hours a day. Senior high school students have high levels of nomophobia, and they also displayed a greater preference for in-person classroom learning and teacher-led instruction with little to no phone usage. Therefore, there is no significant relationship between the prevalence of nomophobia and learning behavior.

Regarding the findings and conclusions, the following recommendations are provided. A larger sample, including junior high school students, can be studied to yield more reliable results. Educators can promote adequate digital literacy, awareness of the adverse effects of smartphone addiction, and appropriate phone use. Even though there is no significant relationship between the two variables, it is important to note that nomophobia, in fact, is associated with mental health problems, such as higher stress, anxiety, irritability, sleeplessness, and depression, so schools and parents can integrate planned "no phone breaks" for students' mental health and productivity. Schools may prioritize in-person collaborative activities and promote a low-stakes accountability culture among students. Future researchers can further explore the coping mechanisms of students with high nomophobia and their learning behavior.

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Work ethics and performance of Generation Z employees in the Local Government Unit of San Jose, Occidental Mindoro

Orsos, Emelyn M. ✉
Divine Word College of San Jose, Philippines (emelynmorsos@gmail.com)
Peditin-Bocobo, Christine Mary M.
Divine Word College of San Jose, Philippines (tinpeditin08@gmail.com)
Amarila, Pauline T.
Divine Word College of San Jose, Philippines (amarila.pauline@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

Generation Z (Gen Z), the first digitally native cohort (born 1997–2012), is rapidly entering the global workforce and is projected to account for 40 percent of workers in less than a decade, with 65 percent already participating in the Philippine labor force. Using a descriptive correlational design and 197 Gen Z employees, this study explores the relationship between work ethics and job performance among Gen Z employees in the Local Government unit of San Jose, Occidental Mindoro. The findings reveal that Gen Z employees exhibit very high levels of work ethics and job performance, with a statistically significant positive correlation identified between ethical orientation and performance, particularly in core task execution and organizational citizenship behaviors (OCBs). The analysis shows that counterproductive behaviors among this group are generally low and not significantly associated with their work ethics. This suggests that a strong work ethics may contribute to improved employee performance in public-sector organizations. The results imply that while ethical standards primarily drive Generation Z employees in the locality, there are identifiable areas for improvement in managing potential negative workplace behaviors. Furthermore, fostering a work environment that nurtures these values is crucial for sustaining and improving job performance in local government settings. Therefore, the Local Government Unit may invest in regular training programs focused on ethics, professional development, and the specific skills needed to enhance job performance. These programs may be tailored to the needs and learning styles of Gen Z employees, incorporating technology and interactive elements to maximize engagement and knowledge retention.

Keywords: better management, work ethics, work performance, Generation Z, counterproductive behaviors

Work ethics and performance of Generation Z employees in the Local Government Unit of San Jose, Occidental Mindoro

1. Introduction

Generation Z (Gen Z) comprises individuals born between 1997 and 2012 who are completing their higher education and entering the workforce (Son, 2022). This generation is considered the emerging pivotal workforce as they enter the labor force. According to his study, Gen Z is the most diverse and technologically sophisticated generation, making them the first "digitally native" generation, as they were born into a world in which data is ubiquitous. In the Philippines, Dagooc (2023) reported that 65 percent of Gen Z are already participating in the workforce. It is projected that, in less than 10 years, 40 percent of the workforce will comprise Gen Z. Regarding Gen Z's work ethics, they are observed to be concerned with their future careers and with moral and ethical conduct at work (Bulut & Maraba, 2021). Bulut & Maraba (2021) also state that this generation values financial stability, skill development, and job opportunities. The study of Knipp and Gallagher (2021) also provided some insights about the work ethic of Gen Z. According to this, the researchers found that older generations (Baby Boomers and Generation X) tend to have a higher level of centrality of work as compared with the younger generations (Millennials and Generation Z). Based on the conclusions, older generations demonstrate a greater work ethic than younger generations.

Regarding the work performance of Generation Z, Wulur and Andagi (2023) investigated the causes and implications of Gen Z employee performance. Based on their findings, several factors affect the job performance of Zoomers. Important components include the generation's use of digital tools and social media platforms, work-life balance, and employee engagement and satisfaction. In addition, aspects that lead to enhanced overall performance of this generation also include inclusive work cultures, a sense of belonging and freedom of speech, and a healthy workplace culture. The study by Wulur and Mandagi (2023) examined the effects of Gen Z employees' performance on overall organizational outcomes, and the findings indicated that Gen Z has a positive impact, contributing to increased productivity and effectiveness.

From another perspective, Generation Z employees' performance is associated with productivity, efficiency, and work (Wasserbauer & Saputra, 2024). As Gen Z is raised in the digital era, they tend to be highly familiar with the internet and technology; their digital skills enable them to use these tools and social media platforms in the workplace. Moreover, Wasserbauer and Saputra (2024) also see the following indicators of Gen Z employees' performance: flexibility/adaptability, creativity and innovation, collaboration and teamwork, and feedback-seeking and continuous learning. According to the study, Gen Z is capable of adapting effectively to dynamic environments and prefers flexible work arrangements. In addition, this generation can engage in inventive thinking, propose alternative solutions, and introduce innovative perspectives into the workplace. Generation Z also collaborates in team environments and tends to seek feedback and engage in continuous learning and personal development to support personal growth (Wasserbauer & Saputra, 2024).

Work ethics affect an employee's job performance. Therefore, organizations must promote sound work practices among employees. The integration of Generation Z into the workforce has introduced transformative shifts in work ethics and organizational dynamics, particularly within public-sector institutions such as the Local Government Unit (LGU) of San Jose, Occidental Mindoro. Shaped by rapid technological advancements, global crises, and heightened social consciousness, Gen Z employees prioritize purpose-driven work, digital fluency, and workplace flexibility, redefining traditional paradigms of productivity and engagement (Kristiana et al., 2025). As this cohort increasingly assumes roles in local governance, their distinct values—such as a commitment to social responsibility, sustainability, and inclusivity—align closely with the public sector's mission to foster community welfare and civic participation.

The entry of Gen Z into the workplace of the Local Government Unit (LGU) of San Jose, Occidental Mindoro, presents not just opportunities but also challenges. Their entry also presents challenges, including balancing innovation with institutional continuity, addressing mental health needs, and bridging intergenerational gaps in work styles. This report examines how the LGU of San Jose can harness Gen Z's technological prowess, creative problem-solving, and ethical alignment to enhance public service delivery, while navigating retention concerns, mentorship demands, and evolving workplace expectations. By fostering adaptive policies, inclusive cultures, and supportive environments, the municipality can stand to unlock a new era of efficiency and community-centered governance driven by its youngest workforce. Despite foreign studies on the work ethics and job performance of Generation Z and other generations in the workplace, there is limited research in the Philippines on Gen Z and their work ethic and performance in the local context. The researchers checked available literature and journals. However, the lack of studies in this area presents an opportunity for researchers to explore this topic. As Gen Z enters the workforce, it is essential to gather data to understand their characteristics and performance as employees.

Research Objectives - This study aimed to determine the relationship between work ethics and the performance of Generation Z employees in the Local Government Unit of San Jose. Specifically, it seeks to (1) determine the work ethics of Generation Z Employees in the Local Government Unit of San Jose in terms of work itself, moral attitude towards work, and intrinsic motivation; (2) determine the performance of Generation Z Employees in the Local Government Unit of San Jose in terms of task performance, contextual performance, and counterproductive behavior; and (3) examine the significant relationship between work ethics and the performance of Generation Z Employees in the Local Government Unit of San Jose.

Significance of the Study - The study aims to examine the work ethics and performance of Gen Z employed in the Local Government Unit (LGU) of San Jose, Occidental Mindoro. The findings of this study will be significant not only for Gen Z employees but also for the LGU of San Jose, Occidental Mindoro, policymakers, the general public, and future researchers. First, for Gen Z employees, their unique attitudes, values, and technological adaptability offer insights into how modern work ethics and performance evolve in the public sector. The LGU of San Jose is beneficial to the study because it provides a real-world, organized environment in which Generation Z's work ethic and performance can be meaningfully analyzed. The insights gained can help improve the efficiency of public services, employee management, and policy formulation within local government. For policymakers, this study will provide the authority, structure, and practical application needed to translate insights into Generation Z's work ethic and performance into effective workplace and governance policies. This role ensures that the study contributes to improving ethical standards, employee engagement, and organizational productivity. For the public, they provide valuable feedback, social expectations, and real-world assessments of Generation Z's work ethics and performance. Their involvement helps ensure that the study reflects authentic experiences, promotes accountability, and contributes to the development of a more ethical, people-centered workforce. Lastly, future researchers are beneficial because they extend, validate, and enhance the study of Generation Z's work ethics and performance. Their work ensures the continued development of knowledge, promotes improved workplace policies, and supports adaptation to the changing needs of the modern workforce.

Scope and Delimitation of the Study - This study focused on the work ethic of Gen Z employees and their performance in the Local Government Unit (LGU) of San Jose, Occidental Mindoro. As aforementioned, this study was conducted in the municipality of San Jose, Occidental Mindoro, from August to November 2025. The respondents are limited to Gen-Z employees currently employed by LGU San Jose, regardless of their employment status (Permanent, Contractual, Job Order, or Contract of Service Worker). A survey questionnaire on online platforms was used to gather the needed data for the study. In line with the research focus, this study examines two key variables: work ethic and work performance. Given these limitations, the following challenges may be encountered in conducting this research: First, the number of Gen Z workers is limited, thereby restricting the study's sample size. Second, there is limited available literature and studies that focus on this specific topic. Lastly, researchers also face time constraints due to several personal commitments.

2. Methodology

Research Design - A descriptive correlational research design was used to assess the work ethics of Gen-Z employees in LGU San Jose and their workplace performance. The goal of this design is to determine the extent of the relationship between variables as they naturally exist, rather than to establish a causal relationship between them (Creswell & Creswell, 2018). Moreover, descriptive research aimed to determine the work ethics and performance of Generation Z employees, whereas correlational research was used to test the significant relationship between two variables.

Respondents of the Study - The respondents of this study were Gen Z employees of the Local Government Unit of San Jose, Occidental Mindoro. In this regard, employees aged 18-28 are the target respondents. In addition to permanent and coterminous employees, workers under job orders and contracts of service were included in the research. The researchers conducted a complete enumeration of 197 Gen Z employees, comprising 162 contractual, job order, and contract of service workers and 35 permanent Gen Z employees. This is based on the number of agency employees provided.

Research Instrument - A survey questionnaire served as the study's research instrument. The researchers adapted the questionnaire developed by Abun et al. (2022) to assess the work ethics and performance of Gen Z employees. To assess the validity of the adapted questionnaires, the researchers employed expert validity. Three experts from the graduate school department, who specialize in research and education, attended. All expert suggestions and comments were incorporated into this study prior to the final administration of the survey questionnaires.

Data Gathering Procedure - To obtain permission to conduct this study, researchers first draft a letter of communication to coordinate with the relevant authorities. The research adviser signed the letter. Upon approval, the researcher secured permission from the management of LGU San Jose. To ensure that all respondents are fully informed, a consent form was given. Survey questionnaires were administered in person by the researchers over 5 days. The collected data was tallied and tabulated. This data was analyzed using the statistical tools specified in the data analysis plan.

Statistical Treatment of the Data - Descriptive and inferential statistics were used to treat the data. For descriptive statistics, the weighted mean was used to assess the extent of work ethics among Generation Z Employees in the Local Government Unit of San Jose. Moreover, to determine if there is a relationship between work ethics and the performance of Generation Z Employees, Pearson’s r moment correlation was employed.

Ethical Considerations - Researchers follow strict ethical considerations. Related studies and literature were cited correctly. At all costs, plagiarism was not to be practiced in conducting this research. Researchers also obtained permission from the Local Government Unit of San Jose, Occidental Mindoro, to conduct the survey. Regarding the survey questionnaire used in this study, proper citation was provided, as the researchers adapted a survey instrument from a previous study. There was also a consent form to be provided to respondents for their approval and to ensure the confidentiality of their participation in the study.

3. Results and Discussions

Table 1
Mean Level of Work Ethics of Generation Z Employees in terms of Work Itself, Moral Attitude toward Work, and Intrinsic Motivation

Indicators: (Work Itself)	Weighted Mean	Interpretation
1. I consider my occupational career to be one of the most essential activities in my life.	3.75	Very High
2. I believe that a person is known in society by the work he does.	3.10	High
3. I believe that a person is known in society by the work he does.	3.05	High

4. Even if I do not have to work to earn a living, I would still prefer to continue working.	3.30	Very High
5. I believe that work provides a powerful channel for expressing one's knowledge, abilities, and creativity.	3.70	Very High
COMPOSITE MEAN	3.38	Very High
Indicators: (Moral Attitude toward Work)		
1. I believe that even in this fast-changing world, sincerity, hard work, and integrity are still the key factors to my success in my work life.	3.80	Very High
2. I feel a moral obligation to give a full day's work for a full day's pay.	3.45	Very High
3. I believe that one should never be last for work unless there is a real emergency.	3.35	Very High
4. I believe that having strong ethics involves being reliable and accountable.	3.65	Very High
5. Even if it means risking my position, I am prepared to defend what is morally correct.	3.35	Very HIgh
COMPOSITE MEAN	3.52	Very High
Indicators: (Intrinsic Motivation)		
1. A job well done is a reward in itself.	3.60	Very High
2. I welcome jobs that involve greater responsibility and challenge, as they contribute to my learning and growth.	3.80	Very High
3. I often set personal objectives that inspire me to do better at work.	3.60	Very High
4. I find purpose in my work when I see how it contributes to my own growth.	3.70	Very High
5. I am inspired to accomplish tasks because I take pride in my work.	3.50	Very High
COMPOSITE MEAN	3.64	Very High

Legend: 3.26 – 4.00 Very High Level, 2.51 – 3.25 High Level, 1.76 – 2.50 Low Level, 1.00 – 1.75 Very Low Level

Table 1 presents the mean levels of work ethics among Generation Z employees with respect to work itself, moral attitudes toward work, and intrinsic motivation. For the work itself, the highest mean of 3.75 indicates that respondents consider their occupational career one of the most essential activities in their lives, which falls within the "very high." It indicates that work is a significant part of their identity and experiences. This refers to studies on work centrality, which examine how important people consider work to be compared to other areas of their lives. For instance, Ziegler and Schlett (2016) found that individuals who place a high value on work perceive job satisfaction as a stronger attitude, which, in turn, has a greater impact on their work-related involvement and behavior. However, the concept that "a person is known in society by the work he or she does" received the lowest rating (mean = 3.05) and still falls under the High verbal description" category. Although this is the lowest score, it still indicates that respondents recognize the relevance of one's employment in shaping social identity. This is supported by Pignault et al. (2021), who highlighted that societal conceptions of work significantly influence how individuals understand their social positions and how they perceive others' perceptions of them. The fact that this item remains high suggests that Generation Z workers remain conscious of how work affects social standing, though less so than other work-value factors.

In terms of attitude toward work, respondents consistently showed strong agreement with the indicators examined in the study, as indicated by a composite mean score of 3.38, which is considered "very high." A very high rating indicates that the construct being evaluated, whether it relates to perceptions, practices, competences, engagement, or satisfaction, is not only present but also well-established among the participants. This pattern is consistent with Likert-scale study interpretation frameworks, which means that scores greater than 3.25 generally indicate very positive responses (Allen & Seaman, 2017). As a result, the findings suggest that the group under study already exhibits a well-reinforced habit or behavior considered typical. The results are also consistent with the literature, noting that strong work values enhance job performance. Kostek (2012) found that individuals with high work centrality are more likely to demonstrate commitment, diligence, and productive behavior in the workplace. The Very High overall rating suggests that respondents possess work ethics aligned with dependable performance and strong dedication to their roles. Therefore, the data imply that the workforce holds positive attitudes that may contribute to effective and efficient service in their respective institutions. The respondents' high rating of their career as "one of the most important activities in their life" shows that work is central to their identity and daily experience. This aligns with research on work centrality, which examines how important people perceive work to be relative to other life areas. Ziegler and Schlett (2016) found that those who highly value work perceive

job satisfaction as more important, which strongly influences their work behavior and engagement. This explains why the respondents value their careers: when work is central, it shapes how they feel about and behave at their jobs. A mean score of 3.35, rated "very high," indicates that respondents are strongly committed to defending what is morally right, even if doing so risks their positions. This finding supports Johnson's (2020) view that moral courage is key to maintaining organizational integrity and public trust. This determination underscores the importance of ethical responsibility, particularly when it may be easier to compromise. Staying true to moral standards under challenging situations demonstrates sincerity and a commitment to doing what is right.

Lastly, in terms of intrinsic motivation, Table 1 reports the highest mean of 3.80, indicating that they welcome jobs that involve greater responsibility and challenge and contribute to their learning and growth, which falls within the "very high category." Employees tend to accept jobs that offer more responsibility and challenge. The Job Demands-Resources (JD-R) Model suggests that job resources, such as autonomy, feedback, and growth opportunities, help counteract the stress of high job demands (Galankis & Tsitouri, 2022). Although the lowest mean of 3.50 falls within the very high range, respondents are motivated to complete tasks because they take pride in their work. For instance, a study conducted among Malaysian public servants discovered a substantial correlation between job motivation and intrinsic happiness, which encompasses pride, a sense of success, and fulfillment (Ismail & Razak, 2016). The overall composite mean of 3.64 (described as "very high"), reflecting both high responsiveness to challenges and a sense of pride at work, supports findings that a mix of job resources such as autonomy, meaningfulness, and support, along with reasonable job demands, encourages engagement and well-being. This leads to lasting satisfaction and better performance. According to Kwon and Kim (2019), an integrative review of employee engagement and innovative behavior indicates that when employees face challenges but have sufficient resources, they are more likely to engage, innovate, and remain committed. Similarly, job autonomy has been shown to help employees thrive at work, suggesting that with responsibility and independence, people not only meet demands but also grow, learn, and flourish (Li, 2018).

Table 2 presents the mean levels of work performance among Generation Z employees for task performance, contextual performance, and counterproductive behavior. For task performance, the highest mean of 3.70 was achieved when they planned their work to be completed on time, which falls within the very high range. Parke et al. (2017) found that, in a two-week study, workers who used what the authors call "time management planning" (TMP)—that is, making task lists, setting priorities, and scheduling tasks—performed better each day than on days when they did not plan. A recent study found that effective time management techniques significantly enhance work performance and reduce workplace stress. This implies that the lower but still high mean indicates a steady, consistent application of planning as a strategy, enabling workers to manage their workloads with direction and clarity, thereby supporting timely job completion. Meanwhile, Mata et al. (2021) found that effective time management techniques significantly enhance work performance and reduce workplace stress. This implies that the lower but still very high mean (3.55) indicates a steady, consistent application of planning as a strategy, allowing workers to manage their workload with direction and clarity, thereby supporting timely job completion. Furthermore, studies on the broader advantages of time management beyond output corroborate a composite mean of 3.62 (very high), reflecting the importance of on-time delivery and meticulous preparation. According to a 2021 meta-analysis, time management is more strongly correlated with well-being and lower distress than with performance (Aeon et al., 2021). This suggests that workers who plan effectively and complete tasks on schedule may also have increased job satisfaction, reduced time-related worry, and general psychological well-being, all of which may support their long-term consistency in planning and execution.

Table 2
Mean Level of Work Performance of Generation Z Employees in terms of Task Performance, Contextual Performance, and Counterproductive Behavior

Indicators: (Task Performance)	Weighted Mean	Interpretation
1. I managed to plan my work so that it was done on time.	3.70	Very High
2. I created a well-organized plan that effectively guided me through the task.	3.55	Very High
3. I kept in mind the results that I have to achieve in my work.	3.55	Very High

4. I was able to separate the main issues from the side issues at work.	3.65	Very High
5. I knew how to set the right priorities.	3.65	Very High
COMPOSITE MEAN	3.62	Very High
Indicators: (Contextual Performance)		
1. I started a new task myself when my old ones were finished.	3.60	Very High
2. I took on a challenging work task when available.	3.40	Very High
3. I worked at keeping my job knowledge up-to-date.	3.70	Very High
4. I came up with creative solutions to new problems.	3.40	Very High
5. I knew how to solve difficult situations and setbacks quickly.	3.15	High
COMPOSITE MEAN	3.45	Very High
Indicators: (Counterproductive Behavior)		
1. I complained about unimportant matters at work.	2.05	Low
2. I focused on the negative aspects of a work situation rather than the positive ones.	1.90	Low
3. I spoke with colleagues about the negative aspects of my work.	2.10	Low
4. I spoke with people from outside the organization about the negative aspects of my work.	1.85	Low
5. I managed to get out of a work task easily.	2.25	Low
COMPOSITE MEAN	2.03	Low

Legend: 3.26 – 4.00 Very High Level, 2.51 – 3.25 High Level, 1.76 – 2.50 Low Level, 1.00 – 1.75 Very Low Level

Table 2 also shows the highest mean of 3.70 for the item "They worked at keeping their job knowledge up-to-date," which falls within the very high category. Corresponds with studies by R and Newman (2021), which highlight the importance of CPD for professionals seeking to maintain their competence and relevance throughout their careers. Similarly, recent studies and conceptual works confirm that professional competence is built on CPD and purposeful updating of knowledge, particularly in domains where standards are changing rapidly. A mean score of 3.15 (High) on knowing how to solve difficult situations and recover quickly aligns with Lin's (2024) findings. Some researchers refer to this as “problem-solving efficacy,” defined as the ability to apply knowledge and adapt under pressure. The recent study Developing problem-solving efficacy and job performance: Moderation of knowledge-oriented leadership explains that problem-solving efficacy connects employees’ motivation to learn (learning goal orientation) with their job performance and is influenced by supportive leadership that promotes knowledge sharing and learning.

The overall composite mean of 3.45**,** classified as “very high,” indicates a general tendency among respondents toward continuous learning and competence maintenance. This tendency aligns with findings from Ojha et al. (2025), who examined how knowledge management influences employee performance in higher education institutions. They found that robust knowledge management practices, such as creation, sharing, retention, and utilization, significantly enhance employee performance, especially when employees engage in continuous learning and creative use of knowledge. The composite mean reflects not only individual attitudes toward learning but also a workplace culture that supports ongoing development and adaptation. N The data shows that respondents focus on keeping their job knowledge up to date and usually stay ready to perform well. Still, the lower average in quickly handling difficult situations suggests a potential gap. Even when professionals update their knowledge, they may struggle to apply it to rapid problem-solving under pressure. This finding aligns with the literature: formal or informal CPD often requires organizational support, such as knowledge-focused leadership, opportunities to apply new skills, and problem-solving training, to improve adaptive performance and resilience (Lin, 2024).

In addition, Table 2 found that employees "managed to get off from a work task easily" (mean = 2.25, low), suggesting they may be avoiding work or putting in minimal effort rather than participating fully. This matches research on Counterproductive Work Behavior (CWB). For example, a study of academic and administrative staff found that poor attendance, time wasting, low performance, and refusal of assignments all harmed institutional effectiveness (Gillian & Bennett, 2016). Employees who can "get off easily" from tasks may be showing withdrawal or slack behavior, which fits the definition of CWB and can harm organizational goals and performance standards. The lowest mean, 1.85 for "spoke with people from outside the organization about the negative aspects of my work," is also consistent with the literature on misbehaving or counterproductive behaviors, particularly the

"contextual" or interpersonal forms of CWB, in which employees vent negativity or dissatisfaction externally. According to a recent meta-analysis by Gillian and Bennett (2016), organizational cynicism is positively correlated with CWB: cynicism about the organization or leadership frequently results in covert behaviors like gossiping, complaining to outsiders, or damaging the organization's reputation. The low overall composite mean (2.03), which falls within the "low" range, indicates that employees generally engage in both task-avoidant behavior (putting off duties) and limited negative external discussion about work. This is typically in line with research showing that, although CWB and deviant behaviors do occur, they are frequently moderated by organizational context: even in the face of dissatisfaction, the likelihood of CWB is decreased by supportive leadership, fair management practices, and a clear ethical climate ("Influence of Managerial and Workplace Factors on Counterproductive Work Behavior Within Private Organizations," 2024).

Table 3

Correlation Coefficients and p-values for Hσ

Variables	Correlation Coefficient	Effect Size (r^2)	Critical Value	t-value	*P-value*	Interpretation
Work Ethics → Performance (Task Performance) *r*						
Work Ethics (Work Itself)→ Performance (Task Performance)	0.630	0.397	2.080	3.717	<0.001	Highly Significant
Work Ethics (Moral attitude towards work) → Performance (Task Performance)	0.694	0.481	2.080	4.417	<0.001	Highly Significant
Work Ethics (Intrinsic Motivation) → Performance (Task Performance)	0.770	0.594	2.080	5.53	<0.001	Highly Significant
Work Ethics → Performance (Contextual Performance)						
Work Ethics (Work Itself)→ Performance (Contextual Performance)	0.507	0.257	2.080	2.695	0.014	Significant
Work Ethics (Moral attitude towards work) → Performance (Contextual Performance)	0.535	0.287	2.080	2.902	0.009	Significant
Work Ethics (Intrinsic Motivation)→ Performance (Contextual Performance)	0.505	0.255	2.080	2.681	0.014	Significant
Work Ethics → Performance (Counterproductive Performance)						
Work Ethics (Work Itself)→ Performance (Counterproductive Behavior)	-0.096	0.009	2.080	-0.442	0.660	Not Significant
Work Ethics (Moral attitude towards work)→ Performance (Counterproductive Behavior)	-0.390	0.152	2.080	-1.941	0.066	Not Significant
Work Ethics (Intrinsic Motivation)→ Performance (Counterproductive Behavior)	0.027	0.001	2.080	0.124	0.902	Not Significant
Work Ethics → Performance	0.499	0.249	2.080	2.639	0.015	Significant

Legend: p-value < 0.001 Highly Significant; p-value < 0.05 Significant p-value > 0.05 Not Significant

Table 3 shows the relationship between several aspects of employee performance and work ethic characteristics among Generation Z workers in the Local Government Unit of San Jose. The table includes sub rows for three work ethics aspects (Work Itself, Moral Attitude, Intrinsic Motivation) and is organized by performance outcome (task performance, contextual performance, and counterproductive conduct). The Pearson's r (correlation coefficient), an effect-size label, the crucial t, the observed t, the p-value, and an interpretation (such as "Highly Significant," "Significant," or "Not Significant") are provided for every pairing in the table. The overall association between work ethic and performance is shown in the bottom row ($r = 0.499$, $p = 0.015$), indicating a moderately favorable correlation that is statistically significant at the 0.05 level. This indicates that among Gen Z employees in the sample, higher work ethic scores are often associated with higher performance. Interpreting the overall $r = 0.499$ and $p = 0.015$: an r of 0.499 is a medium-to-large effect, meaning roughly that one can expect a meaningful positive association between work ethics and performance; as work ethics increase, so performs. The $p = 0.015$ indicates that this association is unlikely to be due to sampling error ($\alpha = 0.05$), so we reject the null hypothesis of no association. This empirical finding aligns with previous research demonstrating that generic work-ethic measures predict job performance, as evidenced by reviews and field studies reporting significant

positive correlations between work-ethic dimensions and employment outcomes (Salahudin et al., 2016).

The highly significant findings for task performance (Work Itself r = 0.630; Moral Attitude r = 0.694; Intrinsic Motivation r = 0.770; all $p < 0.001$) imply very strong positive relationships between these work-ethic facets and employees' core task accomplishment. These significant correlations, especially the very high link with intrinsic motivation (r = 0.770), align well with motivational theory and meta-analytic evidence showing intrinsic motivation is a robust predictor of higher quality and effortful work performance (SDT-based meta-analyses and reviews report consistently positive effects of self-determined/intrinsic motivation on workplace performance. In short, the results that intrinsic motivation and strong moral/work-itself orientations predict better task performance are supported by broader literature (Xue et al., 2022). The results marked as "Significant" for contextual performance (with moderate correlations of approximately 0.505–0.535 and p-values between 0.009–0.014) indicate that work ethic traits also encourage extra-role behaviors, such as helping, citizenship, and teamwork. This is logical: employees who value their work and have strong work ethics are more likely to engage in actions that benefit the organization voluntarily. This finding aligns with organizational research indicating that higher levels of contextual or organizational citizenship behaviors are associated with an ethical climate, shared organizational values, and positive work attitudes. These studies generally support the moderate but consistent correlations between work ethic and contextual performance (Benedicto & Caelian, 2021).

The results show that counterproductive work behavior (CWB) is not significantly related to the factors measured: Work Itself (r = −0.096, p = 0.660), Moral Attitude (r = −0.390, p = 0.066), and Intrinsic Motivation (r = 0.027, p = 0.902). Because these negative correlations are small or only marginally significant, a stronger work ethic does not clearly lead to lower CWB. The relationship may be weak or influenced by other factors, such as stress, job insecurity, perceived unfairness at work, or exclusion by coworkers. Recent studies on work ethic and CWB have yielded mixed findings: some show that a strong work ethic reduces CWB, whereas others find that this link depends on the work environment and individual circumstances, which may explain the lack of significant results for moral attitude. In particular, new research on Generation Z highlights that mental health and workplace pressures can affect whether positive work attitudes actually prevent negative behaviors. Therefore, these non-significant findings for CWB are expected and align with recent literature suggesting that the relationship between work ethic and CWB is not automatic but depends on situational factors (Misnan et al., 2024). Table 3 shows a clear and practically meaningful positive relationship between work ethics and employee performance among Gen Z in the Local Government Unit, especially for task and contextual performance, where effects range from moderate to large and are statistically robust. The non-significant findings for counterproductive behavior suggest a more complex picture: work ethic alone may not be sufficient to suppress deviance in the absence of favorable contextual conditions. Therefore, reject the null for the overall association (r = 0.499, p = 0.015) and for several subcomponents (notably task performance), but retain the null for the counterproductive outcomes. These empirical patterns are well supported by prior research showing strong links between intrinsic motivation/work ethic and performance, and they echo recent studies that treat the work ethic-CWB relationship as contingent on organizational and psychological moderators (Xue et al., 2022).

4. Conclusions and Recommendations

Based on the study's findings, the following conclusion was drawn: the work ethics of Generation Z (Gen Z) employees in the Local Government Unit of San Jose are very high. In terms of moral attitude toward work and intrinsic motivation, the level of the respondents' work ethics is very high as well. The extent of work performance among Gen Z workers in the Local Government Unit of San Jose, in terms of task and contextual performance, is very high. On the contrary, respondents' work performance, as reflected in counterproductive behavior, is low. Given the results, the work ethics of Gen Z employees in terms of the work itself, moral attitudes towards work, and intrinsic motivation have a highly significant relationship with the respondents' job performance in terms of task performance. In addition, respondents' work ethic, as measured by the three aforementioned subvariables, is significantly related to their contextual job performance. On the other hand, there is no significant relationship between the three subvariables of work ethic and respondents' work performance in terms of counterproductive

behavior. Overall, the results indicate a significant relationship between work ethic and respondents' performances.

Based on the findings and conclusions, the following recommendation was presented: LGU San Jose may maintain its cultivation of effective workplace practices and management to improve employees' work ethics and performance within the organization. By providing a healthy and professional workplace, fostering effective communication, recognizing and rewarding employees' achievements, and offering growth opportunities, the work ethic of Gen Z may improve, which may positively impact their job performance. LGU San Jose may invest in regular training programs focused on ethics, professional development, and the specific skills needed to enhance job performance. These programs may be tailored to the needs and learning styles of Gen Z employees, incorporating technology and interactive elements to maximize engagement and knowledge retention. To maintain a high work ethics, Gen-Z employees must have a positive outlook toward their work, maintain a positive moral attitude toward work, and possess high intrinsic motivation. To maintain high work performance, Gen Z employees must be skilled in time management, organization, and problem-solving. Employees may also refrain from engaging in counterproductive behaviors. Future researchers may also consider conducting this research in other government agencies and private enterprises to improve the study's results. They may also use additional variables to provide more detailed information on Gen Z workers' ethics and workplace performance. Lastly, future researchers may consider conducting this research in other government agencies and private enterprises to improve the study's results. They may also use additional variables, such as the impact of technology, leadership styles, and organizational culture, to obtain more detailed information about Gen Z workers' workplace ethics and performance. Additionally, longitudinal studies could be employed to track changes in work ethics and performance over time, providing a more comprehensive understanding of the factors influencing Gen Z employees' behavior.

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Teachers' integration of current events and students' interest in learning Araling Panlipunan

Bermudo, Jomer Vincent D.
Divine Word College of San Jose, Philippines (jomervincentbermudo@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

Recognizing the importance of contextualized instruction in the Philippine K–12 curriculum, the research sought to determine whether incorporating real-world issues into classroom discussions could enhance learners' motivation and engagement in the subject. Thus, this study examined the relationship between teachers' integration of current events and students' interest in learning Araling Panlipunan using a descriptive–correlational design involving 15 Grade 10 Araling Panlipunan teachers and 225 students from San Jose National High School. Teachers' integration of current events was measured using a researcher-made questionnaire. At the same time, students' interest was assessed using an adapted version of the Intrinsic Motivation Inventory (Interest/Enjoyment subscale) on a 5-point Likert scale. Descriptive statistics summarized the frequency and type of current-event integration, while Pearson's correlation coefficient tested the relationship between the independent and dependent variables. Findings revealed that students exposed to lessons enriched with current events demonstrated higher levels of interest, active participation, and perceived relevance of Araling Panlipunan to their daily lives compared to those taught with minimal contextualization. The results underscore the pedagogical value of using current issues to stimulate learners' curiosity, deepen their understanding, and strengthen their appreciation of social studies. This study contributes to the growing body of research on contextualized teaching. It offers practical implications for teachers to maximize the use of authentic and up-to-date materials to foster meaningful classroom experiences. Therefore, this study recommends that school administrators and curriculum planners support teachers through professional development programs and instructional resources that promote the effective integration of current events to improve student interest and engagement in Araling Panlipunan 10.

Keywords: Araling Panlipunan 10, current events, students' interest, descriptive–correlational research, contextualized instruction

Teachers' integration of current events and students' interest in learning Araling Panlipunan

1. Introduction

One of the significant learning areas in the Philippine secondary school system is Araling Panlipunan (AP), which aims to cultivate learners' civic awareness, critical thinking, and understanding of political, economic, cultural, and historical realities. One of the main challenges in teaching Araling Panlipunan is students' lack of sustained interest in the subject. Nuñez-Del Prado et al. (2025) found that boredom in AP often stems from rigid class schedules and teacher-centered approaches that limit student participation and creativity. Their study revealed that many learners perceive AP lessons as repetitive and disconnected from their realities, while teachers themselves expressed concern and frustration over students' disengagement.

To address this, some teachers adopted pedagogical innovations, including ICT integration, interactive strategies, and contextualized instruction. This finding underscores the urgency of exploring methods to bridge the gap between AP content and students' real-world experiences. One promising approach is the integration of current events, which provides learners with opportunities to connect historical and social concepts to contemporary issues such as politics, economics, and global challenges. Unlike textbook-centered instruction, this method can transform AP into a more relevant and engaging subject, thereby mitigating the boredom described by Nuñez-Del Prado et al. (2025). Research has shown that integrating current events into classroom instruction can address these challenges by fostering relevance and encouraging learners to connect concepts to real-world situations (Rhem, 2012). Current events provide opportunities for contextualized instruction, enabling students to apply historical and social concepts to contemporary issues such as climate change, inflation, political participation, and global conflicts. This approach allows learners to better appreciate the value of AP in their daily lives and in society at large (Mendoza & Alipio, 2022). Banaag (2024) emphasized that incorporating current events into social science education significantly enhances student engagement by making lessons more concrete and relatable. Further, recent scholarship highlights the broader role of contextualization in student learning. Dohinog et al. (2025) stressed that the utilization of contextualized instructional materials significantly improves learners' comprehension and motivation because lessons become more relatable when connected to real-life contexts. Their systematic review revealed that instructional strategies that reflect students' lived experiences foster deeper engagement and long-term interest in academic content. This finding reinforces the view that integrating current events into instruction is both relevant and essential for promoting meaningful student learning.

Despite the potential benefits, many AP classes in the Philippines remain textbook-centered and disconnected from present-day issues. Teachers may face challenges such as limited access to up-to-date resources, time constraints for completing the curriculum, and a lack of professional development in contextualized instruction (Reyes, 2020). Consequently, students continue to struggle with low engagement and diminished interest in AP lessons (Domingo, 2021). This problem underscores the pressing need to investigate how teachers' integration of current events into Araling Panlipunan instruction influences students' interest levels. By examining this correlation, the study aims to enhance teaching practices and ensure that AP instruction becomes more meaningful, interactive, and responsive to students' needs in the 21st-century classroom.

Research Objectives - This study aimed to determine the correlation between teachers' integration of current events and students' interest in learning Araling Panlipunan 10. Specifically, it aimed to (1) determine the extent of teachers' integration of current events in their Araling Panlipunan 10 lessons in terms of use of news articles, videos, and media resources; classroom discussions and activities; assessments and projects; and connections to real-life issues; (2) assess the level of students' interest in terms of enjoyment of learning, motivation to participate, perceived relevance of lessons, and overall interest in the subject; and (3) examine the significant relationship between teachers' integration of current events and students' interest in learning Araling Panlipunan 10.

Significance of the Study - The findings of this study on the correlation between teachers' integration of current events and students' interest in learning Araling Panlipunan 10 will be valuable to different stakeholders in the field of education. For students, the study highlights how the use of current events can make lessons in Araling Panlipunan more engaging, relatable, and meaningful. By connecting social studies concepts with real-world issues, students may develop greater intrinsic motivation, critical thinking, and appreciation of the subject. Ultimately, this can lead to improved academic performance and civic awareness. For teachers, the results can guide Araling Panlipunan teachers in adopting more effective strategies that contextualize lessons through current issues. It will provide evidence-based support for innovative classroom practices such as news analysis, debates, and issue-based projects, thereby enhancing teaching effectiveness and classroom engagement. Parents will benefit from the study's insights into how teaching strategies influence their children's interest in social studies. Greater student engagement can translate to more positive attitudes toward learning, improved study habits, and stronger connections between home discussions and classroom learning. Findings can inform school leaders on how to support teachers through training, resource allocation, and professional development programs focused on contextualized instruction. For the Department of Education (DepEd), the study contributes to the continuous improvement of the K–12 curriculum by providing empirical evidence supporting the integration of real-world, contextualized materials. It may serve as a basis for policy recommendations, teacher training modules, and instructional guidelines to enhance student engagement in Araling Panlipunan and related subjects. For Future Researchers—This study can serve as a reference for future researchers who wish to explore innovative and contextualized teaching strategies in Araling Panlipunan and other subject areas. It provides a foundation for replicating or extending the research using different variables such as students' academic performance, critical thinking, or civic participation.

Furthermore, the instruments developed and validated in this study (the teacher observation checklist and the student interest questionnaire) may be adapted or improved for similar research endeavors. By addressing the gap in the local literature on the link between current events and student interest, this study contributes to the growing body of educational research in the Philippine context. It encourages further investigation into how contextualized instruction can improve learner outcomes across various grade levels.

Scope and Delimitation of the Study - This study examined the correlation between teachers' integration of current events and students' interest in learning Araling Panlipunan 10. Specifically, the study was conducted at San Jose National High School during the School Year 2025–2026. The study respondents included Araling Panlipunan 10 teachers and Grade 10 students. The Araling Panlipunan 10 teachers provided data on their integration of current events through surveys. In contrast, the Grade 10 students provided information on their level of interest in the subject through a self-made Likert-scale questionnaire adapted from the Intrinsic Motivation Inventory (Interest/Enjoyment subscale). The study examined teachers' integration of current events as the independent variable, focusing on the frequency of integration, the methods or strategies employed (e.g., discussions, debates, projects, and media analysis), and the relevance of the selected current events to the curriculum. The dependent variable was students' interest in learning Araling Panlipunan 10, measured by their enjoyment of the subject, motivation to participate in class activities, perceived relevance of the subject to real-life situations, and willingness to explore topics beyond classroom requirements. The study did not cover other subjects, grade levels, or external factors such as family background, peer influence, or teacher personality traits that may also have affected students' interest. Its scope was limited to identifying the relationship between the integration of current events and interest in learning Araling Panlipunan 10.

2. Methodology

Research Design - This study employed a descriptive-correlational research design. According to Asenahabi (2019), a descriptive-correlational design is a quantitative approach that aims to describe and measure the degree of association (or relationship) between two or more variables without manipulating them. It focused on identifying patterns, trends, and relationships as they naturally occurred, allowing the researcher to determine whether an increase or decrease in one variable corresponded with changes in another. In this study, a descriptive-correlational

design was used to examine teachers' integration of current events and students' interest in learning Araling Panlipunan 10. Moreover, a correlational design was employed to investigate the relationship between the two identified variables.

Respondents of the Study - The participants in the study included Grade 10 Araling Panlipunan teachers who integrated current events into their instruction, as well as Grade 10 students enrolled in the subject. A purposive sampling technique was used to select teacher participants, ensuring that only those directly teaching Araling Panlipunan 10 classes were included. For the students, stratified random sampling was used to ensure fair representation across sections. Based on a total population of 15 teachers and 536 Grade 10 students, as recorded in the DepEd Learner Information System (LIS), the suggested sample size was determined using the Raosoft sample size calculator, with a 5% margin of error, to ensure representative and statistically valid results. Out of the total population of 536 students, the computed sample size was 225.

Research Instrument - The study used two survey instruments: one for teachers and one for students. The researcher-made questionnaire measured the frequency and strategies of integrating current events into classroom instruction of the teachers. Meanwhile, the student interest questionnaire was adapted from the Intrinsic Motivation Inventory (IMI)—Interest/Enjoyment subscale and employed a 5-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). It assessed students' interest, enjoyment, and motivation for learning Araling Panlipunan. Both instruments underwent expert validation by three specialists—an Araling Panlipunan teacher, a research specialist, and an education supervisor—to ensure content relevance, clarity, and alignment with the study's objectives. For reliability testing, a pilot study was conducted with 20 non-participating students. The reliability coefficient (Cronbach's alpha) of the original IMI Interest/Enjoyment subscale served as the reference value, typically yielding an internal consistency reliability of 0.78-0.84, indicating acceptable reliability.

Data Gathering Procedure - The study commenced with securing the necessary approvals from the Schools Division Superintendent and the school principal to ensure compliance with institutional and ethical protocols. Once approval was granted, informed consent forms were distributed to participating teachers, and students received assent forms along with parental consent forms to ensure voluntary participation and ethical compliance. Following this, teacher surveys were administered to collect data on their integration of current events into the Araling Panlipunan 10 lessons. In contrast, student questionnaires, designed to measure interest in Araling Panlipunan 10, were administered simultaneously. Data were collected over five days, during which all completed surveys and questionnaires were carefully collected, coded, and tabulated for statistical analysis to assess the correlation between teachers' integration of current events and students' interest in learning Araling Panlipunan 10.

Statistical Treatment of the Data - To analyze the data, both descriptive and inferential statistics were used. To describe the teachers' integration of current events and the students' interest in learning Araling Panlipunan, the weighted mean was used. Moreover, to determine the relationship between the two identified variables, Pearson's product–moment correlation coefficient (Pearson's r) was employed.

Ethical Considerations - This study adhered to ethical guidelines to ensure the protection of all participants, consistent with the principles outlined in the Belmont Report (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979) and the Declaration of Helsinki (World Medical Association, 2013). Participation in the study was entirely voluntary, with written informed consent obtained from teachers and assent secured with parental consent from students, reflecting the principle of respect for persons. Confidentiality was maintained by using codes rather than names to protect participants' identities, thereby ensuring privacy and minimizing the risk of harm. All collected data were securely stored and were used solely for academic purposes, in accordance with the ethical principle of beneficence. Furthermore, participants retained the right to withdraw from the study at any time without penalty, reinforcing their autonomy and ensuring that their participation was fully informed and voluntary.

3. Results and Discussions

Table 1
Mean Extent of Teachers' Integration of Current Events in terms of Use of news articles, videos, and media resources, Classroom discussions and activities, Assessments and projects, and Connections to real-life issues

Use of News Articles, Videos, and Media Resources	Weighted Mean	Interpretation
1. I use news articles or online reports to introduce new lessons in	4.07	High
2. I show video clips or news features related to current social or political issues.	4.07	High
3. I assign students to collect and analyze news stories connected to our lessons.	4.07	High
4. I use infographics, news photos, or social media posts as discussion prompts.	4.73	Very High
5. I integrate multimedia sources (TV, radio, or online news) to supplement textbook content.	4.73	Very High
Composite Mean	4.33	Very High
Classroom Discussions and Activities		
1. I facilitate classroom discussions about current national or global issues.	3.75	High
2. I encourage students to express their opinions about recent events.	3.75	High
3. I conduct debates or forums related to current issues in society.	3.50	High
4. I relate current events to historical or civic lessons during discussions.	3.75	High
5. I use collaborative group activities to help students analyze current events.	3.00	Moderate
Composite Mean	3.63	High
Assessments and Projects		
1. I include current event analysis questions in quizzes or tests.	3.67	High
2. I assign written reflections about recent news or social issues.	4.00	High
3. I require projects that connect classroom lessons to present-day events.	4.00	High
4. I assess students' ability to relate current issues to historical contexts.	5.00	Very High
5. I evaluate students' critical thinking using outputs based on real news scenarios.	5.00	Very High
Composite Mean	4.35	Very High
Connections to Real-Life Issues		
1. I help students connect current events to their personal experiences or communities.	3.83	High
2. I emphasize how current issues affect citizens' daily lives.	3.58	High
3. I relate classroom topics to social, economic, or political problems in the country.	3.58	High
4. I guide students to identify solutions or actions related to current issues.	4.83	Very High
5. I encourage students to participate in community or school activities addressing real issues.	4.50	Very High
Composite Mean	4.13	High
OVERALL MEAN	4.11	High

Scale: 4.20-5.00 Very High; 3.40 -4.19 High; 2.60-3.39 Moderate; 1.80-2.59 Low; 1.00-1.79 Very Low

Table 1 presents the mean extent of teachers' integration of current events, measured by the use of news articles, videos, and other media resources; classroom discussions and activities; assessments and projects; and connections to real-life issues. The overall mean of 4.11, interpreted as High, indicates that teachers consistently integrate current events into their teaching practices. According to Fitchett & Heafner (2020), contemporary issues increase relevance and strengthen students' local understanding. Teachers demonstrate a very high level of integration of multimedia resources, such as news articles, infographics, videos, and online media. Items 4 and 5, both with a mean of 4.73, indicate that teachers increasingly use visual and digital sources to introduce social issues and stimulate discussion. Wright and Lee (2014) argue that exposure to multimedia and digital news enhances students' engagement and improves their comprehension of civic and historical topics. The Partnership for 21st Century Learning (2019) emphasizes that integrating technology strengthens students' media literacy, a key skill reflected in the study's findings. As highlighted in DepEd (2016), frequent use of multimedia sources also aligns with the Department of Education's emphasis on contextualized and relevant resources in the Social Studies curriculum. Teachers extend diverse media to make lessons more relevant, updated, and reflective of real-world contexts.

Teachers demonstrate a high level of facilitation of discussions on national and global issues (mean = 3.75). As noted by Parker (2018), classroom discussion fosters critical thinking, perspective-taking, and democratic participation, findings that align with the study's results. However, collaborative group activities (mean = 3.00, Moderate) are used less frequently. This is remarkable because cooperative learning is strongly connected to improved social reasoning and deeper analysis of issues (Johnson & Johnson, 2018). The reduced use may indicate challenges such as time constraints, classroom management difficulties, or resource constraints. Teachers

effectively discuss current events, but need to strengthen collaborative and student-led activities to enhance interactive learning further. Teachers exhibit a high degree of integration of current events into assessments. Items that emphasize analysis and critical thinking demonstrate strong alignment with performance-based learning. This demonstrates how assessments are used not only to measure knowledge but to develop students' analytical and civic reasoning skills. This is consistent with research indicating that current events promote higher-order thinking, particularly when linked to historical contexts and real-world social issues (Barton & Avery, 2016). Project-based and reflective assessments also enhance students' ability to interpret the impact of real-world problems (Levstik & Barton, 2015). Teachers make extensive use of assessments to connect classroom learning to real, contemporary issues, thereby effectively promoting civic and analytical competencies.

Teachers demonstrate a high level of alignment between lessons and personal, community, and national issues. High mean scores indicate a strong emphasis on helping students identify solutions and participate in school or community activities. This supports Dewey's (1916) philosophy that education should be rooted in real-life experiences and social realities. Modern scholars add that relating Araling Panlipunan lessons to real-life issues strengthens civic engagement and empowers students to take informed action (Westheimer & Kahne, 2004). Some items remain within the "High" range, showing that while teachers connect lessons to students' experiences, consistent application can still be improved. Teachers successfully promote real-world relevance and civic action, though some opportunities to personalize issues to students' contexts remain underutilized. The overall findings indicate that teachers integrate current events at a high level. The strongest practices involve using multimedia resources and designing assessments that connect academic content to real-world issues. Classroom discussions are practical, though collaborative activities can be enhanced. The results support existing studies emphasizing the role of current events in making Araling Panlipunan more meaningful, promoting civic readiness, and enhancing media literacy among learners (Heafner & Fitchett, 2017).

Table 2 presents the mean levels of students' interest in enjoyment of learning, motivation to participate, perceived relevance of lessons, and overall interest in the subject. The overall mean of 4.12, which falls within the High range, indicates that students generally show a strong interest in the subject. Research shows that interest is a key factor influencing student engagement, motivation, and learning outcomes (Hidi & Renninger, 2016). Students indicate a very high level of enjoyment when learning Araling Panlipunan. Items with very high means (4.54 and 4.83) show that students feel happy and look forward to the subject. This suggests that learning experiences are enjoyable and positively perceived. This aligns with Schiefele's (2017) study, which shows that when students find learning enjoyable, they become more engaged and develop a deeper interest in the subject. Enjoyment is also associated with higher intrinsic motivation, which in turn strengthens long-term learning (Ryan & Deci, 2020). Students highly enjoy their Araling Panlipunan learning experiences, indicating a favorable classroom climate and effective teaching strategies. Students show a high level of motivation to participate. They report putting effort into tasks (4.57, Very High) and feeling proud of their performance (4.17, High). However, intrinsic motivation items—such as studying without being told (3.21) and improving performance because lessons are meaningful (3.23)—score lower, falling only under Moderate.

This pattern reflects a typical classroom pattern in which extrinsic motivation (teacher instructions, tasks, grades) is more substantial than intrinsic motivation (personal interest, self-directed effort). Research states that students often participate more when activities are structured but struggle with self-directed motivation (Eccles & Wigfield, 2020). Students are generally motivated but rely more on external encouragement; intrinsic motivation can still be strengthened through meaningful learning tasks and autonomy-supportive teaching.

This dimension shows the highest overall score, indicating that students strongly perceive Araling Panlipunan as relevant to life and society. Very high means (4.35–4.84) reflect that students see how lessons help them understand society, become aware of national issues, and develop responsible citizenship. Barton and Avery (2016) argue that Araling Panlipunan becomes more meaningful when students recognize its relevance to real-life issues, civic responsibilities, and current events, findings that align with the study's findings. When lessons are connected to present realities, students become more aware and engaged (Westheimer & Kahne, 2004). Students strongly

appreciate the real-world value of Araling Panlipunan, indicating that lessons are adequately contextualized and relevant. Students show a high level of overall interest. They pay attention to the news (4.03) and perceive the subject as important (4.84, Very High). This demonstrates that Araling Panlipunan influences students beyond the classroom, encouraging civic awareness and curiosity.

Table 2
Mean Level of Students' Interest in terms of Enjoyment of learning, Motivation to participate, Perceived relevance of lessons, and Overall interest in the subject

Enjoyment of Learning	Weighted Mean	Interpretation
1. I enjoy learning new topics in Araling Panlipunan 10.	4.01	High
2. I find the activities in Araling Panlipunan fun and engaging.	3.97	High
3. I feel excited whenever we discuss new lessons.	4.04	High
4. Learning Araling Panlipunan makes me feel happy and interested.	4.54	Very High
5. I look forward to our Araling Panlipunan classes.	4.83	Very High
Composite Mean	4.28	Very High
Motivation to Participate		
1. I actively participate in discussions during Araling Panlipunan classes.	3.45	High
2. I put effort into completing Araling Panlipunan tasks and projects.	4.57	Very High
3. I am motivated to study Araling Panlipunan even without being told.	3.21	High
4. I feel proud when I do well in Araling Panlipunan.	4.17	High
5. I try to improve my performance because I find the lessons meaningful.	3.23	Moderate
Composite Mean	3.73	High
Perceived Relevance of Lessons		
1. The lessons in Araling Panlipunan are helpful in real life.	4.66	Very High
2. I can relate the topics in Araling Panlipunan to current events.	4.35	Very High
3. What I learn in Araling Panlipunan helps me understand society better.	4.38	Very High
4. The topics we discuss help me become more aware of national issues.	4.50	Very High
5. Araling Panlipunan helps me become a responsible citizen.	4.84	Very High
Composite Mean	4.54	Very High
Overall Interest in the Subject		
1. Araling Panlipunan is one of the subjects I am most interested in.	3.24	High
2. I find myself thinking about topics we learn in Araling Panlipunan even outside class.	3.95	High
3. I want to learn more about the issues discussed in Araling Panlipunan.	3.67	High
4. I pay attention to news or social issues related to our lessons.	4.03	High
5. I believe Araling Panlipunan is important and worth studying.	4.84	Very High
Composite Mean	3.95	High
OVERALL MEAN	4.12	High

Scale: 4.20-5.00 Very High; 3.40 -4.19 High 2.60-3.39 Moderate; 1.80-2.59 Low 1.00-1.79 Very Low

Although interest is high, the item on Araling Panlipunan, one of their most preferred subjects (3.24), is only Moderate. This suggests that while students value the subject, it may not yet be among their top personal favorites—possibly due to difficulty, heavy content, or preference for other subject areas. According to Hidi and Renninger's (2016) Interest Development Model, students often first exhibit situational interest before it becomes a strong personal interest. Students value and engage with Araling Panlipunan, though there remains room to elevate it into a top-choice subject through more engaging and relevant activities. The students exhibit a high level of interest in Araling Panlipunan 10 as indicated in the results. They greatly enjoy learning, recognize the real-life value of the subject, and show strong motivation to participate. High enjoyment and perceived relevance contribute positively to their overall interest and engagement. Ainley (2017) and Renninger and Hidi (2019) similarly note that relevance and enjoyment are strong predictors of student interest and sustained motivation.

Table 3 presents the correlation results between Teachers' Integration of Current Events and the Students' Interest in Learning Araling Panlipunan 10. The interpretation uses correlation coefficients (r), effect sizes (r^2), t-values, and p-values to assess the strength and significance of relationships, as shown in the table. A p-value of < 0.05 indicates a statistically significant relationship. The correlation coefficient ($r = 0.359$) indicates a positive, moderate relationship, and the p-value (0.001) indicates that this correlation is highly significant. The effect size ($r^2 = 0.129$) indicates that 12.9% of the variance in students' enjoyment is attributable to teachers' integration of current events. This suggests that students enjoy Araling Panlipunan more when teachers connect lessons to current events. Using real-world issues, multimedia sources, and relevant examples enhances students' curiosity,

excitement, and overall positive attitude toward the subject. This aligns with research stating that relevance and real-world connections enhance students' enjoyment and engagement (Ainley, 2017; Hidi & Renninger, 2016). When lessons feel meaningful, students experience higher situational interest. Although statistically significant, the correlation is negative, indicating that higher integration of current events is associated with slightly lower student motivation to participate. This may imply that some students feel overwhelmed by discussions of sensitive or complex current issues; some prefer traditional learning tasks to issue-based tasks; and increased cognitive demands may reduce participation among less confident learners. Studies show that when topics are controversial or difficult, students' participation may decrease despite high relevance (McAvoy & Hess, 2013). This explains the negative direction of the relationship. There is no significant relationship between teachers' integration of current events and students' perceived relevance of lessons. This indicates that students already find Araling Panlipunan highly relevant, regardless of how often current events are integrated (as shown in Table 2, Composite Mean of 4.54 Very High). In short, their perception of relevance is already high, so the teacher's additional use of current events does not significantly further influence it. Eccles and Wigfield (2020) note that perceived relevance often arises from students' personal values, community context, and the curriculum itself—not solely from teacher strategies. There is a small but significant positive relationship, suggesting that the integration of current events slightly increases students' overall interest in Araling Panlipunan. This means that students who see more real-world connections develop more curiosity and sustained interest.

Table 3
Correlation Coefficients and p-values for H_0

Variables	Correlation Coefficient	Effect Size (r^2)	Critical value	t-value	*P-value*	Interpretation
Teachers' Integration of Current Events → Students' Interest in Learning (Enjoyment of Learning)	0.359	0.129	1.971	5.744	0.001	Highly Significant
Teachers' Integration of Current Events → Students' Interest in Learning (Motivation to Participate)	-0.210	0.044	1.971	-3.207	0.001	Highly Significant
Teachers' Integration of Current Events → Students' Interest in Learning (Perceived Relevance of Lessons)	-0.082	0.007	1.971	-1.229	0.221	Not Significant
Teachers' Integration of Current Events → Students' Interest in Learning (Overall Interest in the Subject)	0.165	0.027	1.971	2.498	0.013	Significant
Teachers' Integration of Current Events → Students' Interest in Learning	**-0.046**	**0.002**	**1.971**	**-0.688**	**0.492**	**Not Significant**

Legend: p-value<0.05 Significant

Research supports the view that situational interest in current events can develop into long-term academic interest (Renninger & Hidi, 2019). There is no significant relationship between overall current-events integration and overall students' interest. Overall interest is influenced by multiple factors such as teaching strategies, personal preference, peer environment, and prior knowledge—not solely by the integration of current events. Student interest is multidimensional and cannot be explained by a single teaching approach (Schiefele, 2017).

4. Conclusions and Recommendations

Based on the research findings, the following conclusion was drawn: Teachers demonstrated a measurable degree of integration of current events into their Araling Panlipunan 10 lessons. This integration was evident in news articles, videos, and other media resources; in classroom discussions and learning activities; in the inclusion of current events in assessments and projects; and in the establishment of connections between lesson content and real-life issues. These practices indicated that current events were utilized as instructional tools to enrich classroom instruction. The students exhibited a defined level of interest in learning Araling Panlipunan 10, as reflected in

their enjoyment of learning, motivation to participate in class activities, perceived relevance of the lessons, and overall interest in the subject. The results suggested that students were generally engaged in the subject, particularly when lessons were meaningful and connected to real-life situations. The study revealed a significant relationship between teachers' integration of current events and students' interest in learning Araling Panlipunan 10. This finding implied that increased and meaningful integration of current events in instruction was associated with higher levels of student interest, indicating that current events play an important role in enhancing student engagement in the subject.

In light of the conclusions, the following recommendation is offered: Araling Panlipunan teachers may be encouraged to further strengthen their integration of current events by consistently using diverse media resources, interactive discussions, performance-based assessments, and real-life issue analysis to enhance lesson delivery. Teachers may design learning activities that sustain students' enjoyment, motivation, and interest by making lessons more relevant to students' daily experiences and contemporary societal issues. School administrators and curriculum planners may support teachers through professional development programs and instructional resources that promote the effective integration of current events to improve student interest and engagement in Araling Panlipunan 10. Future researchers may examine additional variables that affect students' interest. Since the integration of current events alone is not a primary predictor, studies may examine the teacher's communication style, classroom environment, technological resources, and prior knowledge of civic issues.

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Teaching strategies in mathematics and numeracy skills development of elementary pupils in Caluya District

Solino, Karen D.
Divine Word College of San Jose, Philippines (solinokaren@gmail.com)
Galay-Limos, Jenny A.
Divine Word College of San Jose, Philippines (jennygalay05@gmail.com)

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Abstract

Mathematics is essential to education because it develops crucial skills such as logical reasoning, critical thinking, and problem-solving, which are vital for success in both academic and real-world settings. Thus, this study examined the teaching strategies used by mathematics teachers in terms of visual aids, manipulative-based instruction, problem-based learning, collaborative learning, and contextualized instruction, and their relationship to the numeracy skills of elementary pupils in the Caluya District in terms of number sense, basic operations, fractions and decimals, measurement, and problem-solving. A descriptive-correlational design was employed, utilizing a researcher-made questionnaire administered to 51 pupils in Grades 4 to 6. Findings revealed that teachers regularly applied a wide range of instructional strategies. Visual aids and collaborative learning, in particular, appeared as the most frequently used and most effective in supporting pupils' learning. Pupils, on the other hand, demonstrated a very high level of numeracy skills. Strengths were observed in number sense, basic operations, and fraction-decimal competencies, while areas needing improvement included reading, measuring instruments, explaining solutions, and solving word problems. Correlation analysis demonstrated a moderately strong and highly significant relationship between teaching strategies and numeracy skills, suggesting that effective instruction contributes significantly to numeracy development. These findings emphasize the crucial role of instructional practices in forming mathematical learning outcomes and underline the need to enhance specific skill areas through targeted teaching approaches. The researcher recommends that school administrators and DepEd officials support the provision of adequate instructional materials, including visual aids, manipulatives, and digital tools, to sustain effective mathematics teaching across grade levels.

Keywords: fundamental operations, teaching strategies, numeracy skills, mathematics education, instructional practices

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1. Introduction

Mathematics is considered a fundamental of education, as it fosters the development of logical reasoning, critical thinking, and problem-solving skills that are necessary for learners' academic success in real life. Recent research emphasizes that mathematical proficiency supports not only higher-level learning but also the development of life skills needed for decision-making and everyday tasks (OECD, 2015; Barwell, 2016). At the elementary level, the growth of numeracy skills, the ability to understand and apply basic ideas in mathematics, is vital because it forms the foundation upon which higher-level mathematical competencies are constructed. Pupils who fail to develop strong numeracy skills early on often experience challenges that persist throughout their academic journey (Li et al., 2025; Aunio et al., 2019). Although mathematics is one of the most important subjects in the curriculum, many students struggle to develop sufficient numeracy skills, leading to learning gaps that affect their overall academic performance.

In the Caluya District, teachers face several challenges in providing mathematics instruction efficiently. Pupils have varied learning paces and cognitive capabilities. These differences, paired with limited instructional resources, create discrepancies in learners' achievement (UNESCO, 2017). To overcome these challenges, one must employ creative and varied teaching strategies that enhance the significance, appeal, and relevance of mathematical concepts to everyday life (DepEd, 2019; Gillies, 2016).

One of the well-known strategies is manipulative-based instruction, which helps pupils transition from concrete to abstract understanding through hands-on experiences (Jones & Tiller, 2017), and contextualized problem-solving, which places education in context in everyday and culturally appropriate ways. Situations to make mathematics more meaningful (DepEd, 2019; Barwell, 2016). Likewise, collaborative learning enhances communication, reasoning, and peer-assisted problem-solving (Gillies, 2016). In contrast, technology-aided teaching—such as digital platforms, visualizations, and interactive tools—increases students' motivation and understanding of abstract mathematical ideas (Bight et al., 2024; OECD, 2015). When combined, these tactics are essential for ensuring that numeracy skills are effectively developed, meeting the needs of specific students as well as broader educational equity.

Research Objectives - This study aimed to determine the relationship between teaching strategies in mathematics and the development of numeracy skills among elementary pupils in the Caluya District. Specifically, it aimed to (1) determine the level of teaching strategies used by mathematics teachers in developing the numeracy skills in terms of visual aids, manipulative-based instruction, problem-based learning, collaborative learning, and contextualized instruction; (2) determine the status of numeracy skills of elementary pupils in the Caluya District; and (3) examine the significant relationship between teaching strategies and the numeracy skills of elementary pupils in the Caluya District.

Significance of the Study - This study is important because it examines how mathematics teaching methods affect elementary students' development of numeracy skills in the Caluya District. Its conclusions will benefit students as well as educators, parents, administrators, and legislators—all of whom play crucial roles in education. The primary beneficiaries of this study are the pupils themselves. The study will assist students in improving their problem-solving skills by identifying the most effective teaching techniques and by strengthening logical reasoning and critical thinking. For teachers, the results will serve as a reference for improving mathematics instruction. By determining which strategies best support numeracy development, teachers can adapt their methods to accommodate diverse learning styles, promote active involvement, and ensure that mathematical concepts are comprehensible, relevant, and significant. The results also highlight the importance of parents' support for their

children's numeracy development at home. Parents who are aware of effective teaching methods can help their children learn more by enabling them to apply mathematics in everyday tasks such as measurement, budgeting, and problem-solving. For the Department of Education (DepEd), the findings will serve as a foundation for developing teacher training programs, professional development initiatives, and support interventions that specifically target gaps in mathematics education among DepEd officials and school administrators. Policymakers and future researchers might use the findings to guide further research on enhancing mathematics teaching methods and instructional models.

Scope and Delimitation of the Study - This study is limited to examining the teaching strategies in mathematics and their relationship to the numeracy skills of elementary pupils in the Caluya District. It covers students in Grades 4-6 enrolled in the 2025–2026 academic year. The emphasis is on understanding the tactics teachers use and determining how these affect the development of students' numeracy skills. The study's scope encompasses only five major teaching approaches that are well recognized in mathematics education: (a) visual aids; (b) manipulative-based instruction; (c) problem-based learning; (d) collaborative learning; and (e) contextualized instruction. These sub-variables were chosen because they support DepEd's learner-centered and contextualized teaching strategies and because studies have demonstrated their efficacy in fostering higher-order thinking and numeracy abilities (DepEd, 2019; OECD, 2015). The study also evaluates students' numeracy abilities in logical thinking, problem-solving, number awareness, and fundamental operations. Only data collected from respondents in the Caluya District will be used to inform the research findings; these findings may not generalize to other districts or contexts with different learning settings and resources.

Since Grades 4 through 6 mark the shift in the elementary curriculum from foundational to more complex mathematical concepts, this study is restricted to these grades. At these points, students should be able to apply higher-order reasoning and problem-solving skills and demonstrate mastery of basic operations (DepEd, 2019). As a result, analyzing their numeracy abilities alongside teaching strategies provides a more comprehensive view of how teaching methods affect students' preparedness for secondary mathematics. In addition, data collection and analysis were conducted in the third quarter of School Year 2025–2026, ensuring that the findings reflect the most recent teaching practices and pupils' performance within the district.

2. Methodology

Research Design - This study utilized a descriptive-correlational design. The descriptive design of the study focused on describing the teaching strategies commonly used by mathematics teachers in the Caluya District. These strategies included visual aids, manipulatives, problem-based learning, collaborative tasks, and contextualized instruction. At the same time, the numeracy skills of pupils in Grades 4 to 6 were described in terms of their performance in basic operations (addition, subtraction, multiplication, and division), problem-solving, and application of mathematical concepts. Moreover, a correlational design was used to test whether a significant relationship exists between teaching strategies and students' numeracy skills.

Respondents of the Study - The respondents of this study were Grades 4-6 pupils at Tinogboc Elementary School, comprising 21, 15, and 15 pupils, respectively, with a total of 51 pupils. Since the population is too small, the researcher used complete enumeration.

Research Instrument - The main instrument of the study was a researcher-made questionnaire composed of two parts: (a) a checklist on teaching strategies and (b) a numeracy test for pupils. The first part determines the teaching strategies employed, while the second assesses pupils' numeracy skills in basic operations, problem-solving, and application. To ensure the validity of the researcher-developed questionnaire, it underwent expert validation by three specialists: two in educational research and one in assessment and evaluation. Their comments and suggestions were incorporated into the final version of the instrument.

Data Gathering Procedure - Permission to conduct the study was first sought from the principal-in-charge of the District of Caluya. After approval, coordination with the school principals and teachers was made to administer

the questionnaires and tests. Teachers completed the teaching strategies checklist, while pupils took the numeracy test during class hours under the researcher's supervision. After collection, all data were organized, aggregated, and prepared for statistical analysis. Data were collected face-to-face over 1-2 days with both teachers and pupils to ensure sufficient time for distributing, explaining, and retrieving responses.

Statistical Treatment of the Data - To treat the data, the weighted mean was used to determine the level of teaching strategies used by mathematics teachers in developing numeracy skills in terms of visual aids, manipulative-based instruction, problem-based learning, and contextualized instruction; and to determine the status of numeracy skills of elementary pupils in the Caluya District. Moreover, to determine the significant relationship between teaching strategies and the numeracy skills of elementary pupils in the Caluya District, Pearson's r moment correlation was used.

Ethical Considerations - The study closely adhered to research ethics guidelines. Data collection was preceded by obtaining informed consent from parents, students, teachers, and school administrators. Respondents were assured that their responses would be kept confidential and used solely for scholarly research and that their participation was entirely voluntary. No identifying information was included in the reporting of results, and respondents had the right to withdraw at any time during the study without penalty. Additionally, all sources and related work used in this research were appropriately acknowledged and cited in accordance with the American Psychological Association (APA) 7th edition citation and referencing guidelines. This prevented plagiarism, maintained academic integrity, and appropriately acknowledged the original authors whose work underpinned this study.

3. Results and Discussions

The mean levels of teaching strategies employed by math teachers to improve students' numeracy abilities in five domains—visual aids, problem-based learning, collaborative learning, manipulative-based instruction, and contextualized instruction—are shown in Table 1. The findings show an overall mean of 3.25, which is considered Very High and explains why the teaching techniques are regularly and successfully used. Visual aids were rated highly among tactics, indicating that images, charts, and posters significantly help students comprehend lessons, remember information, and remain engaged. High to extremely high scores were also given to manipulative-based education, suggesting that practical tools like counters and blocks improve students' comprehension. Nevertheless, some elements of this approach are not always optimized. As a result, problem-based learning received a very high score, underscoring that real-life situations and open-ended problem-solving promote deeper thinking and improved comprehension. Collaborative learning likewise achieved very high ratings, indicating that working with peers, sharing ideas, and group tasks greatly support learners' understanding of numeracy concepts. Lastly, contextualized instruction received high to very high ratings, indicating that when lessons are related to students' real experiences and community settings, learning becomes more meaningful, though some areas require improvement. Overall, the findings clearly demonstrate that mathematics teachers employ a variety of practical strategies that substantially improve learners' numeracy performance.

The findings are supported by studies showing that the use of varied teaching strategies effectively improves students' numeracy skills. Visual aids and manipulative-based instruction help learners better understand abstract mathematical concepts through concrete and engaging representations (Boaler, 2016; Carbonneau et al., 2017). In addition, problem-based and collaborative learning strategies promote more profound understanding and higher-order thinking by encouraging real-world application and peer interaction (Hmelo-Silver, 2017; Johnson & Johnson, 2017). Contextualized instruction further strengthens learning by connecting mathematical concepts to learners' real-life experiences, making numeracy learning more meaningful (Darling-Hammond et al., 2020).

The data in Table 2 reveal that elementary pupils demonstrate a very high level of numeracy, as evidenced by an overall mean of 3.26. among the five skill areas: Number Sense, Basic Operations, Fractions and Decimals, Measurement, and Problem-Solving, with most indicators falling within the High to Very High interpretation.

Pupils show particularly strong competencies in fundamental skills such as reading and comparing figures, performing the four basic operations, and working with fractions and decimals, all of which yielded very high mean scores. Although overall performance is strong, specific skills received lower ratings, particularly in solving word problems, estimating answers, reading measuring instruments, and explaining solutions to others. These findings suggest that although pupils demonstrate commendable overall numeracy proficiency, targeted instructional interventions focused on these specific skills may further strengthen their mathematical understanding and performance.

Table 1
Mean Level of teaching strategies used by mathematics teachers in developing the numeracy skills in terms of visual aids, Manipulative-based instruction, Problem-based learning, Collaborative learning, and Contextualized Instruction

Indicators: (Visual Aids)	Weighted Mean	Interpretation
A. Visual Aids		
1. I understand the lessons better when there are pictures, charts, or posters.	3.77	Very High
2. The use of visual aids helps me recall numeracy concepts easily.	3.52	High
3. The lesson becomes more interesting when the teacher uses visual materials.	3.63	Very High
B. Manipulative-Based Instruction		
4. I enjoy learning when we use objects like blocks, sticks, or counters in the classroom.	3.52	Very High
5. I understand numbers better when I can touch or use learning materials.	3.55	High
6. Using manipulatives helps me explain my answers to numeracy problems.	2.71	High
C. Problem-Based Learning		
7. I learn to think very deeply when given real-life situations involving numbers.	3.18	Very High
8. Solving problems related to real-life situations helps me learn better.	3.31	High
9. I learn more when we are allowed to find our own way to solve problems.	3.19	Very High
D. Collaborative Learning		
10. I learn better when I work together with my classmates in numeracy activities.	3.26	Very High
11. Listening to my classmates' ideas helps me understand the lesson more.	3.23	High
12. I enjoy learning through group activities related to numeracy.	3.02	Very High
E. Contextualized Instruction		
13. I understand the lessons more easily when examples come from our everyday situations.	3.23	Very High
14. I understand numeracy tasks better when they are related to our local culture or community.	2.45	High
15. Using familiar situations helps me learn numeracy skills more effectively.	3.18	High
OVERALL MEAN	3.25	Very High

Legend: 3.26 – 4.00 Very High Level, 2.51 – 3.25 High Level, 1.76 – 2.50 Low Level, 1.00 – 1.75 Very Low Level

Research shows that high numeracy performance among elementary pupils is strongly associated with mastery of number sense, basic operations, and understanding of fractions and decimals (OECD, 2019; Siegler et al., 2016). These foundational skills are essential indicators of overall mathematical proficiency and often lead to high achievement in mathematics. However, studies also indicate that learners who perform well in computation may still experience difficulties in higher-order skills such as word problem solving, estimation, measurement, and explaining solutions. According to Fuchs et al. (2018), word problem solving requires the integration of mathematical reasoning and language comprehension, which makes it more challenging than routine computations. Moreover, Kilpatrick et al. (2017) emphasized that true mathematical proficiency involves conceptual understanding and reasoning, not only procedural fluency. Thus, targeted instructional interventions focusing on these weaker areas are necessary to enhance pupils' mathematical understanding and performance further.

Table 2
Mean Level of Numeracy Skills of Elementary Pupils

Indicators	Weighted Mean	Interpretation
A. Number Sense		
1. I can read and compare figures.	3.27	Very High
2. I understand the value of each number.	3.23	High
3. I can arrange numbers from smallest to greatest.	3.31	Very High
B. Basic Operations		
4. I can add, subtract, multiply, and divide correctly.	3.37	Very High
5. I can solve fundamental word problems.	3.16	High
6. I can check my answers using estimation.	3.15	High
C. Fractions and Decimals		
7. I can compare fractions and decimals.	3.58	Very High
8. I can change simple fractions to decimals.	3.23	High
9. I can solve simple fractions to decimal places.	3.35	Very High
D. Measurement		
10. I can use the appropriate unit for length, weight, and time.	3.31	Very High
11. I can read and use measuring instruments.	2.94	High
12. I can estimate measurements before actually taking measurements.	3.32	Very High
E. Problem-Solving		
13. I can understand a problem and select the correct operation to use.	3.35	Very High
14. I can explain my answer to other people.	3.11	High
15. I can show different ways to solve a problem.	3.23	High
OVERALL MEAN	3.26	Very High

Legend: 3.26 – 4.00 Very High Level, 2.51 – 3.25 High Level, 1.76 – 2.50 Low Level, 1.00 – 1.75 Very Low Level

Table 3
Correlation Coefficients and p-values for Hσ

Variables	Correlation Coefficient	Effect Size (r^2)	Critical Value	t-value	*P-value*	Interpretation
Teaching Strategies → Numeracy Skills	0.563	0.317	2.001	5.188	0.001	Highly Significant

Legend: p-value < 0.001 Highly Significant p-value < 0.05 Significant; p-value > 0.05 Not Significant

The results in Table 3 indicate a moderately strong and highly significant positive relationship between teaching strategies and numeracy skills (r = 0.563, p = 0.001). This suggests that effective and varied teaching strategies significantly improve students' performance in numeracy. The effect size ($r^2 = 0.317$) further indicates that nearly one-third of the variance in learners' numeracy skills is attributable to the instructional techniques employed. Therefore, improving teaching strategies is crucial to enhancing numeracy results. The study's results are supported by the literature, which indicates a significant positive relationship between teaching strategies and numeracy skills (Boaler, 2016; OECD, 2019). Thus, practical and varied instructional approaches have been shown to improve learners' mathematical performance. Moreover, Hattie (2017) emphasized that quality teaching practices yield moderate to strong effects on student achievement, supporting the finding that a substantial portion of numeracy skills can be attributed to instructional strategies.

4. Conclusions and Recommendations

Based on the study's findings, the following conclusions are drawn: Mathematics teachers in the Caluya District employ teaching strategies at a very high level, particularly in the use of visual aids, problem-based learning, and collaborative learning. These strategies actively support learners' engagement and conceptual comprehension. Elementary pupils demonstrate a very high level of numeracy proficiency, particularly in number sense, basic operations, and fractions and decimals. However, particular areas such as solving word problems, reading measuring instruments, and explaining solutions require further reinforcement. There is a moderately strong and highly significant relationship between teaching strategies and numeracy skills. This indicates that teachers' instructional methods substantially influence pupils' mathematical performance, with nearly one-third of pupils' numeracy outcomes attributable to teaching strategies alone. Effective teaching strategies are therefore essential for strengthening numeracy development, particularly in areas where pupils have demonstrated lower performance.

Based on the conclusions, the following recommendations are proposed: Teachers may continue to use visual aids, manipulatives, and real-life problem-solving tasks, but should adjust these to accommodate varied learning levels among pupils. Curriculum developers and/or mathematics coordinators may strengthen instruction in identified weak areas, specifically word problem solving, measurement skills, estimation, and explaining mathematical reasoning; thus, additional practice activities, guided solutions, and contextualized examples can support improvement. School heads may provide continuous professional development for mathematics teachers, with a focus on strategies such as inquiry-based learning, assessment for learning, and the effective use of educational technology to enhance numeracy instruction. Teachers may encourage greater parental involvement in developing numeracy skills at home through simple tasks like budgeting, measuring household items, and engaging in math-related games. School administrators and DepEd officials may support the provision of adequate instructional materials, including visual aids, manipulatives, and digital tools, to sustain effective mathematics teaching across grade levels. Future researchers may use other variables, such as problem-based learning, that could have a similar effect on students' numeracy skill development.

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