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Preface

Transformative Pathways in the 21st Century: Leadership, Innovation, and Empowerment in the Philippines

Hazel DR. Samala

Striving for academic excellence in the 21st century surpasses educational outcomes as it necessitates transformative leadership and innovative approaches in teaching and learning to empower individuals and communities. As educational institutions bridge the gaps in technological advancements, manpower requirements, and teaching and learning, research plays a critical role in identifying evidence-based strategies that promote significant and lasting change. Consequently, contemporary educational research has shifted in identifying transformational approaches that strengthen institutional communities to respond effectively to multifaceted situations. The studies featured in **Volume XIV, Issue 1 of the PUP Education Review** collectively demonstrate how the three thematic pillars – leadership, innovation, and empowerment intersect to address educational and societal challenges in the Philippines.

The first thematic pillar of this journal issue is **leadership**. Effective leadership is one of the most widely recognized catalysts of educational improvement, particularly in responding to the country's continuing learning challenges. The study on principal instructional leadership underscores the importance of protecting instructional time as an important factor in enhancing teacher effectiveness towards improved instructional leadership while prioritizing 21st century skills development. Complementing this perspective is the investigation of Appreciative Inquiry (AI) in administrative management, which exemplifies how a strengths-based leadership framework can improve cultivate collaboration, organizational commitment, and continuous institutional improvement. These studies reinforce transformative leadership as an avenue to cultivate an environment where students, teachers, and administrators can thrive.

The second thematic pillar focuses on **innovation** as a catalyst to quality education and dynamic teaching-learning process. Digital transformation has been a global phenomenon which significantly reshaped classroom settings. Despite its positive effects on the 21st century classroom, it continuously faces issues in terms of integration in day-to-day learning process. The study of Nurturing Engagement and Lifelong Learning through Audio-Visual (NELLA) Program demonstrates the effectiveness of customized multimedia instructional materials through increased engagement among learners, targeted instruction, and self-paced learning. This suggests that digital transformation serves as a valuable pedagogical tool in enhancing knowledge retention and comprehension among learners. Similarly, Project SPARTA – a national initiative that offers data analytics training through

Massive Open Online Courses (MOOCs) highlights the importance of skill-specific outcomes to improve self-efficacy among professionals. Further, these online courses become key tools to improve one's ability to build knowledge and skills. These studies contribute to innovation that is beyond technological adoption, because educational innovation involves designing learner-centered experiences that eventually respond to the changing needs of society.

Empowerment is the third thematic pillar of this volume. It recognizes education as a powerful instrument for personal development, economic mobility, and social inclusion. In the Philippines, the Technical Education and Skills Development Authority (TESDA) and the Department of Social Welfare and Development (DSWD) collaborate with Local Government Units (LGUs), Non-Government Organizations (NGOs) and other government bureaus to provide skill training to low-income individuals. The narratives of completers of the Community Skills Development Program (CSDP) highlight the achievement of combatting poverty by enhancing their knowledge, skills and attitudes to increase their employability, productivity and capacity. CSDP – a sustainable and cost-effective program thus help achieve long-term socioeconomic benefits and allow people to develop and upgrade their skills to adapt to the challenges of the globalization. Meanwhile, the study on contraceptive use among educationally marginalized women highlights the importance of access to information on contraception usage improve the decision-making among marginalized women to become knowledgeable and responsible women in their households and societies. Together, findings of these studies prove that empowerment is achieved when individuals are provided with combined knowledge, skills, and opportunities which are necessary to shape their own futures.

Collectively, the articles published in this issue advocate for an educational ecosystem that embraces transformative leadership which oversees innovation for inclusive learning and prioritizes the empowerment of individuals and communities. These remind us that educational transformation is not confined in the four corners of academic institutions as it extends to families, communities, and workplaces where learning continues to shape the lives and societal progress of individuals.

The **PUP Education Review Board** is grateful to all the authors, contributors, reviewers, and editors for making this journal issue possible. We hope that the articles presented in this issue will inspire our colleagues, educators, researchers, educational leaders, and policymakers to pursue transformative pathways in advancing educational excellence, while fostering innovation and inclusive development.

Relationship Between Principal Instructional Leadership and Students' 21st Century Skills Performance on the National Achievement Test (NAT)

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Abstract

This study aims to examine the relationship between principal instructional leadership behaviours and students' performance in key 21st Century Skills, as measured by the National Achievement Test (NAT). The sample was selected using a stratified random sampling method, encompassing public schools within the region. The final study group consisted of 11 principals and 327 teachers across various educational institutions, with a total of 670 teachers in the region. To assess principal instructional leadership behaviours, the Principal Instructional Management Rating Scale (PIMRS) was employed, while students' performance in problem-solving, information literacy, and critical thinking was measured using the NAT results. Data analysis was conducted using Spearman's correlation and multiple linear regression. The findings revealed that students exhibited low proficiency levels in all three 21st Century Skills, with mean scores indicating a need for further development in these areas. No significant relationship was found between most principal leadership behaviours and student performance. However, a significant positive correlation was identified between the leadership behaviour of protecting instructional time and teacher performance on the NAT. The study underscores the importance of protecting instructional time as an essential factor in enhancing teacher effectiveness, while suggesting that other leadership practices may not have a direct impact on student achievement. Based on the findings, recommendations for improving instructional leadership and prioritizing 21st-century Skills development have been made.

Keywords: Instructional Leadership; National Achievement Test (NAT); 21st-century skills; PIMRS; Leadership behaviour

INTRODUCTION

The development of 21st-century skills—such as critical thinking, problem-solving, and information literacy—has become a central objective in education systems worldwide. These competencies are increasingly regarded as foundational for students to thrive in a rapidly evolving, knowledge-based global economy. As such, education systems across the globe have adopted mechanisms for evaluating these skills, including large-scale national and international assessments. Tools such as the Program for International Student

Assessment (PISA), Trends in International Mathematics and Science Study (TIMSS), and various country-specific achievement tests serve as key instruments for gauging the effectiveness of instructional practices and overall student proficiency.

In the Philippines, the National Achievement Test (NAT) serves as a principal tool for monitoring student learning outcomes across core subject areas. Designed to measure minimum proficiency levels (MPL) in subjects such as mathematics, science, and English, the NAT provides policymakers and educators with critical insights into student performance. However, recent results have raised concerns. According to the 2023 NAT data, a significant portion of Grade 6, Grade 10, and Grade 12 students failed to meet the MPL, with only around 30% to 40% achieving passing scores in subjects like science and mathematics (Department of Education, 2023).

These national findings align with international assessments that show similarly low performance among Filipino learners. In the 2018 PISA cycle, the Philippines ranked near the bottom in reading, mathematics, and science, with particularly low scores in problem-solving—a key 21st-century skill. This situation reflects a broader and persistent learning crisis that continues to affect student outcomes in the country.

To address these gaps, scholars and policymakers have turned their attention to instructional leadership—particularly the role of school principals—as a key determinant of educational quality. Instructional leadership encompasses the practices and behaviors that school leaders use to promote effective teaching and learning. One well-established framework for evaluating such leadership is the Principal Instructional Management Rating Scale (PIMRS), which assesses principals' actions across three key domains: defining the school mission, managing the instructional program, and promoting a positive school learning climate. These dimensions are believed to significantly influence teacher effectiveness and, by extension, student achievement.

This study examines the relationship between principals' instructional leadership practices, as measured by PIMRS, and students' academic performance based on NAT results. By exploring this linkage, it aims to contribute to a deeper understanding of the leadership factors that may help mitigate the learning crisis and improve student outcomes in the Philippine context.

LITERATURE REVIEW

The Learning Crisis and the Need for Instructional Leadership

The Philippines continues to face a persistent learning crisis, as demonstrated by poor student outcomes in large-scale assessments such as the Programme for International Student Assessment (PISA) and the Trends in International Mathematics and Science

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Study (TIMSS) (Alinsunurin, 2021; Bernardo et al., 2021). These results reflect systemic challenges that include regional disparities, socioeconomic inequality, inadequate school resources, and poor instructional quality (Gumarang Jr. & Gumarang, 2021; Trinidad, 2020). Studies suggest that factors such as students' metacognitive awareness, teacher capacity, and home learning environment also significantly influence learning outcomes (Alampay & Garcia, 2019; Bernardo et al., 2022). Although some reforms have been introduced, the gap between the intended curriculum and actual learning outcomes remains wide.

Amid these challenges, instructional leadership has gained increasing attention as a potential lever for educational improvement. School leaders, particularly principals, are viewed as critical actors in improving teaching and learning, especially when their focus shifts from administrative functions to academic leadership (Mestry, 2017; Shatzer et al., 2014). Instructional leadership entails guiding curriculum, overseeing teaching practices, and fostering school-wide learning goals. Thus, understanding how principals' instructional behaviors correlate with student performance is essential, especially in a context where student achievement is consistently underwhelming.

Instructional Leadership Measured Through PIMRS

The Principal Instructional Management Rating Scale (PIMRS) is one of the most widely used instruments to assess instructional leadership. It is based on the framework proposed by Hallinger and Murphy (1985), which categorizes leadership behaviors into three dimensions: (1) defining the school mission, (2) managing the instructional program, and (3) promoting a positive school learning climate. These dimensions encompass activities such as goal setting, supervision of instruction, curriculum coordination, monitoring student progress, and providing incentives for teachers and students.

Numerous studies have linked instructional leadership practices, as captured by the PIMRS, to improved educational outcomes. For instance, research has shown that goal setting and monitoring instruction can create environments conducive to professional collaboration and high expectations (Gordon & Hart, 2022; Sigilai, 2023). Principals who engage in regular classroom observations, provide timely feedback, and align professional development with school goals have been found to positively influence teacher effectiveness and, indirectly, student achievement (Ajani, 2023; Meng, 2023; Yuliana, 2024).

In the Philippine context, however, the implementation of instructional leadership varies widely. While some principals demonstrate strong instructional leadership, others struggle to balance administrative duties with pedagogical oversight (Arrieta et al., 2020; Mendoza & De Jesus, 2024). Studies in similar contexts have emphasized that leadership is most effective when it promotes stakeholder engagement, data-driven decision-making, and recognition of teacher performance (Campoli & Darling-Hammond, 2022; Pratiwi &

Warlizasusi, 2023). Despite the growing body of evidence supporting the positive role of instructional leadership, the direct relationship between specific leadership behaviors and student performance, particularly in large-scale assessments like NAT, remains underexplored.

Student Performance Measured by the National Achievement Test (NAT)

The National Achievement Test (NAT) is the primary large-scale assessment used in the Philippines to evaluate student performance across various subject areas at key stages of basic education. It measures not only content knowledge but also critical thinking, problem-solving, and literacy skills aligned with 21st-century competencies. While designed to assess minimum proficiency levels, results from the NAT have consistently shown that a large proportion of students do not meet expected standards (Department of Education, 2023).

Several studies have explored factors influencing NAT performance. For example, Cuajao (2024) and Gain and Ancho (2019) found that school leadership, professional collaboration, and budget utilization significantly affect NAT outcomes. However, concerns persist about the test's validity in capturing deeper competencies like reasoning and information literacy (Cuajao, 2024). Gaps in NAT performance are further exacerbated by unequal school funding, differences in teacher quality, and students' socioeconomic status (Magulod, 2017; Mirasol et al., 2021).

Despite these limitations, NAT remains a key benchmark for assessing school effectiveness and informing policy. Its alignment with core subject competencies provides a basis for linking student achievement with instructional leadership. As such, examining how leadership behaviors—such as curriculum coordination or feedback mechanisms—relate to students' NAT scores can offer meaningful insights into school performance dynamics.

Relationship of Instructional Leadership and Student Achievement

The relationship between school leadership and student achievement has been the subject of extensive empirical inquiry. While early research primarily focused on transformational leadership, more recent work underscores the stronger and more direct impact of instructional leadership on academic outcomes (Shatzer et al., 2014). Principals who set clear goals, manage the instructional program effectively, and foster a culture of accountability are more likely to influence student performance positively.

However, findings in the Philippine context remain mixed. Some studies report no significant relationship between principals' leadership behaviors and NAT outcomes (Suyitno, n.d.), while others highlight positive correlations between instructional leadership

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and school performance (Adlaon, 2020; Anub, 2020). Additionally, discrepancies between principals' self-perceptions and teachers' views of leadership behaviors complicate the interpretation of these relationships (Gurley et al., 2016). This complexity suggests that contextual factors—such as school location, resource availability, and teacher capacity—may moderate the effect of leadership on student outcomes.

While existing studies recognize the potential of instructional leadership to improve student outcomes, relatively few have explicitly explored how leadership behaviors, as measured by the PIMRS, relate to performance in 21st-century skills such as critical thinking, problem-solving, and information literacy. Moreover, there is limited evidence on how both principals' and teachers' perceptions of leadership behaviors influence student achievement in national standardized tests like the NAT. Addressing this gap is crucial in advancing evidence-based leadership development strategies in the Philippine education system.

This study, therefore, aims to examine the relationship between principals' instructional leadership behaviors—as assessed through the PIMRS—and students' performance in 21st-century skills, as measured by the National Achievement Test (NAT).

PURPOSE OF THE STUDY

The primary purpose of this study is to examine the relationship between principals' instructional leadership behaviors and students' academic performance in key 21st-century skills, namely problem-solving, information literacy, and critical thinking—as measured by the National Achievement Test (NAT). Guided by the formulated hypotheses, the study seeks to determine whether significant associations exist between instructional leadership practices, as perceived by both principals and teachers, and student achievement in these core competencies. By analyzing these relationships, the study aims to contribute to a deeper understanding of how leadership behaviors influence measurable learning outcomes and to inform school leadership practices that enhance student performance in the context of 21st-century education.

HYPOTHESES

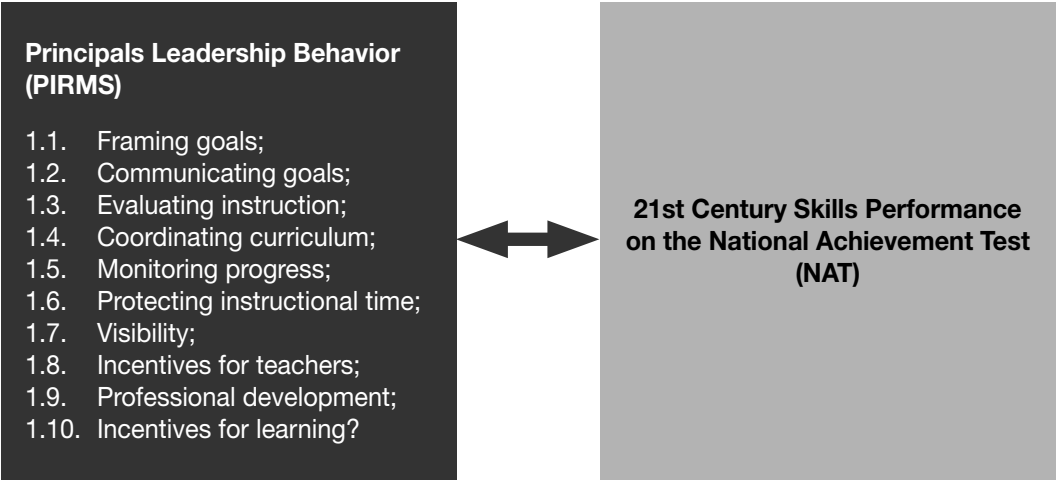
The following hypotheses were posited based on the review of relevant literature and the objectives of the present study:

Hypothesis 1: There is a significant relationship between principals' instructional leadership behaviors, as perceived by principals themselves, and students' academic performance in 21st-century skills—specifically problem-solving, information literacy, and critical thinking—as reflected in National Achievement Test (NAT) results.

Hypothesis 2: There is a significant relationship between principals’ instructional leadership behaviors, as perceived by teachers, and students’ academic performance in 21st-century skills based on NAT results.

Figure 1

Research Conceptual Framework



The conceptual framework illustrates the relationship between principal instructional leadership behaviors, by school leaders and teachers, and their impact on student performance as measured by the 2023 National Achievement Test (NAT). It emphasizes the critical role of principals in improving the teaching and learning process through specific actions such as setting and communicating goals, supervising instruction, coordinating the curriculum, monitoring progress, protecting instructional time, and providing incentives for both teachers and students.

METHODOLOGY

Participants

The participants of this study included secondary school principals and teachers from public secondary schools in the province of Isabela for the school year 2024–2025. Schools were selected from those categorized as large and mega schools across Legislative Districts 1 to 6. A total of 11 secondary school principals participated, one from each identified school. In addition, a sample of 327 teachers was selected from a population of 670 using Cochran’s formula to ensure statistical reliability at a 95% confidence level with a 5% margin of error. Systematic proportional random sampling was applied to ensure representative distribution across districts.

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The sample allocation per district was as follows: Legislative Districts 1, 2, 3, 5, and 6 each included two schools, contributing a total of 55 teacher respondents per district, while District 4 included one school with 52 teacher respondents. This proportional representation facilitated comparative analysis of instructional leadership practices across districts.

Table 1

Allocation of Principal and Teacher Respondents

SCHOOL	Principal	Population Size (Teachers)	Sample Size (Teachers)	Percent
Legislative District 1	2	110	55	16.82
Legislative District 2	2	120	55	16.82
Legislative District 3	2	141	55	16.82
Legislative District 4	1	52	52	15.90
Legislative District 5	2	150	55	16.82
Legislative District 6	2	97	55	16.82
Grand Total	11	670	327	100

Instruments

Two primary instruments were used for data collection: the Principal Instructional Management Rating Scale (PIMRS) and the National Achievement Test (NAT) results.

The PIMRS, developed by Hallinger (1982), measures principals’ instructional leadership behavior through three core domains: defining the school mission, managing the instructional program, and promoting a positive school learning climate. Each domain consists of subscales such as setting academic goals, supervising instruction, coordinating curriculum, monitoring student progress, protecting instructional time, and recognizing teacher and student accomplishments. The instrument includes 50 items rated on a 5-point Likert scale (1 = almost never, 5 = almost always).

Two modified versions of the PIMRS were used: one for principals (self-assessment) and one for teachers (assessment of their principal). The principal version also collected demographic data such as years in service and administrative experience. The teacher’s version included years of teaching and the duration of working with the current principal. Permission to adopt and adapt the tool was secured from Dr. Philip Hallinger.

The PIMRS has demonstrated strong psychometric properties in multiple studies. Hallinger (2008) reported internal consistency values ranging from 0.78 to 0.90 across

subscales, with Cronbach's Alpha exceeding the 0.80 reliability threshold set by Latham and Wexley (1981). Content validity was established through expert consensus of at least 80% for item categorization (Hallinger, 1982). Discriminant validity was also confirmed using ANOVA, showing that ratings varied more between schools than within schools, except for two subscales: "Professional Development" and "Academic Standards."

The second instrument involved secondary data: school-level NAT scores from Grades 10 and 12 for the most recent academic year (2022–2023). These were obtained via a Freedom of Information (FOI) request from the Department of Education–Bureau of Education Assessment (DepEd–BEA). NAT scores were analyzed concerning 21st-century skills indicators such as problem-solving, information literacy, and critical thinking in core subjects (English, Filipino, Mathematics, Science, and Araling Panlipunan)

Procedures

The study employed a quantitative correlational research design to explore the relationship between principals' instructional leadership practices and students' academic performance. Before data collection, approval was sought from relevant education authorities in Isabela. After receiving institutional consent, the researcher distributed the PIMRS surveys to both principals and their teachers. Teachers were selected based on proportional allocation and systematic random sampling. Surveys were administered either in-person or via official school email channels, depending on accessibility.

NAT data were requested and retrieved through an FOI application process to DepEd–BEA. The average school-level performance in Grades 10 and 12 was extracted and analyzed for alignment with 21st-century skills.

Data were encoded and analyzed using the Statistical Package for Social Sciences (SPSS). To describe participants' responses to PIMRS items, weighted mean scores were calculated. To determine the relationship between instructional leadership practices and student achievement, the Spearman Rank Correlation Coefficient was used, a non-parametric test suitable for ordinal or non-normally distributed data.

Ethical Considerations

Ethical clearance for this study was secured from the Institutional Ethics Review Board of the Polytechnic University of the Philippines–Open University. Participation was voluntary, and informed consent was obtained from all respondents. Anonymity and confidentiality were ensured throughout the research process. Participants were assured that all data would be used solely for academic purposes, and they could withdraw at any stage without penalty. The use of NAT complied with DepEd's data-sharing policy under the Freedom of Information Act.

RESULTS AND DISCUSSION

The findings from the National Achievement Test (NAT) indicate that students are performing at low levels in key 21st Century Skills, including problem-solving, information literacy, and critical thinking. This aligns with the broader research indicating that these skills often require significant improvement (Ni Putu Parmini et al., 2023). In response to these deficiencies, school principals play a critical role in implementing instructional leadership strategies aimed at enhancing student outcomes.

Table 2

Assessment of Students' Proficiency in 21st Century Skills from the National Achievement Test (NAT)

National Achievement Test	Mean Percentage Score	Level of Proficiency
Problem-Solving	46.06	Low
Information Literacy	45.05	Low
Critical Thinking	42.14	Low

To address the low proficiency levels revealed in the NAT results, principals may focus on strengthening teacher competence through targeted professional development, such as certification programs and collaborative training initiatives (Supadi, 2022). By enhancing teachers' pedagogical skills and content knowledge, principals can create a more effective learning environment that fosters the development of students' problem-solving and critical thinking abilities. Furthermore, principals themselves must also prioritize the development of their leadership competencies, particularly in technical, conceptual, and human domains, to effectively guide and support their staff in integrating 21st Century Skills into their teaching practices (Riswanti Rini et al., 2023). This holistic approach to instructional leadership is essential for creating a school culture that prioritizes the cultivation of these vital skills among students.

Correlation analysis between principal instructional leadership practices and student performance on the National Achievement Test (NAT)

Utilizing Spearman's correlation, the findings reveal that none of the assessed leadership practices exhibit statistically significant correlations with student achievement scores. Specifically, the practice of framing school goals presents a moderate positive correlation coefficient of 0.499; however, the corresponding p-value of 0.118 indicates that this relationship is not statistically significant, suggesting that establishing clear goals does not have a verified impact on student outcomes in this sample. Similarly, communicating

school goals shows a weak to moderate positive correlation of 0.359, yet the p-value of 0.278 confirms the lack of statistical significance.

Supervision and evaluation of instruction display a weak positive correlation of 0.259, with a p-value of 0.442, further underscoring the absence of a significant relationship. Coordination of the curriculum yields a moderate correlation of 0.417, but the p-value of 0.202 again leads to the acceptance of the null hypothesis, indicating no meaningful impact on National Achievement Test (NAT) scores. Monitoring student progress, with a correlation of 0.339 and a p-value of 0.307, also fails to establish statistical significance. The practice of protecting instructional time shows a moderate correlation coefficient of 0.393, yet this too is not significant, as evidenced by a p-value of 0.232. Similarly, maintaining high visibility has a weak correlation of 0.229, with a p-value of 0.498, denoting a lack of significant association. Moreover, providing incentives for teachers and promoting professional development have weak correlations of 0.183 and 0.358, respectively, both of which are statistically non-significant, with p-values of 0.590 and 0.280. Lastly, providing incentives for learning demonstrates a moderate positive correlation of 0.390 but, like the others, lacks significance (p-value = 0.236).

Overall, while some leadership practices show modest correlations with student performance, none of these associations reach statistical significance, implying that the instructional leadership practices examined do not have a demonstrable impact on NAT performance.

While some studies report a positive correlation in student academic performance—such as Gatama et al. (2023), who found that instructional leadership accounted for 16.7% of the variation in academic performance in Kenyan schools, and Cox and Mullen (2022), who observed that principals' practices directly impacted student achievement in rural, high-poverty schools—the current analysis suggests a different narrative. In contrast, the findings from Sultan et al. (2022) reveal a weak negative correlation between headmasters' instructional leadership and school performance in Malaysian primary schools, which align with the lack of significant relationships observed in the current analysis.

Furthermore, a meta-analysis by Pietsch et al. (2023), covering 75 countries, revealed that the mean correlation between instructional leadership and student achievement was nearly zero, indicating significant variability across different cultural contexts and levels of human development. This broader perspective underscores the complexities inherent in the relationship between instructional leadership and student outcomes.

The analysis also reveals insights into the relationship between principal instructional leadership practices and teachers' performance on the NAT, utilizing the Principal Instructional Management Rating Scale. The study applies Spearman's correlation to

measure the strength and direction of these relationships, alongside p-values to determine their statistical significance. The findings indicate that most leadership practices exhibit weak or insignificant correlations with teachers' NAT performance. Specifically, framing school goals has a near-zero correlation (0.012) with a p-value of 0.825, highlighting no significant relationship. Similarly, communicating school goals shows a weak positive correlation (0.030) and a non-significant p-value of 0.590. Supervision and evaluation of instruction yield a weak correlation (0.053) with a p-value of 0.341, while coordinating the curriculum demonstrates a slightly higher correlation of 0.086 but remains statistically non-significant ($p = 0.121$).

Monitoring student progress presents a correlation of 0.100, yet the p-value of 0.071 indicates no significant association. Notably, protecting instructional time emerges as the only statistically significant relationship, with a weak positive correlation of 0.112 and a p-value of 0.042, suggesting a meaningful yet modest impact on teachers' NAT performance. In contrast, maintaining high visibility, providing incentives for teachers, and promoting professional development all exhibit weak correlations (0.059, 0.013, and 0.055, respectively) and non-significant p-values. Lastly, providing incentives for learning has a weak correlation (0.079) with a non-significant p-value of 0.156.

These results imply that, while instructional leadership practices are often emphasized in educational management, most practices analyzed do not show significant associations with teacher performance on the NAT, except for protecting instructional time. The significant impact of protecting instructional time aligns with Cuajao's (2024) study in the Philippines, which emphasized that safeguarding instructional periods has a measurable effect on enhancing teachers' effectiveness, subsequently improving student outcomes. However, this result contrasts with international research, such as Bietenbeck and Collins (2023), which suggests that the benefits of increased instructional time on student achievement may be less pronounced in broader global contexts.

Moreover, the effectiveness of instructional time appears to depend on how teachers allocate class activities. Burgess et al. (2022) underscore that making activities, such as individual practice and assessments, can boost math scores, while classroom discussions are more beneficial for English performance. This finding highlights the necessity for principals not only to protect instructional time but also to guide teachers in optimizing the use of that time effectively. Despite these potential benefits, Cuajao (2024) also reported a troubling decline in NAT scores for Filipino subjects in Zamboanga City, signalling the need for curriculum reviews and targeted teacher training to address subject-specific challenges.

Nochefranca (2022) further reinforces the critical link between teacher performance and student achievement, emphasizing the importance of high teaching standards. These

studies collectively suggest that while protecting instructional time is a crucial and significant leadership practice, as evidenced by the current analysis, its effectiveness is ultimately tied to how that time is utilized, necessitating strategic curriculum planning and continuous professional development for teachers to maximize student learning outcomes.

CONCLUSION AND RECOMMENDATIONS

The NAT results indicate a concerning level of proficiency among students in critical 21st-century skills. Scores in problem-solving (46.06), information literacy (45.05), and critical thinking (42.14) reflect a low performance, underscoring the need for instructional leadership to focus on enhancing these competencies. This finding highlights a pressing need for strategic interventions aimed at improving students' academic outcomes through targeted instructional practices.

The analysis indicates that both principals' and teachers' perceptions of instructional leadership practices do not exhibit a statistically significant correlation with student achievement as measured by the National Achievement Test (NAT). While certain practices, such as "framing goals," "coordinating curriculum," and "monitoring progress," showed moderate correlations, their p-values suggested no significant impact on student performance. This finding implies that principal leadership behaviors alone may not directly influence student outcomes on standardized assessments, highlighting the need for a more integrative approach to leadership that encompasses additional factors, such as classroom dynamics and resource availability.

Similarly, while teachers generally rated principals' instructional leadership behaviors highly, the analysis revealed predominantly weak or non-significant correlations with student performance. The practice of "protecting instructional time" was the only behavior to demonstrate a statistically significant relationship with NAT scores, suggesting that managing instructional time effectively may have a meaningful impact on student achievement. The overall limited significance of the other practices suggests that while instructional leadership is crucial, its direct effect on student achievement may be influenced by contextual factors, such as how leadership practices are applied in the classroom and the availability of resources. Therefore, a more holistic and context-specific approach to instructional leadership may be necessary to drive measurable improvements in student performance.

Based on the conclusions drawn from the study, several recommendations are proposed to enhance instructional leadership and student achievement. Firstly, school principals must prioritize the protection of instructional time by minimizing disruptions and ensuring that scheduled teaching hours are effectively utilized. This entails the development and enforcement of policies that limit non-instructional interruptions, thereby

maximizing opportunities for student learning. Secondly, it is essential to provide continuous professional development opportunities for both principals and teachers, with a focus on data-driven decision-making, goal setting, and curriculum alignment. The integration of peer mentoring programs and collaborative workshops is likewise encouraged to cultivate a culture of shared learning and pedagogical innovation. Lastly, instructional strategies should be implemented to strengthen students' 21st-century skills, particularly in the areas of problem-solving, information literacy, and critical thinking. These efforts must be aligned with large-scale assessment frameworks, such as the National Achievement Test (NAT), to adequately prepare learners for standardized evaluations and future academic demands.

STATEMENTS AND DECLARATIONS

- 1. Funding details.** No funding was received for this research.
- 2. Disclosure statement.** The authors report that there are no competing financial or non-financial interests that could have appeared to influence the work reported in this paper.
- 3. Ethical Approval:** This study adhered to ethical guidelines concerning human research. Ethical approval was obtained from the Institutional Ethics Committee of the Polytechnic University of the Philippines - Open University System. All participants were informed of the purpose and procedures of the study, as well as their rights, in accordance with ethical research practices
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APPENDIX

Correlation analysis between principal instructional leadership practices and student performance outcomes on the National Achievement Test (NAT), using the Principal Instructional Management Rating Scale.

Type	Principal Instructional Management Rating Scale	Spearman Correlation	p-value	Decision	Remarks
Principal	Frame the School Goals	.499	.118	Accept Ho	Not Significant
	Communicate the School Goals	.359	.278	Accept Ho	Not Significant
	Supervise & Evaluate Instruction	.259	.442	Accept Ho	Not Significant
	Coordinate the Curriculum	.417	.202	Accept Ho	Not Significant
	Monitor Student Progress	.339	.307	Accept Ho	Not Significant
	Protect Instructional Time	.393	.232	Accept Ho	Not Significant
	Maintain High Visibility	.229	.498	Accept Ho	Not Significant
	Provide Incentives for Teachers	.183	.590	Accept Ho	Not Significant
	Promote Professional Development	.358	.280	Accept Ho	Not Significant
	Provide Incentives for Learning	.390	.236	Accept Ho	Not Significant
Teacher	Frame the School Goals	.012	.825	Accept Ho	Not Significant
	Communicate the School Goals	.030	.590	Accept Ho	Not Significant
	Supervise & Evaluate Instruction	.053	.341	Accept Ho	Not Significant
	Coordinate the Curriculum	.086	.121	Accept Ho	Not Significant
	Monitor Student Progress	.100	.071	Accept Ho	Not Significant
	Protect Instructional Time	.112*	.042	Reject Ho	Significant
	Maintain High Visibility	.059	.288	Accept Ho	Not Significant
	Provide Incentives for Teachers	.013	.809	Accept Ho	Not Significant
	Promote Professional Development	.055	.322	Accept Ho	Not Significant
	Provide Incentives for Learning	.079	.156	Accept Ho	Not Significant

[18] Prestoza, Mark – Jhon R., Naldoza, Niño D.

A 4D Analysis of Appreciative Inquiry: Evaluating its Applicability and Effectiveness in BVS Colleges' Administrative Management

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Abstract

This study explored the applicability and effectiveness of the Appreciative Inquiry (AI) approach in the administrative management of BVS Colleges, utilizing the 4D framework (Discovery, Dream, Design, Destiny). Employing a descriptive survey design, the research utilized a survey questionnaire to collect data from both teaching and non-teaching staff. It aimed to assess the perceived levels of applicability and effectiveness of AI across the four phases of the 4D framework, and to determine if significant differences existed between the perceptions of teaching and non-teaching staff. Additionally, the correlation between the perceived applicability and effectiveness was analyzed. The results indicated a high level of perceived applicability of AI in BVS Colleges' administrative management, attributed to its people-oriented focus. No significant difference was found between the perceptions of teaching and non-teaching staff regarding applicability. However, a significant difference was observed in the perceived effectiveness, with both groups rating it highly due to the institution's student-centered programs. Furthermore, a positive correlation was found between the perceived applicability and effectiveness of AI, suggesting a dependent relationship between these variables. This strong relationship suggests that the perceived suitability and feasibility of AI directly contribute to its perceived positive impact on administrative outcomes. When employees view AI as a relevant and fitting approach, they are more likely to perceive it as effective in driving positive change and achieving desired results within the institution. This highlights the potential of the AI approach, particularly within the 4D framework, to enhance administrative management in higher education settings.

Keywords: Appreciative Inquiry Approach, 4D cycle, Higher Education, Administrative Management, Qualitative Research

INTRODUCTION

Appreciative Inquiry (AI) has gained prominence as a strengths-based approach in organizational development, offering a constructive alternative to deficit-focused change models. Central to AI is the belief that "organizations move toward what they study," which encourages institutions to identify, amplify, and build upon their existing strengths in pursuit of a more sustainable and positive future (Cooperrider & Srivastva, 1987).

In educational contexts, AI aligns with research advocating for a dual-path approach to change. Reynolds (2004) emphasizes that sustainable school reform requires both top-down direction and bottom-up engagement. Similarly, Copland (2003) highlights the role of inquiry in institutional change, arguing that inquiry-based processes help establish a culture of continuous improvement by empowering stakeholders to co-create solutions. Hoy and Tarter (2011) further argue that strengths-based strategies can positively influence school structures, policies, and cultures by promoting collaborative and optimistic organizational mindsets.

AI was developed in the 1980s by David Cooperrider and his colleagues at Case Western Reserve University. Influenced by the idea of the “appreciative eye,” a concept introduced by Cooperrider’s wife, Nancy, AI assumes that beauty and potential can be found in all systems. This view led to four early methodological principles: begin with appreciation, promote collaboration, encourage provocative thinking, and ensure practical relevance (Cooperrider & Srivastva, 1987). These principles later evolved into the 4D model—Discovery, Dream, Design, Destiny—and eventually the refined 5D model, which adds a Definition phase (Bushe, 2011).

Underlying AI are several core assumptions: every organization has elements that work well; what we focus on shapes our reality; inquiry is generative; and people are more likely to commit to change when it reflects the best of their past (Whitney & Trosten-Bloom, 2010). The assumptions underlying AI include: in every society, organization, or group, something works; what we focus on becomes our reality; reality is created in the moment, and there are multiple realities; the act of asking questions within an organization or group influences the group; people feel more confident and comfortable moving toward the future when they carry forward elements of the past; if we carry forward elements of the past, they should be the best aspects of the past; valuing differences is important; and the language we use shapes our reality.

After two years, it has become obvious that AI, when skillfully applied with proper support and resources, is a powerful, planned, transformational change process (Bushe & Kassam, 2005). A lot of published accounts highlight the extraordinary results of its use in various countries. For instance, Nutrimental Foods in Brazil engaged all 750 employees in two Appreciative Inquiry Summits, and within one year, absenteeism decreased by 300%, sales increased by 27%, productivity increased by over 23%, and profits increased by 200% (Bushe, 2011).

In 2009, AI was introduced in the Philippines, and several companies, organizations, and churches have successfully applied its principles. One example is CARD Inc., which, like BVS Management, faced challenges in 2009, including clients not honoring procedures and commitments, and employees experiencing burnout and frustration. AI was introduced

as a key intervention. Through a positive storytelling workshop approach, CARD Inc. conducted 2.5-day sessions of positive story telling workshop done per group to revisit and build a shared vision-mission. For 25 years, CARD, Inc. has been a leading microfinance institution in the Philippines, fostering a positive future for Filipino families.

AI approaches organizational issues, challenges, and concerns from a distinct perspective. Instead of focusing on problems, organizational members first identify what is working particularly well within their organization. Rather than analyzing potential causes and solutions, they look for what it might be like if “the best of what is” occurred more frequently. Participants engage in dialogue about what is needed to bring about the desired future and then implement their desired changes. While problem-solving approaches typically assume that organizations are best served by identifying and eliminating deficits, Appreciative Inquiry posits that organizations improve more effectively through “discovery and valuing, envisioning, dialogue, and co-constructing the future” (Ashford & Patkar, 2001).

The success of organizational change initiatives hinges significantly on employee perceptions, a factor of paramount importance within the intricate ecosystem of higher education institutions (Morgan et al., 2022). In the context of perceived applicability, this refers to the extent to which employees deem the AI approach suitable and relevant to their specific roles and the broader organizational objectives (Ezzeddine et al., 2023). This involves their assessment of its practicality, ease of implementation, and alignment with their daily tasks and responsibilities.

On the other hand, perceived effectiveness reflects the degree to which employees believe that the Appreciative Inquiry approach will positively impact the organization, fostering improvements in areas such as communication, collaboration, problem-solving, and overall performance (Glenn et al., 2014). Exploring these perceptions is particularly crucial within the nuanced context of higher education, where the success of any administrative approach is contingent upon the buy-in and active participation of both teaching and non-teaching staff.

There are also several factors that influence perceptions of organizational interventions, such as organizational culture, communication strategies, leadership support, and the level of employee involvement (Hale et al., 2020). A transparent and inclusive organizational culture, characterized by open communication channels and a strong emphasis on employee participation, tends to foster more positive perceptions of change initiatives (Jones et al., 2017). When employees feel heard, valued, and actively involved in the decision-making process, they are more likely to embrace new approaches and perceive them as both applicable and effective. Conversely, a lack of clear communication, inadequate leadership support, or a perception that the change process is being imposed

from above can breed skepticism and resistance (Akmal & Miller, 2003). Therefore, understanding these underlying factors is essential for tailoring the implementation of the Appreciative Inquiry approach to resonate with the specific needs and concerns of employees in higher education settings (Wedajo & Chekole, 2020). Furthermore, it is important to acknowledge that perceptions are not merely passive reflections of reality but are actively constructed through individual experiences and interpretations (Otara, 2011).

The examination of perceptions holds significant importance because employee buy-in and engagement are often crucial for the success of any organizational change initiative (Nutakor, 2019). If employees do not perceive an approach as applicable or effective, they may be less likely to embrace it (Albrecht et al., 2022). Furthermore, acknowledging and addressing the emotional and cognitive responses of individuals during periods of organizational change is paramount to ensuring their acceptance and active involvement (Moosa et al., 2021).

The concept of openness to change, defined as a positive attitude and support for change and its consequences, is also grounded in social exchange, where trust in both parties is a prerequisite (Sinval et al., 2021). Consequently, change management strategies that prioritize transparent communication and comprehensive training initiatives are more likely to foster heightened levels of employee satisfaction and acceptance, thereby increasing the likelihood of successful implementation (Long & Spurlock, 2008).

Teaching staff, primarily focused on instruction, research, and student mentorship, may evaluate the approach based on its perceived ability to enhance their teaching effectiveness, foster student engagement, or streamline research processes. Non-teaching staff, encompassing administrative, technical, and support personnel, may assess its applicability in terms of improving operational efficiency, communication flow, or resource allocation. These differences in perspectives stem from the distinct responsibilities and priorities inherent in their respective roles, potentially leading to divergent opinions on the relevance and value of the Appreciative Inquiry approach.

Considering these differences is critical for tailoring the implementation of the Appreciative Inquiry approach to effectively address the specific needs and concerns of both teaching and non-teaching staff (Tam, 1999). Furthermore, differences in perceptions between academic and administrative staff regarding organizational issues in higher education are influenced by varying levels of involvement in administrative processes, differing priorities, and distinct patterns of interaction within the institution (Nicoleta, 2013).

Gaining faculty and student trust requires administrators to acknowledge and address aspects of the existing status quo that may impede progress or create dissatisfaction (Martinez & Favero, 2018). This can involve engaging in transparent communication, actively soliciting input from stakeholders, and demonstrating a commitment to addressing

concerns and incorporating feedback. Given their vital role in campus internationalization and the cultivation of innovative pedagogical practices, the perspectives of international academic staff regarding institutional approaches and frameworks merit careful consideration (Minocha et al., 2018).

To understand the potential impact of it in higher education, it is important to investigate and compare the perceptions of both teaching and non-teaching staff, acknowledging their distinct roles, experiences, and priorities within the institutional landscape. By exploring these differences, institutions can tailor the implementation of this approach to effectively address the specific needs and concerns of all stakeholders, fostering a more inclusive, collaborative, and ultimately successful organizational change process. Also, fostering an appreciative attitude among educators is crucial, as it directly influences their ability to positively engage with and appreciate their students, which is a key component of effective communication and collaborative group dynamics (Susilo & Sudrajat, 2020).

BVS Colleges, Inc., known for its strong foundation in TESDA-accredited programs, has long followed a “one-man-one-office” management setup. While this approach encouraged staff to become skilled by learning each other’s roles, it also resulted in burnout, errors, and a challenging work environment—especially for newly hired employees. These experiences have highlighted the need to explore more collaborative and empowering ways of managing people and processes. This study investigates how Appreciative Inquiry (AI), with its four key phases—Discovery, Dream, Design, and Destiny—can be applied within the administrative operations of BVS Colleges. It aims to understand how applicable and effective AI is from the perspective of both teaching and non-teaching staff. The study also investigates whether there are notable differences between these two groups and whether there is a meaningful connection between how applicable and how effective AI is perceived to be. By focusing on the real experiences of people working within the institution, the study hopes to offer practical insights into how positive, strengths-based approaches like AI can support better management practices in higher education settings.

To guide the statistical analysis and provide testable predictions, the following null and alternative hypotheses were formulated:

Table 1

Research Questions with Null & Alternative Hypothesis

Research Question	Null Hypothesis (H_0)	Alternative Hypothesis (H_1)
1. What is the perceived level of applicability of the Appreciative Inquiry approach in the administrative management of BVS Colleges, as assessed across the Discovery, Dream, Design, and Destiny phases? 1a. Is there a significant difference in the perceived level of applicability between teaching and non-teaching employees?	H_{01} : There is no statistically significant difference between the perceived levels of applicability of the Appreciative Inquiry approach across the 4D phases between teaching and non-teaching employees.	H_{11} : There is a statistically significant difference between the perceived levels of applicability of the Appreciative Inquiry approach across the 4D phases between teaching and non-teaching employees.
2. What is the perceived level of effectiveness of the Appreciative Inquiry approach in the administrative management of BVS Colleges, as assessed across the Discovery, Dream, Design, and Destiny phases? 2a. Is there a significant difference in the perceived level of effectiveness between teaching and non-teaching employees?	H_{02} : There is no statistically significant difference between the perceived levels of effectiveness of the Appreciative Inquiry approach across the 4D phases between teaching and non-teaching employees.	H_{12} : There is a statistically significant difference between the perceived levels of effectiveness of the Appreciative Inquiry approach across the 4D phases between teaching and non-teaching employees.
3. Is there a statistically significant correlation between the perceived level of applicability and effectiveness of the Appreciative Inquiry approach in the administrative management of BVS Colleges?	H_{03} : There is no statistically significant correlation between the perceived levels of applicability and effectiveness of the Appreciative Inquiry approach in administrative management.	H_{13} : There is a statistically significant positive correlation between the perceived levels of applicability and effectiveness of the Appreciative Inquiry approach in administrative management.

The scope of the research determined the extent to which employees perceived AI as applicable and effective in their administrative context, and analyzed the relationship between these two variables. Delimited to the perceptions of teaching and non-teaching employees of BVS Colleges, Inc., who served as the primary data source. Its use of self-reported perceptions, despite efforts to ensure clarity in the survey instrument and apply statistical analyses, introduces potential for individual biases and limits the generalizability of findings beyond BVS Colleges. Therefore, interpreting the results requires careful consideration of these inherent limitations.

The study is significant for various stakeholders. To the Institution, it is significant in providing valuable information as a basis for enhancing AI-based strategies to create a collaborative working environment for both the employees and students. Also, the findings and methodology can serve as a valuable resource for future researchers exploring the application of AI in similar settings and have the potential to inspire further investigation and development of AI-based management strategies.

Affirmative Inquiry provides a systematic and collaborative approach to uncovering the positive core of an organization and using it as a basis for change (Cooperrider & Whitney, 2005; Filleul & Rowland, 2006). Rather than focusing on deficits, AI emphasizes positive emotions, organizational strengths, and relationships to facilitate meaningful change.

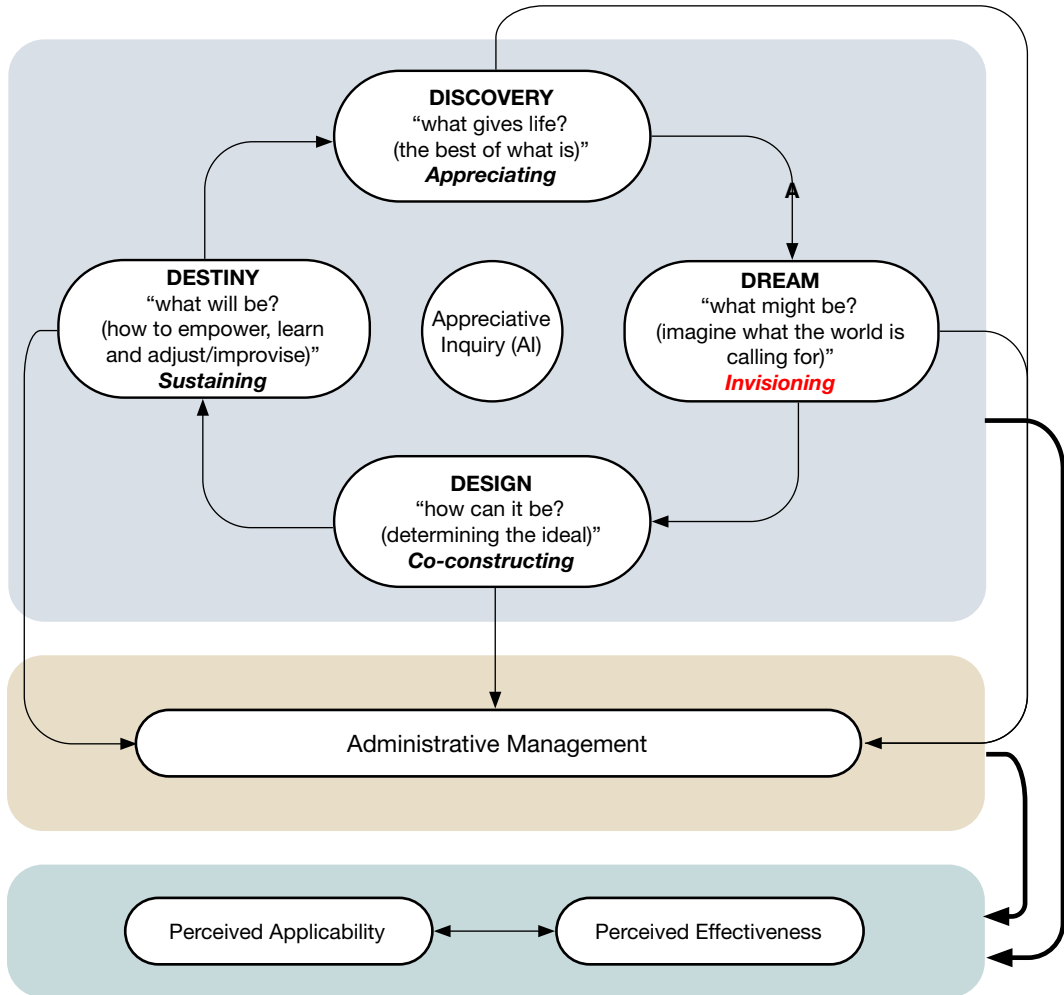
At its core, affirmative inquiry is both a philosophy and a process. As a philosophy, it emphasizes collaboration, participation, and a systems-oriented approach to change that focuses on the organization rather than the individual (Morales, Corpuz, & Oliver, 2016). Fundamentally, it seeks to find the best in people and organizations, affirming strengths and potential (Cooperrider, 2015; Stavros, Godwin, & Cooperrider, 2015). This approach empowers individuals within an organization to shape change by exploring and appreciating the positive aspects of the workplace.

It specifically examines the application of AI through the 4D framework: Discovery, Dream, Design, and Destiny (Barrett & Fry, 2005). This framework provides a structured process for implementing AI principles: a) Discovery as a stage focused on appreciating the “best of what is” by exploring positive elements and strengths within the organization.; b) Dream where participants envision “what might be,” creating a shared positive image of the desired future.; c) Design which involves collaboratively crafting strategies and structures to realize the envisioned dream.; and d) Destiny which focuses on empowering organizational members to take responsibility for enacting and sustaining the change.

This serves as a framework for assessing the applicability and effectiveness of AI in the administration of BVS College.

Figure 1

4D Framework of Appreciative Inquiry Approach



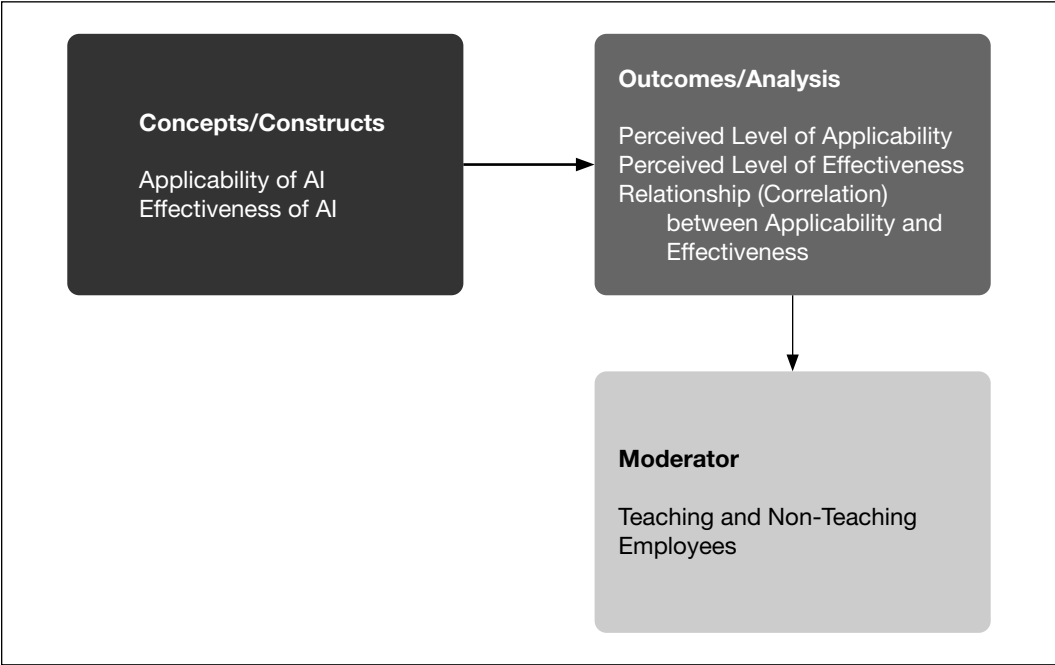
This explores how teaching and non-teaching staff viewed this process holistically and within each of the stages like the applicability and effectiveness of the process in shaping administrative practices. This helps to provide insight into the role of AI in facilitating positive change in institutional administration and how different groups of employees experience the process.

This study corroborates theoretical underpinnings from the following: a) Organizational Development (OD) means AI as a key to OD intervention that fosters positive change and growth.; b) Positive Psychology, which says that AI aligns with the principles of

positive psychology, emphasizing strengths, well-being, and positive experiences.; c) Social Constructionism, which acknowledges that organizational reality is socially constructed, and that positive dialogue and collaboration can shape a more desirable future.

Figure 2

Paradigm of the Study



In the left column are the central concepts under investigation: Applicability of Appreciative Inquiry (AI) and Effectiveness of AI, representing the core focus of the study in assessing the utility of the AI approach. The right column outlines the specific outcomes and analyses that the research aims to achieve, which include the ‘Perceived Level of Applicability’ and the ‘Perceived Level of Effectiveness. Furthermore, the paradigm indicates that the study analyzed the ‘Relationship (Correlation) between Applicability and Effectiveness,’ to understand how these two concepts are associated.

Finally, ‘Teaching and Non-Teaching Employees’ is positioned below. This indicates that the study examined how employee group membership (teaching or non-teaching) moderates or influences the perceived levels of applicability and effectiveness of AI, and their relationship.

METHODOLOGY

The study utilizes a descriptive-survey research design as the study aims to describe the perceptions of employees regarding the applicability and effectiveness of Appreciative Inquiry (AI) in the administrative management of BVS Colleges, Inc. According to McNabb (2007), descriptive research involves gathering data to describe events and then organizing, tabulating, illustrating, and describing those data. Furthermore, it incorporates a correlational element within the descriptive design, focusing on examining the relationship between the perceived applicability and perceived effectiveness of AI. The study was conducted at BVS Colleges, Inc. BVS Colleges, Inc. is an educational institution located in La Trinidad, Benguet, Philippines, offering technical-vocational education and training (TVET), tertiary, and senior high school programs.

The participants include teaching and non-teaching employees who are involved in or affected by the administrative management processes of the institution. The researcher utilized total population sampling, a type of purposive sampling technique. This allows all to contribute their perspectives, experiences, and suggestions regarding the applicability and effectiveness of Appreciative Inquiry in the institution's administrative management.

Table 2

Population of the Study

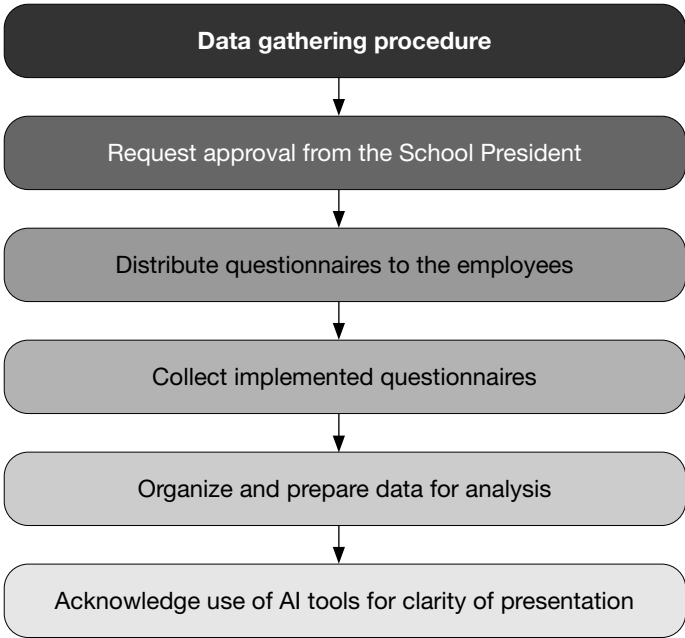
Group	Number of Respondents	Percentage
Teaching	30	71%
Non-teaching	12	29%
Total	42	100%

The primary data gathering instrument for this study was a self-administered survey questionnaire, which was designed to measure employees' perceptions. The questionnaire was structured in two parts: the first part gathers the employment status of the employee (teaching or non-teaching). The second part comprised a structured survey designed to measure the perceived applicability and perceived effectiveness of AI.

To gather the data, permission was obtained through a formal request letter from the Institution. Upon approval, questionnaires were personally distributed to the participants. Then collected the questionnaires from the respondents, ensuring that it was completely answered. The data was organized and prepared for analysis.

Figure 3

Flow Chart for the Data Gathering Procedure



Descriptive statistics, including frequency distributions, means, standard deviations, and weighted means, were used to summarize demographic characteristics and overall perceptions. Inferential statistics were then applied to draw broader conclusions. Independent samples t-tests identified significant differences in perceived applicability and effectiveness between the employee groups. Furthermore, Pearson’s correlation coefficient assessed the linear relationship between these two perceptions.

RESULTS AND DISCUSSION

This chapter is presented in three parts. The first part presents the findings related to the perceived level of applicability of the Appreciative Inquiry approach, the second part presents the findings about the AI’s perceived level of effectiveness, and the last part discusses the relationship between the perceived applicability and effectiveness of AI.

Table 3

*Perceived Applicability of Appreciative Inquiry Approach
in the Administrative Management of BVS Colleges*

	Indicators	Weighted Mean	Descriptive Equivalent	Rank
	Discovery	3.40	Very Much Applicable	3
1	The Management always focuses the attention of the Institution in the positive view every time challenges are encountered.	3.38	Very Much Applicable	5
2	The Management always chooses to pay attention to what could bring benefit to the Institution.	3.48	Very Much Applicable	2.5
3	The Management discovers the strengths of its people and encourages them to develop it.	3.55	Very Much Applicable	1
4	The management encourages the staff to attend training and seminars that could help the employee develop their strengths and skills.	3.48	Very Much Applicable	2.5
5	During the planning stage, the management starts the discussion by elaborating on the Institutions potentials.	3.19	Moderately Applicable	8
6	The management's way of appreciating and recognizing teamwork outputs encourages you and your teammates to perform better.	3.38	Very Much Applicable	5
7	The management's emphasis on room for innovations and improvements encourages you to be more innovative.	3.33	Very Much Applicable	7
8	The employees always approach additional tasks as a challenge for growth rather than a punishment.	3.38	Very Much Applicable	5

	Indicators	Weighted Mean	Descriptive Equivalent	Rank
	Dream	3.32	Very Much Applicable	4
1	The management creates the working environment a possible workplace for development and growth.	3.38	Very Much Applicable	2
2	The employees attitude towards changes is a room for expansion of knowledge, growth and experience.	3.29	Very Much Applicable	3.5
3	The management creates a new set of competition rather than being in a competition of what was already existing in the "market place."	3.29	Very Much Applicable	3.5
4	Ambiance of the working environment always motivates and encourages the employees to work.	3.21	Moderately Applicable	5
5	Employee career/skills development opportunities are always encouraged and fairly distributed among employees	3.45	Very Much Applicable	1
	Design	3.56	Very Much Applicable	1
1	The management always find ways to improve its set of programs and services offered (e.g. From automotive Bundle to Automotive Bundle with Toolkits)	3.69	Very Much Applicable	1
2	The Management introduces innovation of services in conducting training to the community (Community-Based Training).	3.57	Very Much Applicable	2
3	Teamwork is always appreciated in the Institution	3.43	Very Much Applicable	3

	Indicators	Weighted Mean	Descriptive Equivalent	Rank
	Destiny	3.46	Very Much Applicable	2
1	The management of the Institution is directed to the Vision-Mission of the Institution.	3.57	Very Much Applicable	1
2	The management view of Long-term effect in decision making is convincing.	3.38	Very Much Applicable	3
3	The management always conducts evaluation of outputs after the conduct of an event.	3.43	Very Much Applicable	2

As shown in Table 2, the Design area received the highest applicability rating (3.56). This high rating may be attributed to the respondents' strong agreement with indicators such as "The management always finds ways to improve its set of programs and services offered..." (3.69) and "The Management introduces innovation of services..." (3.57). These results indicate that employees perceive management's focus on program improvement and service innovation as highly relevant aspects of AI within the institution. This orientation aligns with the core principles of AI, which posits that focusing on existing strengths and successes can be a more effective catalyst for organizational development than dwelling on deficits and shortcomings (Savage et al., 2018).

The Discovery area (3.40) suggests that respondents generally agree that management focuses on positive aspects and employee strengths. For instance, the indicator with the highest rating in this area is "The Management discovers the strengths of its people and encourages them to develop it" (3.55), highlighting the emphasis on strength recognition, a core principle of AI. Other indicators, such as "The management always chooses to pay attention to what could bring benefit to the Institution" (3.48) and "The management encourages the staff to attend trainings and seminars that could help the employee develop their strengths and skills" (3.48), also received high ratings, further supporting the perception that the Discovery phase is being applied effectively. The observed emphasis on the management's inclination towards recognizing and nurturing employee strengths aligns with established principles in positive psychology and organizational behavior (Richter et al., 2021). Prioritizing the identification and cultivation of individual talents is not only perceived favorably by employees but also resonates with contemporary research advocating for strengths-based leadership and humanized organizational practices (Bhatnagar, 2020; Wang et al., 2023).

The Dream area, with a mean of 3.32, also demonstrates high applicability. Respondents rated highly the management's emphasis on creating a positive working environment for development and growth (3.38) and the fair distribution of career/skills development opportunities (3.45). This indicates that employees perceive the management as fostering a positive and growth-oriented vision, aligning with AI's focus on envisioning a desired future. The importance of organizational support in fostering positive employee attitudes and behaviors (Donkor et al., 2020). When employees feel supported and valued, they are more likely to be engaged, committed, and productive (Yuwono, 2021).

The Destiny area, with a mean of 3.46, reflects a strong perception of applicability. A key indicator in this area is the management's alignment with the institution's vision and mission (3.57), suggesting that employees perceive the management as effectively translating the vision into action, a crucial aspect of the Destiny stage in AI. Furthermore, respondents indicated agreement with indicators such as "The management always evaluates outputs after the conduct of an event" (3.43) and "The management's view of the long-term effect in decision-making is convincing" (3.38), indicating that employees perceive the management as focused on sustainability and continuous improvement. This emphasis on long-term impact and consistent evaluation resonates with the principles of corporate sustainability, which emphasize meeting the needs of current stakeholders without compromising the ability of future stakeholders to meet their own needs (Lee, 2020).

Overall, the findings in Table 2 suggest that the Appreciative Inquiry approach, as implemented across the 4D framework, is perceived as highly applicable in the administrative management of the Institution. This aligns with existing literature highlighting its effectiveness in fostering positive change and employee engagement (Cooperrider and Whitney, 2005). Specifically, the high applicability ratings in the Design and Destiny phases corroborate studies emphasizing AI's role in facilitating innovative solutions and aligning organizational actions with its core vision and mission (Ludema et al., 2003).

In Table 3.1, an independent samples t-test was conducted to determine if these differences in perceived applicability between teaching and non-teaching employees were statistically significant.

Table 3.1

*Comparison of Perceived Applicability of Appreciative Inquiry Approach
between Teaching and Non-Teaching Employees*

Areas	Non-Teaching	Teaching	W.M.
A. Discovery	3.37	3.47	3.40
B. Dream	3.33	3.32	3.33
C. Design	3.57	3.56	3.57
D. Destiny	3.48	3.42	3.46
Average	3.44	3.44	3.44

The results of the t-test, assuming equal variances, indicated that there was no statistically significant difference between the two groups ($t = -0.06765$, $p = 0.948262$). This test was performed on the average scores of the 4 areas and not the individual responses of the 30 teaching and 12 non-teaching respondents. This emphasis on recognizing and utilizing individual strengths is a core principle of Appreciative Inquiry, and it appears to be consistently perceived by both groups of employees. Due to the relatively small size of the institution, there might be frequent interactions between teaching and non-teaching staff, which may contribute to a shared understanding and perception of the applicability of AI. The observed consistency in perceived applicability of Appreciative Inquiry may stem from management's equitable recognition of individual strengths, irrespective of employees' roles (Susilo & Sudrajat, 2020)

Table 4

*Perceived Effectiveness of Appreciative Inquiry Approach
in the Administrative Management of BVS Colleges*

Indicators	Weighted Mean	Descriptive Equivalent	Rank
Discovery	3.29	Highly Effective	4
1. The Management always focuses the attention of the Institution on the positive view every time challenges are encountered.	3.29	Highly Effective	4
2. The Management always chooses to pay attention to what could bring benefit to the Institution.	3.4	Very Much Applicable	1
3. The Management discovers the strengths of its people and encourages them to develop it.	3.24	Highly Effective	5

Indicators	Weighted Mean	Descriptive Equivalent	Rank
4. The management encourages the staff to attend trainings and seminars that could help the employee develop their strengths and skills.	3.38	Very Much Applicable	2.5
5. During the planning stage, the management starts the discussion by elaborating on the Institution's potentials.	3.14	Moderately Effective	7
6. The management's way of appreciating and recognizing teamwork outputs encourages you and your teammates to perform better.	3.38	Very Much Applicable	2.5
7. The management emphasizes room for innovations and improvements encourages you to be more innovative.	3.19	Moderately Effective	6
8. The employees always approach additional tasks as a challenge for growth rather than a punishment.	3.26	Highly Effective	5
Dream	3.37	Highly Effective	2
1. The management creates the working environment a possible workplace for development and growth.	3.38	Highly Effective	2
2. The employees' attitude towards changes is a room for expansion of knowledge, growth, and experience.	3.35	Highly Effective	3
3. The management creates a new set of competition rather than being in a competition of what was already existing in the "marketplace."	3.32	Highly Effective	4
4. The ambiance of the working environment always motivates and encourages the employees to work.	3.32	Highly Effective	4
5. Employee career/skills development opportunities are always encouraged and fairly distributed among employees.	3.48	Very Much Applicable	1

Indicators	Weighted Mean	Descriptive Equivalent	Rank
Design	3.51	Highly Effective	1
1. The management always finds ways to improve its set of programs and services offered (e.g., from Automotive Bundle to Automotive Bundle with Toolkits).	3.64	Highly Effective	1
2. The Management introduces innovation of services in conducting training to the community (Community-Based Training).	3.55	Highly Effective	2
3. Teamwork is always appreciated in the Institution.	3.35	Highly Effective	3
Destiny	3.37	Highly Effective	2
1. The management of the Institution is directed to the Vision-Mission of the Institution.	3.48	Very Much Applicable	1
2. The management's view of the long-term effect in decision-making is convincing.	3.24	Highly Effective	4
3. The management always conducts an evaluation of outputs after the conduct of an event.	3.38	Highly Effective	2.5

As shown in Table 3, the Design area received the highest effectiveness rating (3.51). This high rating aligns with the findings on applicability, suggesting that the aspects of AI that are perceived as most applicable are also perceived as most effective. The high effectiveness rating may be attributed to the respondents' strong agreement with indicators such as "The management always finds ways to improve its set of programs and services offered..." (3.64). This merging of perspectives highlights the perceived value and impact of initiatives aimed at refining existing programs and pioneering novel service offerings (Jiang et al., 2024). And "The Management introduces innovation of services..." (3.55). These results indicate that employees see the management's focus on program improvement and service innovation as not only applicable but also highly effective. This aligns with the Poetic Principle of AI, which suggests that organizations can choose what to focus on and that choice influences what they learn and become. In this case, the focus on design and innovation is perceived as leading to effective outcomes.

The perceived effectiveness of the Discovery area (3.29) also indicates a positive perception, with respondents generally agreeing that the management's focus on positive aspects and employee strengths contributes to effective outcomes. The indicator with the highest rating in this area is "The Management always chooses to pay attention to what could bring benefit to the Institution" (3.40), further supporting the perception that this phase is contributing to effective administrative management. This focus on organizational benefits aligns with the principles of organizational support, which posits that a supportive work environment, encompassing factors such as a facilitative climate, motivation management plans, and conducive work conditions, is positively correlated with managerial effectiveness (Srivastava & Sinha, 2009).

The Dream area, with a mean of 3.37, demonstrates high effectiveness, mirroring its applicability rating. Respondents rated the management's emphasis on creating a positive working environment for development and growth (3.38) and employee career/skills development opportunities (3.48), suggesting that employees perceive the management as effectively fostering a positive and growth-oriented vision. The alignment of management's vision with the Anticipatory Principle of AI suggests that a positive outlook on the future, especially concerning the integration of AI in the workplace, can lead to more positive actions and attitudes in the present (Fousiani et al., 2024).

The Destiny area, with a mean of 3.37, also reflects a strong perception of effectiveness. A key indicator in this area is the management's alignment with the institution's vision and mission (3.48), suggesting that employees perceive the management as effectively translating the vision into action and achieving desired outcomes. The alignment of management actions with the institution's vision and mission resonates profoundly with the Positive Principle of the Appreciative Inquiry approach, a methodology that emphasizes the transformative power of positive questioning and a strengths-based perspective in driving organizational change (Al-Hawari et al., 2021).

Overall, the findings in Table 3 suggest that the Appreciative Inquiry approach, as implemented across the 4D framework, is perceived as highly effective in the administrative management of BVS Colleges. This finding is supported by literature indicating that AI's focus on positive core and future possibilities leads to improved organizational outcomes and employee morale (Watkins et al., 2011). The high effectiveness ratings across all four dimensions, particularly Design and Destiny, align with the core principles of AI, where envisioning and enacting a desired future through positive inquiry drives impactful change and goal achievement (Cooperrider & Srivastva, 1987).

Table 4.1

Difference between the Perceptions of Respondents on the Effectiveness of Appreciative Inquiry Approach in the Administrative Management of BVS

Areas	Non-Teaching	Teaching	W.M
A. Discovery	3.24	3.41	3.29
B. Dream	3.22	3.55	3.31
C. Design	3.54	3.81	3.62
D. Destiny	3.32	3.64	3.41
Average	3.33	3.60	3.41

As shown in Table 3.1, there are noticeable differences in the perceived effectiveness ratings between teaching and non-teaching employees across the four dimensions (Areas) of Appreciative Inquiry. Teaching employees have a higher average effectiveness rating (3.60) compared to non-teaching employees (3.33). An independent samples t-test was conducted to determine if these differences in perceived effectiveness between teaching and non-teaching employees were statistically significant. The results of the t-test indicated that there was a statistically significant difference between the two groups ($p = 0.02$, $\alpha = 0.05$). This result supports the finding that the teaching staff have a significantly higher perceived effectiveness of the AI approach.

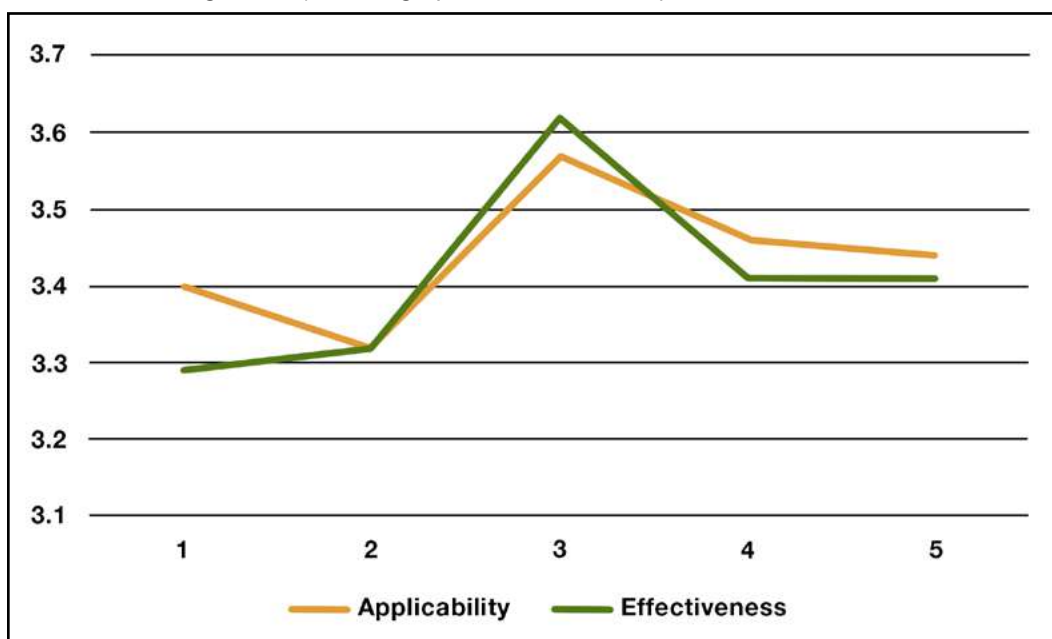
Specifically, teaching employees rated the effectiveness of AI higher in all four dimensions, with the most substantial difference observed in the Dream area (3.55 for teaching vs. 3.22 for non-teaching). This suggests that teaching employees perceive a greater positive impact of AI on envisioning and creating a desired future for the institution. The significant difference is due to the nature of teaching roles, which might allow for a greater sense of ownership and involvement in the institution's vision and goals. Also, the non-teaching staff may be more focused on day-to-day operational tasks, which could influence their perception of AI's effectiveness.

Figure 4 below reveals a very strong positive correlation ($r = 0.92$) between the perceived applicability and perceived effectiveness of the Appreciative Inquiry approach in BVS management. Specifically, the correlation coefficient of 0.92 suggests that approximately 84.6% of the variance in perceived effectiveness can be attributed to its linear relationship with perceived applicability ($r^2 = 0.8464$). This strong positive correlation means that employees who perceive Appreciative Inquiry as highly applicable also tend to perceive it as highly effective. This finding aligns with the theoretical underpinnings of AI, which suggests that when an approach is seen as suitable and feasible, it is more likely to be viewed favorably in terms of its outcomes.

While Figure 4 illustrates the overall correlation, it's important to consider the specific dimensions of AI. The data recommend that the four dimensions demonstrate a consistent pattern of applicability and effectiveness. This parallel progression indicates that the perceived applicability of AI in each dimension is closely linked to its perceived effectiveness in that dimension. The strong correlation observed has

Figure 4

Correlation between Applicability and Effectiveness of the Appreciative Inquiry Approach in the BVS Management (0.92, High positive correlation)



Practical implications for BVS Colleges. For example, projects like program innovation and community-based training, which were rated highly in both applicability and effectiveness, appear to be key drivers of positive perceptions of AI. This suggests that focusing on enhancing the applicability of AI in these areas may further strengthen its perceived effectiveness. This finding supports the idea that fostering a sense that AI is a suitable and feasible approach can contribute to its perceived value and impact within the institution.

This aligns with the core principles of AI, which recommend that when stakeholders perceive the approach as relevant and suitable, they are more likely to engage with it, leading to positive outcomes (Cooperrider & Srivastva, 1987). This relationship strengthens the importance of fostering a sense of relevance to enhance the perceived value and impact of organizational development initiatives, as highlighted by scholars who emphasize the role of shared understanding and buy-in in successful change processes (Bushe, 2011).

Summary of Findings

The level of applicability of the Appreciative Inquiry (AI) approach in the administrative management of BVS Colleges was observed as very high. Employees from both teaching and non-teaching roles generally agreed on the high applicability of AI. On the other hand, the level of effectiveness of the Appreciative Inquiry (AI) approach in the administrative management of the Institution was also high. However, a statistically significant difference was observed in the perceptions of teaching and non-teaching employees, with teaching employees reporting higher perceptions of effectiveness. Finally, a strong positive correlation was observed between the perceived applicability and effectiveness of the Appreciative Inquiry (AI) approach in the Institution.

CONCLUSION AND RECOMMENDATIONS

The following conclusions were drawn based on the findings of the study. The Appreciative Inquiry (AI) approach is identified as highly applicable and highly effective in the administrative management of BVS Colleges. Employees normally perceive AI as suitable and relevant for implementation within the institution's administrative context. Also, they see AI producing a positive outcome in the institution's administrative practices. However, teaching employees reported significantly higher perceptions of effectiveness compared to non-teaching employees. There was a very strong positive correlation between the perceived applicability and perceived effectiveness of the Appreciative Inquiry (AI) approach in the Institution. This indicates that higher perceptions of effectiveness are strongly associated with higher perceptions of effectiveness.

The following recommendations are forwarded based on the conclusions of the study. First, BVS Colleges management is persuaded to continue utilizing the Appreciative Inquiry (AI) approach in its administrative practices in various areas such as general administration, teaching, employee evaluation, and overall institutional development. Second, to maintain and enhance the perceived effectiveness of AI, the management may ensure consistency and a gradual improvement in its programs and services. Third, may focus on further developing strategies to address the institution's potential during the planning process. This will help to focus attention on the institution's strengths and foster a positive outlook among employees. Fourth, may implement practices (tangible or intangible) that recognize and appreciate employee contributions. Fifth and last, may invest in training programs that promote a positive and receptive mindset among employees in all circumstances to enhance employees' ability to adapt to change.

STATEMENTS AND DECLARATIONS

1. **Disclosure statement.** The authors assert that there are no relevant financial or non-financial competing interests to disclose regarding this research.
2. **Ethical Approval.** The researcher declares that there were no participants harmed, coerced, or subjected to any form of distress during the conduct of this study. All ethical guidelines were followed to ensure the safety, well-being, and voluntary participation of all respondents. Confidentiality and anonymity were maintained throughout the study process.
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Effectiveness of Nurturing Engagement and Lifelong Learning through Audio-Visual (NELLA) as Supplementary Materials in Enhancing the Academic Performance of Grade 11 Students in Food and Beverage Services

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Abstract

The demand for skilled professionals in the Food and Beverage Services sector highlights the critical need for effective teaching methodologies that can boost student engagement and performance. However, conventional classroom instruction often struggles to meet the diverse learning needs of students and to provide the practical, immersive experience necessary for a deep understanding of the subject matter. This challenge points to a notable research gap: the need to explore innovative supplementary educational tools, specifically audio-visual materials, and their direct impact on knowledge retention and comprehension in this vocational area. To address this, the current study investigated the effectiveness of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) as a supplementary material for enhancing the academic performance of Grade 11 students in Food and Beverage Services. A quasi-experimental design was employed with ninety-six participants, who were divided into an experimental and a comparison group using a match pairing method based on pretest scores. The experimental group received NELLA interventions, while the comparison group followed the standard curriculum. The results of formative and post-tests revealed that students who used NELLA demonstrated a significant improvement in their understanding and learning outcomes. This suggests that the NELLA intervention, through increased engagement, targeted instruction, and self-paced learning, is a valuable pedagogical tool. While both groups showed some improvement, the NELLA group demonstrated a clear advantage in accelerating learning and achieving a deeper understanding, thereby confirming the potential of this audio-visual approach to bridge the gap in effective vocational education.

Keywords: effectiveness, food and beverage services, modified video lessons, supplementary materials

INTRODUCTION

Student engagement and long-term knowledge retention are crucial for academic success. However, traditional classroom learning methods may not always achieve these goals effectively, particularly in subjects like Food and Beverage Services, where

practical skills and visual understanding are essential. To address this, this research introduces Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA), a supplementary material program that utilizes audio-visual resources to enhance student engagement and academic performance in Food and Beverage Services for Grade 11 students. The term “NELLA” is unique not only as an acronym for the program but also as a personal term inspired by the researcher’s daughter, whose nickname served as a creative and inspirational foundation for the self-made videos used in this study. By incorporating the NELLA approach, this study aims to address the need for more engaging and effective learning methods in the Food and Beverage Services course. Improved student engagement can lead to better knowledge retention, higher academic performance, and a deeper understanding of the subject matter, ultimately preparing them for future careers in the hospitality industry.

In July 2020, the Department of Education (DepEd) issued DepEd Order No. 018, s. 2020, titled “Policy Guidelines for the Provision of Learning Resources in the Implementation of the Basic Education Learning Continuity Plan (BE-LCP).” This policy established guidelines for DepEd to develop educational materials in support of the BE-LCP. It also outlined procedures for the allocation, utilization, and disbursement of funding to produce self-learning modules and other learning resources.

Based on the research study of Baldon (2023), the researcher compared the effectiveness of three teaching approaches in Food and Beverage Services for Grade 11 students: modular learning, video demonstrations, and traditional lectures. The results indicated that video demonstrations (Demo Video Learning Approach) led to significantly better scores compared to the other two methods. This suggests that educators should utilize a variety of teaching styles to cater to different student learning preferences. Additionally, the study found a link between preferred teaching style and learning outcomes, highlighting the importance of considering student preferences when choosing instructional methods. Overall, this research contributes to the growing evidence supporting the benefits of technology-based teaching methods in enhancing student learning. It emphasizes the need for educators to incorporate innovative teaching practices that create a positive learning environment and boost student engagement.

This research sought to maximize the use of technology to enhance student learning in Food and Beverage Services (FBS). Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) went beyond simply providing readily available modified videos. The researcher created original video content specifically tailored to the students’ needs and aligned with the required competencies of the course. This ensured the students were exposed to accurate and relevant information presented in an engaging format.

In a previous study by Buniel and Calipayan (2021), contextualized modules were shown to be effective in supporting student learning even without a physical teacher present. These modules, designed for distance learning environments, have been demonstrated to improve student academic performance. By allowing students to progress at their own pace and offering content relevant to their specific needs, contextualized modules promote a more personalized learning experience.

The Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) videos offered students the advantage of repeated viewing, allowing them to become thoroughly familiar with the skills their teacher aimed for them to master. This facilitated the expected return demonstrations in class, where students could showcase their acquired skills.

The foregoing study integrates the use of a TPACK and ADDIE model. TPACK stands for Technological, Pedagogical, and Content Knowledge, and is a framework that helps teachers figure out how to use technology effectively in their lessons. TPACK says teachers need three things: knowledge about the technology itself (Technological), knowledge about how to teach effectively in any subject (Pedagogical), and knowledge about the specific subject they're teaching (Content Knowledge). Further, TPACK acts like a roadmap, giving teachers a clear path on how to effectively integrate technology into the classroom.

Another model is the ADDIE, which stands for Analyze, Design, Develop, Implement, and Evaluate. This model provides a structured framework to design, develop, and evaluate the effectiveness of NELLA as an intervention using audio-visual supplementary materials to improve student performance in Food and Beverage Services.

Moreover, the study is anchored to Gardner's multiple intelligences theory, an individual possesses, in varying strengths and preferences, at least eight discrete intelligences: linguistic, logical, mathematical, spatial, musical, bodily-kinesthetic, interpersonal, intrapersonal, and naturalistic (Gardner, 2006). "The relative strengths and weaknesses among and between these intelligences dictate how individuals take in information, perceive the world, and learn" (Marshall, 2002, p. 8). This represents a great departure from the traditional view of intelligence, which recognizes only verbal and computational ability (Brualdi, 1996).

Gardner's theory suggests that how subject matter is conveyed will influence an individual's ability to learn and that teachers need to take all these intelligences into account when planning instruction (Brualdi, 1996). While traditional textbooks often take a primarily linguistic approach to learning, video's multiple modes can take a variety of approaches, such as aesthetic, logical, or narrational, in addition to linguistic, thus addressing the needs of a broader range of learners: "These 'multiple entry points' into the content are especially

valuable in a formal educational setting, as they offer greater accommodation to the multiple intelligences of a diverse group of students” (Corporation for Public Broadcasting, 2004).

The theory of Gardner’s multiple intelligences helps this study to recognize the individual differences of the learners since some of them may be auditory, visual, or audio-visual. The use of technology employing self-made videos will greatly help the learners to cope easily with the lesson. Because they see, hear, and can repeat some parts they do not understand. Richard Mayer’s cognitive theory of multimedia learning helps the researcher to create a meaningful video in line with the precise content and competencies that the students need for a particular course or subject. It is intended for learners who require improvement.

This approach aimed at encouraging students to replicate the skills demonstrated by the teacher in class and during laboratory time. Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) videos, designed as supplementary learning materials for Food and Beverage Services (FBS), served as a valuable guide for students even when they were absent from school. These self-paced video resources allowed students to practice and learn at their convenience, promoting independent learning and potentially mitigating the negative effects of absenteeism. According to the study by Almuslamani et al. (2020), researchers investigated the impact of educational videos on student participation in a classroom setting. The study involved 24 students at the Applied Science University in Bahrain. The findings revealed that incorporating educational videos, regardless of whether they were chosen by the instructor or the students themselves, led to a notable increase in student participation. Interestingly, the study also showed that videos selected by the students had an even greater positive effect on their classroom engagement compared to those chosen by the researcher.

Furthermore, the study aimed to address the challenge of limited laboratory time by providing students with additional practice opportunities through Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) materials. In this way, this program not only served as a valuable learning resource but also potentially functioned as preparation for students’ upcoming national assessment under the Technical Education and Skills Development Authority (TESDA).

In addition, the learning by doing theory of education was expounded by American philosopher John Dewey and Latin American pedagogue Paulo Freire. It’s a hands-on method of learning, meaning the students must engage with their environment for them to adapt and learn. Most significantly, this kind of instruction allows students to actively create knowledge since they will perform a real task. The well-known educational idea known as the learning by doing principle states that one should learn through experiences that are directly related to their activities. Food & Beverage Services focuses on skills that require

students to get practical experience in the laboratory. Through the practice of specific skills, they can apply to their experience; students can gain all the knowledge they require to learn in the subject.

One potential challenge for implementing the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program could have been limited access to technology among students. Fortunately, at Kapayapaan Integrated School, most Grade 11 students owned cell phones with internet access. For those who didn't have access, there was a dedicated time for the students to watch the videos on television during their class schedule since all classrooms were equipped with TVs. In this way, the program ensured students had the necessary tools to engage with Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) video materials.

The Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program offered a further benefit by encouraging students to use technology positively. Instead of solely using their devices for online games, chatting, or unproductive video watching, students were exposed to the educational potential of technology through Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA). This positive technology use aligned with a course requirement where students themselves created interactive videos related to specific competencies. The program helped students develop their creativity and fostered valuable video creation skills.

The cognitive theory of multimedia learning by Richard Mayer's represents a foundation for the implementation of multimedia educational content presentation. This theory explains the significance of the modality principle in the learning process. To efficiently process multimedia information, it is necessary to select relevant information and organize it into a verbal and pictorial model. Processing the information is performed in two channels after receiving the auditory and visual information that appears in the working memory as verbal and pictorial information models. Rational use of resources is very important, so the design of multimedia presentation is a crucial factor for the learning process outcome (Mayer, 2001; Moreno & Mayer, 2006).

This study aimed to develop and evaluate the effectiveness of the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program in enhancing the teaching and learning process of Food and Beverage Services (FBS) at Kapayapaan Integrated School. The findings of this research were intended to serve as the foundation for a comprehensive program. This program's goal was to further improve the delivery and student experience within the Food and Beverage Services (FBS) curriculum.

The rationale for program development is driven by the continuous growth in Food and Beverage Services (FBS) enrollment at Kapayapaan Integrated School. A more vigorous and engaging curriculum is essential to ensure these students achieve their full

potential in the course and meet their educational aspirations. Additionally, the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program has the potential to serve as an effective advocacy campaign for the Food and Beverage Services (FBS) program. By providing incoming students with a glimpse into the course content and expectations through well-designed video materials, the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) program can foster informed enrollment decisions and ensure students are well-prepared for the demands of the FBS curriculum.

A major challenge for many students is memorizing the scripts and becoming familiar with the wide range of table appointments and their associated terminology. Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) serves as a valuable tool for students in Food and Beverage Services (FBS) to improve their long-term memory of the subject matter. By addressing the research gap, this study can contribute valuable insights into the potential of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) materials, not only for boosting short-term academic performance but also for nurturing a long-term passion for lifelong learning in Food and Beverage Services (FBS).

METHODOLOGY

Research Design

This research is an experimental design in nature. This is the strongest design for establishing cause-and-effect relationships. Participants are randomly assigned to groups (control and treatment), and the researcher manipulates one variable (independent variable) to observe its impact on another variable (dependent variable).

Moreover, a quasi-experimental research design was chosen for this study. Creswell (2012) states that a quasi-experiment is an experimental situation in which the researcher assigns, but not randomly, participants to groups because the experimenter cannot artificially create groups for the experiment. Furthermore, the researcher employed a pre-test and post-test design for this study. Creswell explained that a pre-test measures attributes or characteristics assessed for participants in an experiment before they receive treatment. Meanwhile, a post-test was administered to measure the same attributes or characteristics of participants in an experiment after a treatment. A quasi-experimental design was deemed appropriate for this study because it aimed to investigate the effectiveness of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) as supplementary materials in enhancing students' academic performance in Food and Beverage Services.

Participants of the Study

The participants of the study are the Grade 11 students taking up Food and Beverage Services (FBS) under the Home Economics strand at Kapayapaan Integrated School were chosen as participants because they are enrolled in the specific program that is the focus of this study. Their enrollment in the FBS strand during the 2023-2024 school year makes them a relevant and accessible population for the research. It is conducted during the 2nd semester in the third quarter of the school year 2023-2024.

Table 1

Participants of the study

Grade 11 FBS Students	Male	Female	Total	Participants matched based on pre-test scores	Blind samples
FBS Ginto	26	22	48	30	18
FBS Pilak	25	23	48	30	18
Overall	51	45	96	60	36

Before the conduct of the study, two comparable sections among Grade 11 students in Food and Beverage Services enrolled during the school year 2023 – 2024 were chosen as participants of the study. A match-pairing technique is defined as a type of experimental design where participants are matched based on key variables or shared characteristics relevant to the topic of the study. Then, one member of each pair is placed into the comparison group while the other is placed in the experimental group. This technique was used in this study, where the participants were selected based on their pre-test scores. The pre-test score of one participant in one section was paired with the pre-test score of one participant in the other section. The same pre-test scores were paired; the goal is to create 30 pairs of students. The students who did not have a matching pre-test score were considered a blind sample. These students were still included in the class, but their test results were not used in the study.

To assign the group assignment, the researcher designates one section as experimental and the other as a comparative group. Throughout the experiment, the two groups received two distinct treatments. The experimental group was receiving Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) intervention, while the comparative group will continue with the standard curriculum.

Research Instrument

The researcher utilized the pre-test, formative test, and post-test assessment for the participants. The covered assessment and self-made videos in quarters 1 and 2 of Food and Beverage Services. It includes preparing the dining room/restaurant area for

service, welcoming guests, and taking food and beverage orders. A total of 50 items were included in the researcher-made questionnaire with a 2-way Table of Specification (TOS).

Validity. The researcher-made questionnaire was validated by the Master Teachers and the Head Teacher, while the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) supplementary materials were validated by the Master Teachers, the Head Teacher, and the LR coordinator. To ensure the accuracy of the questionnaires, they were reviewed by experts in the field. The experts assessed whether the questions were relevant, clear, and covered the intended aspects of the research. For the video content, the criteria followed the DepEd standards. A checklist based on these standards was provided to the experts.

The researcher provided a Google Drive that was accessed by the validators. All feedback and comments on the videos were carefully considered by the researcher, who then revised the instruments accordingly. Proper documentation throughout the validation process strengthened the credibility of the study. The validation process identified minor errors in the videos. However, all videos met the criteria established by the validators. This suggests a high overall quality but with room for some minor improvements. Revisions and adjustments were also made to the questionnaires and Table of Specifications (TOS).

Reliability. The researcher-made questionnaire was administered outside of a school that also offered an FBS course.

Scoring. Under DepEd Order No. 8, s. 2015 - Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program, this memorandum aimed to assist in identifying the mastered and least learned competencies in each subject.

The interpretation of test paper checking is based on the table below.

Table 2

Interpretation for Test Results

50 Item Test	Interpretation
38-50	High Performing (HP)
25-37	Average Performing (AP)
24 below	Low Performing (LP)

After receiving permission to conduct the study at Kapayapaan Integrated School, the researcher was also given explicit approval to use the school's name for all research purposes. The formal approval letter from the School Head confirmed that the school's identity could be disclosed in the research paper. This allowed the researcher to proceed with the pre-test and post-test administration. The data-gathering instrument was

administered face-to-face. A one hundred percent (100%) retrieval rate of test questions was achieved, and the data was analyzed using appropriate statistical tools.

Statistical Treatment of Data

After gathering the necessary data, the researcher’s statistical analysis plan was reviewed and approved by a qualified statistician to ensure the accuracy and appropriateness of the methods used. To interpret the respondents’ performance on the pre-test and post-test assessments, the researcher employed descriptive statistics, including mean, frequency count, and percentage.

For inferential analysis, an independent samples t-test was used to determine if there were significant differences between the post-test mean scores and the formative mean scores of the experimental and comparison groups. To further assess the learning impact within each group, a paired-sample t-test was employed to determine the significant differences between the pre-test and post-test mean scores of each group. Finally, Cohen’s d was also used to assess the effect size between the two means, providing a standardized measure of the magnitude of the observed differences.

RESULTS AND DISCUSSION

This section presents the findings and analysis of the quasi-experimental study investigating the Effectiveness of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) as Supplementary Materials in enhancing the Academic Performance of Grade 11 Students in Food and Beverage Services.

Table 3

Level of Academic performance in terms of pretest, formative test, and post-test mean scores

Test	Group (n=30)	Mean	SD	Interpretation
Pre-test	Experimental	26.70	4.24	Average Performing (AP)
	Comparison	26.70	4.24	Average Performing (AP)
Formative	Experimental	45.33	3.08	High Performing (HP)
	Comparison	40.97	6.45	High Performing (HP)
Post-test	Experimental	37.63	4.71	Average Performing (AP)
	Comparison	31.93	5.66	Average Performing (AP)

38-50 High Performing (HP), 25-37 Average Performing (AP), 24 below Low Performing (LP)

Table 3 presents the results of the pretest, formative test, and posttest for both the experimental and comparison groups. As shown, both groups scored an average of 26.70 on the pretest, indicating an average level of performance according to DepEd Order No. 8, s. 2015: Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program. The experimental group achieved a significantly higher score ($M = 45.33$) on the formative test compared to the comparison group ($M = 40.97$). This trend continued in the posttest, where the experimental group obtained a higher mean score ($M = 37.63$) than the comparison group ($M = 31.93$). This suggests that the use of Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) as supplementary materials may have facilitated a deeper understanding and learning of FBS concepts in the experimental group.

Table 4

Test of Significant Difference for Formative Test mean scores of the experimental and comparison groups

Test	Group (n=30)	Mean	SD	t	Mean-Diff	Cohen's d	Effect Size
Formative	Experimental	45.33	3.08	3.35 **	4.37	0.86	Large
	Comparison	40.97	6.45				

** - Test is Significant @ $p\text{-value} < 0.01$. $df=58$

Cohen's $d \leq 0.19$: Very Small, $d \leq 0.49$: Small, $d \leq 0.79$: Medium, $d \leq 1.19$: Large, $d \leq 1.99$: Very Large; $d \geq 2.0$: Huge

An independent sample t-test was conducted to examine the difference in formative test scores between the experimental and comparison groups (Table 4). The analysis revealed a statistically significant difference between the groups [$t(58) = 3.35$, $p < .01$]. The mean difference was 4.37, with a large effect size (Cohen's $d = 0.86$).

Analysis of the formative test results revealed a significant improvement in the understanding of the lesson among students in the experimental group who utilized Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) modified video lessons. This suggests that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) may be a valuable pedagogical tool, potentially due to factors such as enhanced engagement, targeted instruction repetition, and self-paced learning.

Wang et al. (2021) suggests that technology is transforming how traditional learning materials are used. This shift allows educators to deliver content in new ways and create engaging activities, ultimately increasing student motivation to achieve learning goals.

In line with Gilakjani (2012), Nicolaou et al. (2019), and Wungguli and Yahya (2020), research suggests that integrating technology into learning materials fosters a stimulating and interactive learning environment for students.

Table 5

Test of Significant Difference for Post-test mean scores of the experimental and comparison groups

Test	Group (n=30)	Mean	SD	t	Mean-Diff	Cohen's d	Effect Size
Posttest	Experimental	37.63	4.71	4.24 **	5.70	1.09	Large
	Comparison	31.93	5.66				

** - Test is Significant @ $p\text{-value} < 0.01$. $df=58$

Cohen's $d \leq 0.19$: Very Small, $d \leq 0.49$: Small, $d \leq 0.79$: Medium, $d \leq 1.19$: Large, $d \leq 1.99$: Very Large; $d \geq 2.0$: Huge

An independent sample t-test was conducted to assess the difference in post-test mean scores between the experimental and comparison groups (Table 5). The results revealed a statistically significant difference between the groups [$t(58) = 4.24$, $p < .01$]. The mean difference was 5.70, indicating a large effect size (Cohen's $d = 1.09$).

Based on the post-test results revealed a statistically significant difference in the performance of the experimental group compared to the comparison group. Students who utilized Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) in the experimental group achieved higher scores, suggesting that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) may have a positive impact on learning outcomes.

Consistent with Ariani, Imany, and Wungguli, W. (2014), the findings of this study support the use of learning media in culinary programs. Integrating learning media into curriculum delivery has the potential to enhance students' understanding, ultimately impacting their cognitive development and skill acquisition, which are essential for graduating competent culinarians.

Table 6

Test of Significant Difference between Pretest and Posttest of the Experimental Group

Group (n=30)	Test	Mean	SD	t	Mean-Diff	Cohen's d	Effect Size
Experimental	Posttest	37.63	4.71	16.42 **	10.93	2.44	Huge
	Pretest	26.70	4.24				

** - Test is Significant @ $p\text{-value} < 0.01$. $df=29$

Cohen's $d \leq 0.19$: Very Small, $d \leq 0.49$: Small, $d \leq 0.79$: Medium, $d \leq 1.19$: Large, $d \leq 1.99$: Very Large; $d \geq 2.0$: Huge

A paired-sample t-test was conducted to analyze the difference between the pretest and post-test scores of the experimental group (Table 6). The results revealed a statistically significant difference between the scores [$t(29) = 16.42$, $p < .01$]. The mean difference was 10.93, with a huge effect size (Cohen's $d = 2.44$).

Analysis of the pre-test and post-test results within the experimental group revealed a significant improvement in learning outcomes attributable to Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) implementation. This suggests that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) may have a positive impact on both students' learning abilities and understanding capabilities. The substantial improvement observed within the group indicates that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) modified video lessons potentially facilitated deeper comprehension and knowledge retention.

Studies show that digital tools have fundamentally reshaped education in the post-pandemic era. They empower educators to redefine not just the “what” of learning (curriculum content) but also the “how” (pedagogical approaches), “where” (physical location), and “when” (scheduling) of knowledge acquisition. This technology allows for access to a vast range of learning materials, far exceeding traditional textbooks. These resources come in various formats, catering to diverse learning styles, and can be utilized irrespective of geographical constraints or time limitations (Velunta, 2021).

Table 7

Test of Significant Difference Between Pretest and Post-test of Comparison Group

Group (n=30)	Test	Mean	SD	t	Mean-Diff	Cohen's d	Effect Size
Comparison	Posttest	31.93	5.66	4.99 **	5.23	1.05	Large
	Pretest	26.70	4.24				

** - Test is Significant @ $p\text{-value} < 0.01$. $df=29$

Cohen's $d \leq 0.19$: Very Small, $d \leq 0.49$: Small, $d \leq 0.79$: Medium, $d \leq 1.19$: Large, $d \leq 1.99$: Very Large; $d \geq 2.0$: Huge

A paired-sample t-test was conducted to examine the difference between the pretest and post-test scores of the comparison group (Table 7). The analysis revealed a statistically significant difference between the scores [$t(29) = 4.99$, $p < .01$]. The mean difference was 5.23, with a large effect size (Cohen's $d = 1.05$).

The comparison group also demonstrated improvement in their learning outcomes, as evidenced by the increase in scores from their pre-test to post-test. This suggests that traditional teaching methods can still be effective. However, the level of improvement for the experimental group utilizing Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) was significantly greater compared to the comparison group. This finding suggests that Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) may offer an advantage in terms of accelerating learning or achieving a deeper understanding of the subject matter. Studies by Samat and Aziz (2020) demonstrated that multimedia proved to be an effective tool for enhancing student learning outcomes.

This study aligns with Constructivism, a theory emphasizing that learners actively build their knowledge. It highlights that learners don't simply absorb information presented to them. Instead, they engage in a process of actively organizing and making sense of new information based on their existing knowledge, experiences, mental frameworks, and beliefs (Samosa, 2021).

The results of this study demonstrate a clear convergence of findings, providing compelling evidence for the effectiveness of the NELLA instructional tool. This is visible in the quantitative data from the pre-test and post-test assessments show a statistically significant improvement in the post-test scores of the experimental group. This numerical evidence directly supports the hypothesis that NELLA leads to enhanced learning outcomes. Next is supported by the practical context of how NELLA was used. The tool's audio-visual nature directly addresses a key challenge in teaching procedural skills like table setting and service sequences. The visual and auditory elements likely facilitated a deeper, more intuitive understanding for students, which is reflected in their improved performance. The effectiveness of the tool can be seen in its ability to simplify complex demonstrations, which is consistent with the significant score improvements.

Llego (2020) emphasizes the importance of differentiated instruction based on mastery levels. Students who demonstrate sufficient understanding by meeting the minimum criteria should be offered enrichment programs to extend their learning. Conversely, students who fall below the mastery criteria should be provided with targeted remedial programs to address knowledge gaps and support their achievement of learning objectives.

While the post-test scores clearly demonstrated improved knowledge, the study did not measure long-term retention of these skills. It is possible that while students quickly grasp the concepts from the NELLA tool, the long-term mastery and retention of physical, hands-on skills may still require more extensive laboratory practice. Future research could explore whether the initial knowledge gains from NELLA translate into sustained practical competence over a longer period.

Alber (2019) highlights the challenges faced by new educators in expanding their curriculum. They propose instructional videos as a valuable tool to enhance student understanding. However, the authors emphasize the importance of mindful implementation, ensuring videos are not used simply as routine but strategically to significantly contribute to learning. Jamal Yar (2019) suggests that educational videos can benefit language acquisition. The study indicates that videos can enhance students' abilities in reading, listening, and speaking. By watching and retaining information from the videos, students can more easily recall, interpret, and practice language concepts.

Studies suggest that Supplementary Learning Materials (SuppMats) serve a dual purpose: teacher motivation and content adaptation (Jimenez, 2020). By creating SuppMats, teachers are encouraged to develop materials specific to their region and learner demographics, fostering a more localized learning experience (Modesto, 2019). This process can also empower teachers to explore their creativity, acting as writers, illustrators, and layout artists for their resources (Jimenez, 2020).

A growing body of research supports the effectiveness of video-based learning for students. Studies by Wong (2020, 2022) highlight student recognition of the benefits of video clips, including improved comprehension, enriched lessons, and increased engagement. Dham (2021) further emphasizes the flexibility video offers, allowing students to learn at their own pace and in a way that best suits them. Trail and Caukin (2022) add that video serves as a powerful tool for both students and teachers, fostering a shared learning environment that promotes growth for all. These findings collectively suggest that video-based learning is a valuable tool for educators to consider, providing students with an effective means to build a strong knowledge foundation for their future endeavors.

Trail and Caukin (2022) suggest that video presentations offer instructors greater control over the information presented to students compared to online sources of unknown origin. This approach can also foster students' awareness of privacy and trust issues in the digital age. Indriani (2020) highlights an additional benefit: video presentations can serve as an alternative assessment tool, allowing instructors to evaluate student skills and provide immediate feedback for improvement, potentially preparing them for similar tasks in the future.

Dham (2021) suggests that video-based learning addresses four key factors that influence student motivation: attention, relevance, confidence, and satisfaction. By incorporating these elements into a comprehensive learning package, video-based learning is argued to be a highly effective instructional approach.

Indriani (2020) explored the use of video recordings as an alternative assessment tool. This approach provided learners and their peers with opportunities to evaluate speaking and presentation skills through self and peer review of the recorded videos.

Mercado (2022) investigates the potential of integrating video clips into multimedia presentations to enhance student engagement. The rationale behind this approach lies in the power of visual stimulation combined with a familiar media format (video clips) to capture students' attention. The study emphasizes the importance of selecting appropriate video clips and implementing them effectively within learning materials to optimize curriculum design and promote positive learning outcomes.

In this manner, the right use of technology made the class more engaging and interactive with the help of self-made videos as supplementary materials. It supports learning that makes students more capable and effective.

CONCLUSION

Based on the comprehensive analysis presented in the preceding chapters, this study's findings definitively establish the profound and positive impact of the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) instructional tool on the academic performance of Grade 11 Food and Beverage Services students. The empirical evidence gathered from the experimental design strongly supports the efficacy of NELLA as a potent and effective method for enhancing student learning, skill acquisition, and overall mastery of the curriculum.

The initial null hypothesis, which posited no significant difference between the post-test mean scores of the experimental and comparison groups, was decisively rejected. The analysis revealed a statistically significant difference, with the experimental group—which utilized the NELLA tool—demonstrating substantially higher mean scores compared to the control group. This outcome provides direct evidence of NELLA's superior effectiveness over traditional instructional methods in fostering higher levels of student achievement.

Furthermore, the null hypothesis of no significant difference between the pre-test and post-test scores within each group was also rejected for both the experimental and comparison groups. However, the magnitude of improvement was markedly different. For the experimental group, the statistically significant increase from pre-test to post-test scores (at a p -value < 0.01) indicates that the NELLA intervention was highly effective in facilitating a deep and measurable gain in knowledge and skills. While the comparison group also showed some improvement, the gains were not as pronounced, further highlighting the unique advantage conferred by the NELLA tool.

The calculation of Cohen's d yielded a notable effect size, demonstrating that the observed difference between the two groups was not merely statistically significant but also practically meaningful. A large effect size indicates that the NELLA instructional tool has a substantial and tangible influence on student learning outcomes, making it a highly impactful and worthwhile educational intervention. This effect size provides a strong justification for integrating NELLA into the standard Food and Beverage Services curriculum.

The combined evidence from the significant improvements in post-test scores and the clear distinction from the control group underscores that NELLA is an effective instructional tool for enhancing student learning and mastery of critical skills. The audio-visual components likely facilitated a more engaging, multi-sensory learning experience, which is particularly crucial for a vocational subject like Food and Beverage Services. By

combining visual demonstrations with auditory explanations, NELLA likely made complex procedures and concepts easier to understand, remember, and apply, leading to higher levels of competence.

In conclusion, the findings of this study provide certain evidence that the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) instructional tool serves as a highly effective and impactful method for enhancing student learning and mastery of critical skills within the Food and Beverage Services curriculum. The statistically significant improvements, a notable effect size, and the clear distinction from the control group collectively demonstrate NELLA's potential to transform pedagogical approaches in vocational education.

These results strongly suggest that NELLA should be considered an essential component of the instructional strategy for Food and Beverage Services courses. Future research should explore the long-term retention of skills acquired through NELLA and its potential application in other vocational subjects to further solidify its role as a leading-edge educational innovation. The success of NELLA is not merely a statistical victory; it represents a tangible improvement in the quality of education, preparing students more effectively for their future careers.

Recommendations

Based on the comprehensive findings of this research, the following recommendations are offered to optimize the use of the Nurturing Engagement and Lifelong Learning through Audio-visual (NELLA) instructional tool. For students, the NELLA instructional videos can be a powerful resource for mastering fundamental and advanced skills in Food and Beverage Services. Specifically, these videos can equip them with the knowledge to identify various table appointments, which is a foundational skill for mastering the four standard table settings as prescribed by TESDA (Russian, American, English, and French). The video lessons, designed to improve understanding of table service sequences, promote better memorization and lead to more confident and accurate performance of service tasks. Furthermore, NELLA empowers students to learn and practice a wide range of napkin folding techniques at their own pace, from basic to advanced, allowing for the refinement of skills through repeated visual demonstrations. The step-by-step breakdown of procedures in the video lessons also facilitates the internalization of the entire table service sequence, fostering a more professional and confident approach for future food attendants.

For educators, the NELLA instructional tool offers a unique set of modified video lessons that are directly aligned with TESDA's core competencies, serving as a valuable pre-made instructional material. This resource can significantly simplify lesson delivery

for teachers, reducing the need for extensive in-laboratory demonstrations, which is particularly beneficial during periods of blended learning with limited face-to-face laboratory time. The flexibility of NELLA empowers teachers to create engaging and effective learning experiences across various formats, including face-to-face, modular, or online. The videos' clear and concise presentation of complex topics makes them an invaluable visual aid for new teachers who may still be developing their content delivery skills, saving them valuable time that can be better spent on classroom management and student interaction. As a consistent delivery model for key concepts, NELLA can also serve as a helpful reference point for new teachers as they develop their own teaching styles. Moreover, these findings provide valuable insights that can be incorporated into professional development workshops for teachers, equipping them with effective and innovative strategies to improve student learning outcomes in Food and Beverage Services across the division and beyond. The adoption of this intervention can thus lead to a widespread improvement in educational quality and student performance in this vocational field.

STATEMENTS AND DECLARATIONS

The author received no specific financial support for the research study entitled "Effectiveness of Nurturing Engagement and Lifelong Learning through Audio-Visual (NELLA) as Supplementary Materials in Enhancing the Academic Performance of Grade 11 Students in Food and Beverage Services".

The author certifies that they have no affiliation with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

To ensure the ethical integrity of this study, the researcher obtained voluntary informed consent from all participants, ensuring they were fully aware of the study's aims, procedures, and potential consequences. Data confidentiality was maintained, which was used solely for academic purposes, and all efforts were made to ensure participants' safety, with no harm reported during the study's conduct. Proper citation and acknowledgment of all sources were observed to avoid plagiarism and copyright issues. The study also complied fully with the Data Privacy Act of 2012 to protect participant privacy.

To ensure the originality and academic integrity of this manuscript, the final draft was submitted to Turnitin (Turnitin LLC). The resulting Similarity Report indicated an overall similarity index of 20%, which was carefully reviewed to confirm proper citation and referencing of all sources. This score is consistent with expected academic conventions, acknowledging that research builds upon existing literature.

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Narratives of the Community Skills Development Program Completers in District 1, Makati

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Abstract

The Community Skills Development Program (CSDP) is a term encompassing all the skills training taken by our completers as implemented by TESDA or DSWD in partnership with other government bureaus, the local government units (LGUs), and/or with the support of private entities or non-governmental organizations (NGOs) to provide skills training to the low-income and vulnerable sectors of the municipality. The study focused on the completers from the 1st District of Makati, exploring their perspective and experiences in taking the CSDP to highlight the achievement of its main goal of combating poverty by enhancing the participants' knowledge, skills, and attitudes, thereby increasing their employability, productivity, and capacity. The completers, as described in this study, are the participants of the CSDP who completed any form of livelihood training, and skills training, particularly those who were awarded a Certificate of Competency (COC) by completing a particular or cluster of units of competency, or a National Certificate (NC) by completing all units of competency that comprised a Qualification. The Study also explored how the CSDP completers achieve long-term socioeconomic benefits through the free barangay skills training program and the distribution of financial grants and training materials such as Seed Capital Funds, training allowances, tool kits, and more. The CSDP is a sustainable and cost-effective program that allows people to develop and upgrade their skills to adapt to the challenges of globalization.

Keywords: Community Skills Development Program, Livelihood training, Poverty alleviation, Barangay Skills Training Program

INTRODUCTION

One of the many problems plaguing the Philippines, more so than its neighboring asian countries, is poverty, which is due to the lackluster performance of the economic policies and the influence of powerful elites that hinder economic reforms (Mendoza et al., 2022). In many parts of the Philippines, it is common to see poor communities located near Central Business Districts (CBDs). Makati City is often regarded as a model for urban development and is known as one of the wealthiest cities in the Philippines. Despite this recognition, poor communities exist alongside the posh gated communities and highly developed areas (Tomeldan et. al., 2014). The 1st district of Makati, where the Central Business District (CBD) is located and where most of the city's prosperity originates,

exemplifies this phenomenon. According to Garrido (2023), “There is a parallel growth of informal settlements at the perimeter of villages that is continuing apace in the CBDs.” Given this reality, there is a need to conduct further studies on various aspects of this situation, including the government’s efforts to bridge the gap by introducing capacity-building programs aimed at developing and enhancing the skills of community members to create more livelihood opportunities and manpower resources—ultimately reducing poverty and unemployment.

To contribute to improved national well-being, the government continuously works to meet the country’s evolving needs by implementing Community Development Programs (CDPs). A community is defined as a group of individuals who share a common identity and face similar challenges, yet possess untapped potential for self-improvement (Phillips & Pittman, 2009, as cited in Pfortmueller, 2017). One key strategy for uplifting communities and alleviating poverty is through the provision of skills training programs, offered as part of CDPs, which enable individuals to acquire new skills or upgrade existing ones. Skills training, in general, is a vital component of both personal and professional development. Whether through basic workplace instruction or more comprehensive training offered by private institutions and government agencies, these programs serve as powerful tools for enhancing the social and economic well-being of participants.

In the Philippines, various government bureaus have been established to help improve the country’s social conditions, including the Technical Education and Skills Development Authority (TESDA). According to the TESDA website, it is a government agency that manages the country’s technical education, skills development, and certification system by implementing a competency-based education and training framework known as TVET (Technical and Vocational Education and Training). This system aims to meet the demands of the labor market by producing skilled Filipino workers.

TVET is delivered through four modalities: school-based programs, center-based programs, community-based programs, and enterprise-based programs (Wu et al., 2019). TESDA’s skills training is particularly directed toward the poor and marginalized sector groups characterized by low skill levels, limited management capabilities, and minimal access to formal training or capital. In partnership with local government units (LGUs), non-government organizations (NGOs), people’s organizations, and other agencies, TESDA’s Community-Based Training and Enterprise Development (CBTE) not only provides training but also aims to jumpstart the creation of livelihood enterprises, empowering individuals to become responsible and productive citizens.

Since 1960, TESDA and its predecessor have introduced various community-based training programs, such as the National Agricultural Skills Training Program (NASTP), Training for Entrepreneurial Development (TREND), Training Delivery for the Informal Sector (TDIS), Community-Based Training and Entrepreneurship (CBTE), and

the Special Training for Employment Program (STEP). TESDA continues to ensure that every individual, especially those in underserved communities, has equal opportunities to acquire and enhance skills that can lead to improved social and economic outcomes (Technical Education and Skills Development Authority [TESDA], 2022).

Another government agency tasked with addressing the ills of Philippine society is the Department of Social Welfare and Development (DSWD). Like TESDA, DSWD has taken the lead in providing opportunities for income-generating activities and livelihood development through the implementation of the Sustainable Livelihood Program (SLP) since 2011. Social protection (SP) schemes have proven to be practical tools for reducing poverty in many countries, including the Philippines. (PDP) (NEDA, 2017, as cited in Acosta & Avalos, 2018). Through the implementation of the SLP, selected individuals from marginalized sectors benefit from increased wages and self-employment opportunities, leading to overall socio-economic well-being through access to productive assets and sustainable income (Acosta & Avalos, 2018).

This study focused on the experiences of Community Skills Development Program (CSDP) completers from District 1, Makati City. The individuals interviewed had completed one or more skills training programs offered by TESDA, DSWD, and other government agencies, private entities, and NGOs over the past five years. The Makati Social Welfare Department (MSWD) is the primary agency responsible for facilitating these skills training programs. It has recently implemented initiatives such as TESDA's Community-Based Training and Enterprise Development (CBTE), the Sustainable Livelihood Program (SLP), and other training programs from various institutions at the barangay level. The CSDP aligns with the goals of skills development programs: to equip individuals with job-relevant and in-demand skills, promote entrepreneurship and innovation, and align skill supply with labor market demand (International Labor Organization, 2018). This research presents the narratives of CSDP completers, detailing their experiences during training and the resulting changes or improvements in their knowledge, skills, and attitudes. Their stories help illustrate the value of continuous skill development and how it contributes to personal and professional growth. The study also explored the challenges completers faced during and after the training. Furthermore, it provides an overview of the CSDP's structure, implementation, and the support provided by the local government to encourage program completion, offering a comprehensive understanding of its benefits and impact.

Theoretical Framework

Skills training is an essential economic activity, and various theories and philosophies have influenced the creation of different methods and practices in this field to better deliver the intended outcome. One relevant theory is the Skills Development Theory, proposed by Alexander Romiszowski, which defines skill as the “capacity to perform a

given type of task or activity with a specified degree of effectiveness, efficiency, speed, or other measures of quantity or quality” (Moyo et al., 2023). In general, skills training allows an individual to perform a task with depth and understanding; it is thought that an individual who participates in skills training will show a significant improvement in that trade or task. Romiszowski indicates that a trained individual should display the essential aspects of the performance execution and management, namely: (1) intellectual or cognitive skills, (2) motor, sensorimotor, or psychomotor skills, and (3) reactive or interpersonal skills (Mohd Hajaraih et al., 2016). These classifications are crucial when practicing a skill, especially for performing more complex and sophisticated tasks. The evaluation of an individual's mastery or proficiency in a skill is usually done by measures of effectiveness, such as the time consumed in completing the task, the number of outputs produced within a given time frame, the quality of those outputs, the feedback from clients, and other criteria. Collectively, these measures indicate the use of broader developmental facets, not just the skills themselves.

Another critical theory that applies to skills training is the Experiential Learning Theory (ELT), which describes learning as a process of gaining knowledge through experience (Devi and Thendral, 2023). According to Kolb (2012), as cited in (Taneja et. al., 2022), learning through experience offers a lasting transformation in an individual's behavior and beliefs, which is not possible in rote learning.

Knowledge results from the combination of grasping and transforming experience (Kolb, 1984 as cited in Cherry, 2019), so various educational settings such as internships, classrooms, laboratory activities, vocational education programs, and distance learning programs benefit from this theory (KingKaew et. al., 2023). Kolb's model identifies four (4) stages in the learning cycle wherein learners should ideally progress namely: (1) concrete experience (CE, grasping experience), (2) abstract conceptualization (AC, forming new ideas), (3) reflective observation (RO, reflection on experience) and (4) active experimentation (AE, applying ideas), these four stages represent how effective learning occurs (Devi and Thendral, 2023). Training is a daunting task since the class often comprises individuals with different personalities and learning preferences. ELT is therefore useful in improving instructional design and for understanding how students learn (Kolb, 1984, as cited in Cherry, 2019). ELT learners improve by actively engaging in concrete experiences and then reflecting on those experiences (RO), forming new abstract ideas (AC), and finally applying these new ideas in practice (AE) (Devi and Thendral, 2023). This cycle is continuous and iterative as learners test and refine their understanding with new experiences.

The assessment and interpretation of the learning outcomes of each participant in this study are guided by the Skills Development Theory. Since the theory states that every successful training develops the (1) cognitive skills, (2) motor or sensorimotor

skills, and (3) interpersonal skills of an individual (Reigeluth & Carr-Chellman, 2009), the researcher concentrated on determining the improvements of the completers in these areas. Following Romiszowki's skills classification, the results demonstrated the improvements of the participants' theoretical understanding of the trade (intellectual skills), the practical execution of tasks (psychomotor skills), and displayed confidence and the use of good communication in serving others (interpersonal skills). In the same manner, the experiential learning theory shaped the research design and analysis. The interview questions were designed to elicit participants' descriptions of their concrete experiences and their reflections. At the same time, the study looked for evidence of their development following Kolb's four stages of learning. Many of the participants discussed their hands-on training (concrete experience), reflection of their experiences (reflective observation), developing new concepts or methods (abstract conceptualization), and applying them in real situations (active experimentation). For example, participants shared that they gained confidence by practicing their skills (AE) following the correct procedures and safety protocols (RO and AC). The results of the study proved that the CSDP's impact is aligned with the established model of Skills Development and Experiential learning theories, thereby supporting the study's conclusion regarding the program's effectiveness in enhancing the completer's competencies.

METHODOLOGY

The research design employed is the qualitative method, used to answer questions about experience, meaning, and perspective using the participant's standpoint (Hammerberg et al., 2016). The researcher used a descriptive qualitative study to thoroughly examine and discuss the experiences and perspectives of the participants regarding the topic. This design is useful when participants are invited to share their reflections on their experiences. The chosen method enabled the researcher to assess whether the program was effective and to detail every step in the process to determine which parts were problematic as experienced by the recipients of the CSDP that affected the expected results.

The in-depth interview (IDI) method was used to gather relevant and vital information essential to this study. An IDI is defined as a long-duration, face-to-face interview conducted to achieve a detailed understanding and in-depth information (Showkat and Parveen 2017). In an IDI, the interviewer prepares questions covering the most essential concepts, situations, or areas for a deeper understanding of a subject or concept (Kvale 1996, cited in Showkat and Parveen 2017). The interviewer also builds rapport to establish trust and encourage the interviewee to talk openly and freely about the topic. It is also encouraged to have brief, informal conversations to help the interviewee feel at ease. The interview questions contain general interview guides and standardize open-ended questions that allow exploration of the topic.

The participants of the skills training program were the main source of information regarding the CSDP of District 1 and all relevant information for the study. The study focused on nine (9) barangays in the 1st District of Makati City, which is closest to the Makati CBD and expected to have a highest number of skilled workers and economics growth: (1) Tejeros, (2) Carmona, (3) Olympia, (4) Kasilawan, (5) Singkamas, (6) La Paz, (7) Santa Cruz, (8) San Antonio, and (9) Bangkal. The barangay officials handpicked the participants following the criteria set by the researcher, such as (i) they completed any form of barangay livelihood training, and (ii) being holders of either a Certificate of Competency (COC) or a National Certificate (NC). Aside from the interviews, the researcher supplemented the study with pertinent sources from different books, journals, and research from the National Library of the Philippines and the Makati City Public Library, as well as online sources that offer relevant digital copies of information.

To analyze the qualitative data, the researcher employed the thematic analysis technique following Braun and Clarke's (2006) six-phase framework (Ahmed et. al, 2025). This process begins with (1) data familiarization, where all interviews were transcribed verbatim, and goes through repeated readings during which notes are taken on interesting points and recurring topics. Next is (2) initial coding, the segment in which data were highlighted and assigned codes - short phrases like "program goals", "safety protocols", and "confidence" are significant ideas applied through the dataset to ensure comparability. The codes are then carefully examined to identify a wider pattern and used to (3) generate initial themes, which are coherent and distinct from one another. Themes are further refined through (4) reviewing them and cross-checking with the original transcript to see if there were missing or redundant data. Each theme is then (5) defined and named concisely, ensuring that supporting quotes and detailed descriptions are present for clarity. The researcher then organized these findings and 6) writing a report or research, which includes a detailed account of themes, data extracts, and analysis. The report provides a meaningful interpretation of data and links findings to the literature for transparency. The thematic analysis revealed these major themes: Knowledge of Program Content, Skills Development, Improvement in Attitude, Challenges, and Benefits Experienced by the Completers.

The CSDP completers reported acquiring explicit knowledge about the program's objectives, essential concepts, and safety guidelines related to their skills, particularly in the use and maintenance of tools and equipment. They also understood the program as an initiative aimed at providing economic opportunities by equipping them with practical skills and recognizing the value of training not only for employment but also for contributing to their financial independence and personal growth. In terms of skills development, the CSDP improved the completer's hard skills (e.g., trade-specific technical skills) and soft skills (e.g., communication, leadership, and collaboration). Participants reported better job performance, increased client trust, and new opportunities, such as mentoring

others or securing community-based work. While some employment was informal, many participants valued the economic stability gained through side jobs or microenterprises. The completers reported significant improvements in their attitudes and professional behavior, citing that the training boosted their confidence, sociability, and sense of competence through earning certificates that validated their skills. Participants also developed essential interpersonal and work ethics, such as humility, patience, discipline, cleanliness, and professionalism. These positive attitude changes highlight the program's holistic impact on both personal and professional development. For the completers, obtaining a TESDA certificate through the CSDP was a top priority, as it signified credibility and improved employability. They also experienced personal fulfillment through volunteer services and helping others. The program effectively enabled participants to gain or enhance skills, leading to new job opportunities, business prospects, and additional income streams. The start-up kits, seed capital, and allowances helped them begin earning immediately, contributing to their economic stability. Most of the completers are mothers balancing family duties, work, and the training. They overcame time and financial challenges through perseverance, time management, and family support. Despite working in the informal sector, they remained resourceful in ensuring income stability. Some, particularly in massage therapy, faced stigma and inappropriate behavior due to misconceptions about their profession. Participants emphasized the need for training modules on handling harassment and maintaining professional boundaries, highlighting the importance of protection and empowerment for women in the industry.

To identify and correct grammatical errors, generative AI tools such as Grammarly and ChatGPT were used. These tools were not used to write or rewrite the content of the study but served solely to ensure that messages were communicated effectively. Additionally, the aforementioned AI tools helped translate Filipino statements into English.

Ethical Considerations

Before interviewing each of the completers who satisfied the criteria, the researcher sought approval from barangay officials to ensure ethical considerations were observed and to obtain permission to interview with their constituents. All interview questions were evaluated by the thesis adviser and three (3) experts knowledgeable in the writing and training fields. Practice interviews were also done with two (2) experts through video conferencing and face-to-face settings. The researcher constructed the questions using multiple references, which helped explore the essential concepts of the study. Approval was also obtained to establish communication with barangay officials and the participants before conducting the interviews.

In the investigation process, the researcher adhered to ethical standards to uphold the integrity of this academic activity. The researcher ensured the safety of all

participants by securing approval and consent forms before conducting the research. Once an interviewee consented, the researcher interviewed in a secure and comfortable environment as agreed upon by both parties. Recording devices and assistants (if any) were disclosed, and all contents will be considered HIGHLY CONFIDENTIAL. The completers were treated with utmost respect, and their voluntary cooperation was requested. Any refusal to answer questions was respected. Confidentiality and anonymity (if requested) of the participants and the organization were prioritized. The researcher sought permission before recording the interview and oriented participants on the purpose of the interview beforehand. After conducting the interviews, the researcher transcribed the audio materials to provide a text basis for analysis along with supplementary data.

FINDINGS AND DISCUSSION

Assessment of the Community Skills Development Program in Terms of Knowledge

As with any other training program, the CSDP is essential for the development and mastery of its completers, preparing them for active roles in the community and the country's economic activities. The program's most notable benefit is the enhancement of the participants' knowledge, which is measured by how well they understand (1) the goals of the CSDP and the key concepts applied to their skill, (2) the tools required for their trade, and (3) the health and safety protocols necessary for each occupation.

The completers demonstrated a clear understanding of the CSDP's aim to provide economic opportunities through skills training. They viewed the program as a local government initiative that empowers individuals to become self-sufficient by equipping them with relevant knowledge and abilities for their chosen trade.

Para ano...Siyempre magandang anu yan kasi ang livelihood nakakatulong din sa mga katulad namin na walang trabaho. Parang binibigyan ng opportunity na kung sakaling makatapos kami ng ganyang proyekto mai-apply namin sa trabaho. Madali kaming matanggap.

(Of course, that's (CSDP) good because livelihood training helps people like us who are unemployed. It allows us to apply the skills to jobs. We get hired more easily.)

Furthermore, the completers emphasized that the training was not only crucial for employment or the industry itself but also as a way to serve people who need these services. They also highlighted the importance of the program to women, saying it significantly contributes to their economic freedom and sense of self-fulfillment.

Ah, una po kasi ano yun, ah para talaga ito sa mga taong walang hanapbuhay. Kumbaga, tambay sa madaling salita, na gustong matuto't pwede nilang gawing hanapbuhay—para hindi sila simpleng katulad ko na nanay lang, nasa bahay lang. Kailangan din po talagang may matutunan para hindi tayo maging bahagi ng malaking bilang ng mga walang hanapbuhay.

(This is really for people who don't have jobs, those who do nothing at home, but are eager to learn and have a job. So they don't end up like me, a stay-at-home mom. We need to know something so we don't become part of the growing unemployed population.)

A crucial aspect of knowledge acquisition is understanding the concepts necessary to develop or acquire skills. The completers showed a clear understanding of these concepts, which serve as guidelines for them to perform their work correctly and safely, thus reducing the risk of accidents or mistakes. They also discussed how these concepts help them learn new skills and contribute not only to their well-being but also to the well-being of their clients.

(1) Oo, may gloves. May gloves kami. Oo, may mask kami. Kasi gumagamit kami ng mga antiseptic sa CR. Kami nung nag-housekeeping, tinuruan kami. Kapag underwears, may lagayan talaga.

(Yes, we have gloves and masks because we use antiseptic products in the bathroom. We were taught about proper handling in our housekeeping training. There's a designated container just for underwear, too.)

(2) Una po siyempre 'yung hygiene mo rin sa sarili mo. Kasi pag humarap ka sa tao na parang sarili mo di mo kayang linisin, nakakahiya. Karaniwan kong naririnig sa mga customer ko: 'Yung manikyurista pa ang hindi marunong maglinis ng kuko.' Tapos kailangan po talaga sa manicure, doble ingat para 'di makasugat, lalo na sa mga senior na may diabetes o sensitive ang balat. Present of mind din po—'wag kang lutang sa trabaho.

(Of course, hygiene starts with yourself. It is embarrassing to face your customers unkempt. I often hear complaints from my customers about manicurists who can't keep their nails clean. You also have to be extra careful not to wound anyone, especially seniors with diabetes or sensitive skin. You must stay focused, don't be absent-minded while working.)

Knowledge of the proper use and care of tools and equipment is essential to mastering a skill. Naturally, participants were introduced to the tools they needed to perform their services effectively. Those who joined the Beauty Care training program (manicure, pedicure, hairdressing, and massage) listed the basic tools required for

their work and mentioned that they must be well-maintained—cleaned, sterilized, and organized—to ensure client safety.

(1) Yung nipper, cuticle pusher—lalo na ‘yung nipper, kailangan talagang isanitze. Tapos ‘yung pang-foot spa, binigyan din kami sa training. Hindi nga lang ‘yung mga mamahaling makina kasi mahal talaga. Siyempre, safety first. Minsan kasi may alipunga ‘yung client, o sugat na puwedeng makahawa. Kailangan talaga secure ang gamit.

(The nipper and cuticle pusher really need to be sanitized. They gave us some tools for the foot spa during the training, but not the expensive machines because they’re costly. Still, safety first. Sometimes clients have fungal infections or wounds that can be contagious. We have to make sure our tools are secure.)

(2) Tripleng ingat po talaga ang ginagawa ko. Lalong lalo na po sa pagkukulay kasi meron ding kaming mga customer na allergic. Kailangan hypo, ano hypo yung gagamitin mo sa buhok nya. Hypoallergenic para hindi madamage yung scalp nya, mga ganun po. Ayun po, saka inaalang ko muna talaga kung allergic, may allergy sya, may sakit sya na bawal yung gagawin namin. Opo, lalo na kung may kulay o kaya aalamin ko muna kung nagkukulay na ba dati, hindi ka ba allergic sa gantong brand, parang ganun po. Lalo na kung mga senior.

(I really take triple precautions, especially when it comes to hair coloring, because we also have customers who are allergic. You need to use hypoallergenic hair dyes to avoid damaging their scalp. I also make sure to ask first if they have any allergies or medical conditions that would prevent us from doing the procedure. Yes, especially when it involves coloring, I first ask if they’ve had their hair colored before, or if they’re allergic to a particular brand, things like that. This is even more important when the client is a senior citizen.)

As part of the CSDP, the LGU provided toolkits containing basic beauty care tools for use during training and to help start a livelihood afterward. In the Housekeeping Training, the trainer shared extensive knowledge of hotel appliances, tools, supplies, and cleaning products crucial to the daily operations of the hotel industry. Learning about the latest hotel technologies may also benefit those planning to apply their skills abroad. Health and safety protocols were emphasized as a core concept throughout the training to help avoid potential medical or legal issues due to negligence.

(1) Mga vaccum. Mga automatic na washing machine. Pero madali naman. Tapos may extra pay yata yung lilinisin mo yung anu ng lababo? Yung parang tubo ng lababo, kasi natatanggal yata yun. May extra pay yung pag-aanu ng tubo. Nagti-training kami pinaghahawak kami ng mga iba’t-ibang klase na ginagamit

sahousekeeping kagaya ng mga tawag nito, mga mop, mga washing machine, mga vaccum. Iba't-ibang klase ng washing machine. Kasi pwede mong apply ung NCII housekeeping mo sa abroad.

(The vacuum cleaners and automatic washing machines are easy to use. There's also an extra pay when you clean the drain pipe of the sink? I think that part can be removed. There's extra pay for dealing with the pipes. During the training, we were made to handle various equipment used in housekeeping, like mops, washing machines, vacuum cleaners, and other cleaning tools. That's because you can apply your NCII in-housekeeping for work abroad.)

The completers have internalized that their livelihood depends on their knowledge and professionalism, which serve as the foundation for their continued growth and long-term success.

Assessment of the Community Skills Development Program in Terms of Skills

Skill is defined as the ability to perform a task effectively. Improvements in a person's skills can be assessed through opportunities to teach others (mentoring), self-assessment (including perceived improvement, practical application, and usefulness), and client feedback.

The completers mentored others using both the knowledge acquired from the CSDP and their personal work experience. They trained not only family members but also people in their communities, applying strategies learned during the program.

(1) Una sa anak ko—tinuturuan ko siya kung paano maglinis ng kuko ko. Minsan, kapag kinukulang kami ng trainee, kami na ang hinuhugot bilang assistant ng trainer. Gaya sa San Lorenzo, nakapag-assist na rin ako doon.

(First, I taught my child how to clean my nails. Sometimes, when there are not enough trainees, the trainers pull us in as assistants. Like in San Lorenzo, I was able to assist there.)

(2) Oo, marami akong naturuan sa District 2. Isang oras lang naman 'yon, may kita ka na agad. Sabi ko sa kanila, hrap kayo sa buhay? Mag-aral kayo. Gusto mo turuan kita? Hindi naman ako madamot. Marami akong naturuan at marami silang natutunan.

(Yes, I've taught many people in District 2. Just one hour of work and you already earn something. I tell them, if you're struggling, study. Want me to teach you? I'm not selfish—I taught a lot of people and they learned a lot.)

The participants indicated that their performance improved significantly after the training. They supported this self-assessment with examples demonstrating enhanced problem-solving skills, a growth in their client base, and expanded job opportunities. The improved performance also increased their confidence.

(1) Nag-boost po sya lalo ng confidence kasi po noon po talaga mahihiya pa akong maglinis kasi wala pang tiwala sakin bago pa lang ako mga ganyan customer ko isa lang halos sa isang buwan yun po, tapos dun na sya nag-start simula nung nagtraining ako nagka-confidence, nagka-tiwala din po mga tao kasi trained na nga daw po ako.

(It boosted my confidence because before that, I felt embarrassed to clean because people didn't trust me since I was just starting out. I used to have only one customer a month, but things began to change after my training. I gained more confidence, and as a result, people started to trust me too, saying that I was already trained.)

(2) Ayun nga! Sabi ko, bago ako nag-training, hindi ganoon karami ang skills ko. Hindi pa ganoon kalawak ang knowledge ko sa paghawak ng mga tools. Nung nag-training ako, doon ko natutunan lahat. Doon talaga dumami ang customer ko. Siyempre, nagtatanong ang iba: 'Nakapag-training ka ba? Ang galing mo kasi.

(Before the training, I didn't have enough knowledge and skills in handling tools. After the training, I learned so much. That's when my customers increased. People would even ask me if I had training because they thought I was excellent at what I do.)

It is also important to note that the Makati City Government gives hiring priority to CSDP completers through its partnerships with private entities. Moreover, several participants were able to supplement their main jobs with side gigs based on the skills they acquired, proving how the program helped them live more comfortably despite broader economic challenges.

(1) Opo yan sila kagawad mga customer ko po yan. Opo pag po merong pong mga events sa barangay na may mga kailangan ng manicurista maggugupit kami po yung priority ni kap.

(Yes, the barangay councilors are my customers. Whenever there are events in the barangay and they need manicurists or hair cutters, we are the ones prioritized by the barangay captain.)

(2) *Kasi mayroon kaming ano nun pagkatapos nang nag-graduate ng 6 months ng beauty care binigyan kami ng pagkakataon na mag barangay barangay [services paid by city hall].*

(After we graduated from the 6-month beauty care course, we were allowed to go from one barangay to another to offer our services, and the city hall paid us for these.)

(3) *Nagho-home service ako, on-call ako. Malaking bagay talaga ‘yan sa akin kasi nakakatulong sa pamilya. Minsan tatlong service lang, may kita ka na. Minsan five hundred, minsan three hundred—malaking halaga na ‘yon sa akin. Hanggang ngayon, dala ko pa rin ‘yan—patuloy pa rin ako sa pagse-service.*

(I do on-call home service, and it’s a huge help to my family. Sometimes with just three clients, I already earn something - Php500, sometimes Php300. That’s already a significant amount for me. Until now, I still carry that skill, I’m still offering my services.)

Some completers chose to work independently through freelance or on-call arrangements, appreciating the flexibility in managing their time. However, this form of employment falls under the informal economy, which comes with limitations in terms of job security and benefits. Still, it allows them to earn extra income and live beyond subsistence. Another notable benefit of training in their field of interest is the opportunity to establish microbusinesses, further contributing to their financial stability and long-term goals.

Assessment of the Community Skills Development Program in Terms of Attitude

Skills training is viewed as a holistic approach to human development. It not only enhances technical competencies but also cultivates interpersonal skills, of which attitude is an essential component. Interpersonal skills may be described as a form of “social intelligence,” involving processes such as attention and decoding. The impact of training does not end with completing the required hours or passing assessments—it extends to how participants apply what they have learned in real-life settings and how they reap its benefits over time.

Completers shared that their self-confidence significantly improved after undergoing the skills training, not just in how they spoke or carried themselves, but more importantly, in how they performed their jobs. This confidence was further solidified by the certificate of completion, which validated their competency and gave them a sense of credibility and pride in their work.

Lalo pa akong ano nagkaroon ako ng confident na kaya ko pala, kaya ngayon kaya ko na! kasi sa tutuusin mahiyain ako e, nnahihiya pa ako kasi baka mapintasan ung gawa ko kasi hindi pa naman ganun kaano talaga mag-training. Dati kasi tumatanggi ako parang alanganin na ako. Dati nung wala pa akong training. Pero nung bandang huli hindi na, naging confident na ako sa sarili ko. Hindi na ako nahihiya, nagkakaroon ka na rin ng kaibigan. Yun na rin ung pumapasok na rin sa punto na ganun.

(As my confidence increased, the more I believed that I could actually do it. Now, I know I can! To be honest, I used to be very shy and afraid that people would criticize my work because I hadn't received proper training. As a result, I used to decline clients out of hesitation. However, after the training, I was no longer like that. I became confident in myself, overcame my shyness, and started making friends. That was a turning point for me.)

This increased confidence was also reflected in the changes they saw when interacting with people. Since the skills they acquired involve providing services, constant interaction with clients of diverse personalities is expected. As such, patience, empathy, and adaptability were emphasized throughout the training to prepare them for everyday challenges, including complex or demanding clients.

The completers also noted the importance of discipline and being systematic in their work. Due to the technical nature of their jobs, which often relate to health, hygiene, and personal care, they were taught to be meticulous and detail-oriented. They applied this rigor not just in performing services, but in maintaining cleanliness, orderliness, and professionalism always.

(1) Makita rin ng mga customers mo na organized ka na hindi ka taranta na andun lahat kumpleto mo gamit mo mga ganun po. Opo lalo sa bahay kailangan organized ka. Organized naman po kaso syempre mas naaply ko ngayon lalo na sa mga gamit mga tools po kailangan sanitized kasi hindi nain alam kung yung mga germs ng paa nila baka kumapit dun sa tools ko yun po kailangan isasanitize mo lagi after gamitin sa isang customer.

(Customers easily notice if you are organized, calm, or if your tools are complete. It is especially important to be organized when you're at somebody's home. I used to be pretty organized, but now I apply it more deliberately, especially with tools that must always be sanitized. You never know what kind of germs clients may carry on their feet, so everything has to be disinfected after each use.)

(2) Yung minsan nga ung pagiging organized ko sa trabaho inaanu ko na bahay. Tapusin niyo ung nililinis niyo. Pagkatapos niyo maglinis magsaing na kayo. Kung

anu ung dapat niyong gawin isunod sunod niyo na. Para matapos ang trabaho niyo ng maaga at maayos.

(Sometimes, my organizational skills at work carry over into home life. I tell my kids, “Finish cleaning first, then start cooking. Do things in order so you can finish early and more efficiently.”)

Completers recognized the improvement in their organizational skills, noting that these habits are essential for safety and efficient workflow. Since most of their tasks require them to keep tools clean and follow precise procedures, they developed structured routines that extended into their personal lives. Other positive changes in attitude also emerged: treating clients with respect, especially elders; practicing polite and clear communication; staying calm and composed under pressure; and upholding dignity in their profession. These values were reflected in how participants carried themselves, with honesty, courtesy, and genuine passion for their craft.

(1) Syempre magalang dapat lalo na pag matatanda yung mga customer mo tapos minsan may mga customer na madadaldal papa-kinggan pakinggan mo na tas sasagot ka na yung makikinig ka na lang po sa mga sasabihin nila para di naman po sila ma offense.

(Of course, you must be respectful, especially with older clients. Some of them like to talk a lot, so you just have to listen patiently and respond in a way that doesn’t offend them.)

(2) Kahit makulit, kailangan mong magpakumbaba. Tayo diba pag nagtatrabaho, may problema ka sa inyo? Iwan mo na. Eh nagtatrabaho ka. Kahit anu man ang gulo na nangyayari sa buhay mo at saka hindi mo ku-kwentuhan ang pasyente mo ng buhay mong magusot.

(Even if a customer is demanding, you must remain humble. When you’re at work, leave your problems behind. No matter what chaos is going on in your life, you don’t share it with your client.)

Benefits of Completing the CSDP

Acquiring a TESDA certificate was the top priority of the CSDP completers. They noted that both customers and employers tend to prefer hiring individuals who have received formal training from TESDA, as it is an indication of trustworthiness and proficiency. The completers also shared that the training encouraged them to be more considerate toward others by volunteering their services to senior citizens and other social groups, helping ease their clients’ “physical worries.”

Lastly, the participants agree that joining a CSDP is one way to acquire skills or upskill and improve their knowledge to either find a job or improve their existing job. Furthermore, the completers claimed that the skills training opened the doors for more business prospects, government employment, and consistent side jobs gained through referrals, all of which contributed to their economic stability. Through the support of the MD track and the provision of start-up kits and allowances, they were equipped with essential tools and materials. This enabled them to begin accepting clients as soon as they felt confident enough, saving them from having to make significant personal investments just to start working.

Challenges Encountered by the Participants during and after Taking the CSDP and How They Overcame Them

All the completers were mothers, and they shared that aside from participating in personal growth activities like attending the CSDP, they also managed responsibilities and challenges related to their families and work. To overcome these challenges, the participants relied on effective time management skills and persistence to juggle domestic and professional life. They described themselves as “students of life,” having learned to be resourceful in the face of adversity, particularly poverty, which they identified as the most pressing issue in the country. Despite working in the informal economy, they devised ways to ensure a steady flow of income for their families.

Another recurring concern raised by participants was the challenge of adapting to an ever-changing world, which affects both their work and their relationships with clients. These changes are constant and unavoidable. When asked about the problems they faced after completing the program, especially in practicing their skills, all massage therapy or reflexology completers lamented distressing incidents involving sexual advances from clients. Most people attributed this to the negative stereotype that links “massage” with prostitution, largely due to unregulated or illegal spas and wellness centers that offer such illicit services. This stigma severely undermines the credibility of professionals who practice massage ethically. The participants expressed concern that this misrepresentation can lead to abuse of women, and unfortunately, some had personally experienced such situations. Although the government is making efforts to shut down illegal establishments, public perception is harder to control. When asked whether their instructors had prepared them for these risks, all participants confirmed that they were warned. Instructors gave practical advice on how to respond to sexual harassment or advances should they arise. Given the vulnerability of women in these professions, participants suggested that the Beauty Care and Housekeeping training programs should include modules on handling harassment and setting professional boundaries. This will significantly contribute to women’s empowerment and ensure greater safety and confidence for trainees working in these fields.

CONCLUSIONS AND RECOMMENDATIONS

Building Skills and Confidence

During the interviews, participants carried themselves with confidence and professionalism. The completers demonstrated a firm grasp of essential technical knowledge that could help them build a sustainable livelihood. The information provided in the training ensures ongoing productivity and creates opportunities for further learning, should they wish to expand their skills. The completers also showed perseverance and a good disposition in navigating life's challenges. The CSDP formed a renewed interest and motivation to learn. In many ways, skills training can be just as beneficial as earning a college degree in shaping one's future. Although their paths may differ, the participants considered the CSDP a meaningful step in achieving a stable future and sustaining their families. With the rise of social media due to rapid technological advancement, the completers found alternative ways to supplement their learning by exploring online resources, helping them further develop and refine their skills.

Resilience through livelihood and economic participation

A training program that focuses on skills acquisition is paramount in community efforts to alleviate poverty. The CSDP helped transform individuals into contributing members of society by developing new skills and enhancing existing ones for improved productivity. This study presented examples of skill improvement among completers, showing their ability to take on roles that require mastery of skills immediately. To ensure a seamless transition from training to employment, the CSDP also provided "start-up kits," enabling participants to launch small businesses. These kits were sufficient to begin offering services and eventually invest in more tools. In certain barangays, participants also received allowances, which supported their personal needs or helped them grow their businesses.

TESDA COCs and NCs

All participants expressed that the most significant change in their attitude was increased confidence, validated by their successful completion of the TESDA assessment and the receipt of a certificate. The program's interactive nature also allowed them to expand their personal and professional networks. Some barangays further supported their entrepreneurial goals by offering opportunities during community festivals and referring them to local businesses. These efforts aligned with the CSDP's goal of helping participants achieve long-term economic independence. Barangay officials also played a key role in supporting their constituents in generating or supplementing income.

Women Empowerment

Most of the participants were women and mothers, making women's empowerment a critical theme in this research. Many of them faced family and marital issues that pushed them to find livelihood opportunities to raise their children. The CSDP provided a platform for women to discover or enhance their talents for economic gain. As a result, many mothers gained confidence and recognized their potential to become productive citizens. Some were even able to support their partners financially, helping to provide a more comfortable life for their families. Due to the difficulty of balancing work, family, and training, a few participants were unable to complete the full CSDP program required for NCII certification. However, they were awarded the Certificates of Competency (COCs), which they reported were already beneficial in their current work or business. Those who received COCs expressed little interest in completing the remaining requirements, either due to a lack of interest or because their role as mothers with young children took priority.

Gaps in Program Monitoring and Delivery

Despite the overall positive results, some challenges in the implementation of the CSDP were noted in the nine (9) barangays included in this study. One key issue was the absence of post-training evaluations. Initial data collection was difficult due to limited records on the CSDP offerings over the past five years. The importance of post-training assessment cannot be overstated. Regular follow-ups with participants would help measure success, adjust the program as needed, and inform future improvements. Such evaluations are essential for barangays to monitor program effectiveness and ensure alignment with community needs.

Future-proof Training Programs

Another issue was the inconsistent implementation of CSDP policies, particularly in terms of training schedules, start-up kit distribution, and allowance provision. These inconsistencies should be explored in future studies to address disparities across barangays. Additional programs tailored to the BPO and ICT sectors should also be considered, while existing programs effectively develop local talent, nearby areas indicate a strong demand for ICT and BPO-related skills, which have become major sources of employment. As the industry grows and technology evolves, too will the need for a broader and more diverse workforce.

Overall, the CSDP proved to be a valuable program in promoting the socio-economic well-being of its participants. It supports livelihood development and contributes to the government's efforts to improve the lives of its constituents. The LGU plays a vital role in this process, using the CSDP as a tool to meet the intellectual, mental, and economic needs of its people. The program helps individuals develop their soft skills, preparing

them for formal roles in their chosen fields. It unites the community by empowering the vulnerable sectors and helping them realize their capacity to contribute meaningfully to society. Going forward, the program must remain responsive to globalization and its accompanying socio-economic challenges. With regular improvements, the CSDP can help ensure that the city remains rich in talent and continues to grow in overall social well-being.

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3. **Ethical Approval:** The research went through a process of presentation and defense headed by a distinct group of panelists from the Polytechnic University of the Philippines Open University System. The study also included proper instrumentation in gathering data needed to complete the topic. Additionally, the researcher/s communicated the aims of the research to their respondents through letters of consent, which were affirmed and signed by the latter.
4. **Declaration of Generative Artificial Intelligence (AI) in Scientific Writing.** The researcher used generative (ChatGPT) and Grammarly (PRO) to correct the grammar of the manuscript; the content and organization are original. *However, the author/s affirm their responsibility for the accuracy of the content of the whole manuscript.*
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The Influence of Data Analytics MOOCs in Making Career Decisions: The Case of Project SPARTA Completers

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Abstract

Massive Open Online Courses (MOOCs) are widely valued across sectors for their ability to build knowledge and skills. With the growing demand for data analytics professionals, MOOCs have become a key tool for teaching data analytics to meet this need. This demand also influences professionals' career decisions. Using the Social Cognitive Career Theory, this study explores the influence of completing data analytics courses under the national project, Smarter Philippines through Data Analytics Research and Development, Training, and Adoption (SPARTA). Project SPARTA offered six learning pathways and 12 micro specializations, comprising a total of 30 MOOCs to Filipino students and professionals from 2019-2024. Through qualitative research, specifically semi-structured interviews with Filipino professionals in the private sector who completed at least one main pathway, with at least 90% of their courses taken through MOOCs, this study revealed that MOOCs help professionals improve their self-efficacy through Modular Instructions. Participants also developed key data analytics skills such as Root Cause Identification, Dashboard Creation, and Data-driven Presentations. These skills stimulated interest in Data Analytics Specializations, enabling professionals to set career goals either a Cross-functional Transition or Work Promotion. As a result, they also engaged in Continuous Skill Expansion. The study identifies themes anchored on the Social Cognitive Career Theory and MOOCs, hence, theorizing and proposing a model on how data analytics learning influences Filipino professionals in their career goals. It also highlights the importance of skill-specific outcomes from MOOCs and suggests further research on the career impacts for professionals who transitioned roles or achieved promotions.

Keywords: Career Decision, Career Development, Data Analytics, Education, MOOCs,

INTRODUCTION

Data Analytics has placed its importance in various industries in the age of AI; however, it has been mentioned that specific competencies have not been identified yet to become a data scientist (Cao, 2019). Back in 2016, there was already a significant demand

for professionals who are proficient in analyzing data; this is why the study conducted by Kim (2016) mentioned the value of collaborating with professionals coming from different disciplines and industries. The significant demand has continued globally in the following years.

In the United States (U.S.), Le et al. (2025) expressed that the continuous economic growth in states leads to a higher demand for data analytics practitioners. The said demand in the U.S. has improved the operations in various fields: energy (Atadoga et al., 2024), business, particularly in customer management (Tiwari, 2024), and public health (Babarinde et al., 2023). It has also been mentioned that such demand is not being achieved due to the skills gap that is present in the United Kingdom (Fearn & Harriss, 2023); however, the curricula on data science in Switzerland match the needs of various industries, mentioning SQL (Structured Query Language) as a key skill (Mildenberger et al., 2023).

While in Asia, it was found that in India, data analytics was identified as one of the core competencies that employees should upskill themselves to adapt to the age of Artificial Intelligence (AI) (Jaiswal et al., 2021). Similarly, data analytics was also seen as a core competency among businesses in the United Arab Emirates in establishing their competitive edge in the market (Aljumah et al., 2022). The increased demand for data professionals has been present, as well, in Southeast Asia, as claimed in the study of Andrea et al. (2023). For example, the study of Shafiullah et al. (2022) suggests that utilizing data analytics and AI may help address challenges in developing smart cities in the region.

In the Philippines, efforts to create smart cities and address demand have been supported by government agencies and the private sector. One of which is the Development Academy of the Philippines (DAP) and the Department of Science and Technology's (DOST) Project Smarter Philippines through Data Analytics Research and Development, Training and Adoption or also known as Project SPARTA. It was established in 2019 to offer massive open online courses (MOOCs) on Data Analytics, aiming to increase the number and quality of data professionals in the Philippines (Development Academy of the Philippines, n.d.).

In 2019, Project SPARTA began offering six (6) learning pathways, and by 2022, it had expanded to include 11 microspecializations, comprising a total of 30 MOOCs. From 2019 to 2022, these MOOCs were accessible to learners through Coursebank (coursebank.ph). However, in 2023–2024, they migrated to DAP's own learning management system, Linang. These MOOCs were offered for free to Filipinos aged 18 and above who were residing in the Philippines, catering to both students and professionals during the period from 2019 to 2023 (Development Academy of the Philippines, n.d.).

Table 1

The Main Pathway Offerings of Project SPARTA

Pathway	No. of Required Courses	Pathway	No. of Required Courses
Data Associate	6	Analytics Manager	10
Data Steward	10	Data Engineer	15
Data Analyst	12	Data Scientist	17

These Main Pathway Offerings of Project SPARTA were developed by the Development Academy of the Philippines, Analytics and AI Association of the Philippines, and DOST-PCIEERD. These are based on analytics roles, as defined in the Development Academy of the Philippines (n.d.), specifically: (a) Data Associate – teaches learners to collect, manage, and interpret data to communicate insights. The Data Associate is the entry-level pathway that does not require any expertise. (b) Data Steward – enables learners to administer data processing and to comply with data governance policies. (c) Data Analyst – allows learners to employ further analytical approaches in solving functional problems in organizations. (d) Analytics Manager – teaches learners to lead analytical functions and report insights to higher-level decision makers in organizations. (e) Data Engineer – develops learners who can develop, manage, and maintain data workflows and systems. (f) Data Scientist – enables learners to develop advanced frameworks that can be utilized in generating more observations.

Table 2

The Micro Specialization Pathway Offerings of Project SPARTA

Pathway	No. of Required Courses	Pathway	No. of Required Courses
Analytics Project Management	5	Data Visualization	5
Finance and Risk	5	Research Methods	4
Human Resources	5	Statistical Techniques	5
Urban Planning	5	Computing	4
Data Governance	5	Methods and Algorithms	4
Operational Analytics	4	Public Policy and Governance	5

While these Micro Specialization Pathway Offerings were also described in the Development Academy of the Philippines (n.d.) as: (a) Analytics Project Management – allows learners to demonstrate knowledge on the processes and activities required in implementing projects and their process groups. (b) Finance and Risk – enables learners to utilize machine learning and use statistics in developing insights from financial records. (c) Human Resources – teaches learners to develop new or improve existing hiring processes and capability-building initiatives from human resource data. (d) Urban Planning – allows learners to acquire knowledge on the challenges and trends in urban planning and to utilize analytics in fostering smart governance. (e) Data Governance – enables learners to develop measures in securing compliance with data privacy, data ethics, and intellectual property rights. (f) Operational Analytics – teaches learners to analyze and visualize data in operations and roles, enabling them to understand and use it easily in the business. (g) Data Visualization – allows learners to utilize data visualization tools and languages in developing reports and presentations. (h) Research Methods – enables learners to explore various research methods in developing new frameworks and knowledge. (i) Statistical Techniques – teaches learners to use advanced statistical tools and methods in analyzing data. (j) Computing – allows learners to use programming languages in analyzing and visualizing data. (k) Methods and Algorithms – enables learners to utilize Python to check on algorithms and develop predictive models. (l) Public Policy and Governance – teaches learners to utilize data analytics as a basis for drafting policies and improving processes in the government.

Table 3

List of Project SPARTA Courses

No.	Course Code	Course Title
1	SP101	Getting Grounded with Analytics
2	SP102	Designing and Building Data Products
3	SP201	Essential Excel Skills for Data Preparation and Analysis
4	SP301	Data Management Fundamentals
5	SP302	Enterprise Data Governance
6	SP203	SQL for Business Users
7	SP401	Dashboards and Drill-Down Analytics
8	SP202	Computing in Python
9	SP501	Data Visualization Fundamentals
10	SP502	Data Visualization Using Tableau and Python

No.	Course Code	Course Title
11	SP503	Storytelling using Data
12	SP601	Data-Driven Research Fundamentals
13	SP602	Experimental Design and Analysis
14	SP701	SQL for Data Engineering
15	SP702	Python for Data Engineering
16	SP703	Advanced Data Engineering
17	SP801	Statistical Analysis and Modeling using Excel
18	SP802	Statistical Analysis and Modeling using SQL and Python
19	SP901	Data Science and Machine Learning using Python
20	SP902	Deep Learning Using Python
21	SP1001	Design Thinking for Analytics
22	SP1002	Analytics Applications in Operations
23	SP1003	Analytics Applications in Finance and Risk
24	SP1004	Data Science and Analytics Project Management
25	SP1005	Data-Driven Policy Analysis
26	SP1006	Applied Analytics in Public Human Resource Management
27	SP1007	Applied Analytics in Public Finance and Budgeting
28	SP1008	Data Engineering in e-Governance Systems
29	SP1009	Urban Planning in the Fourth Industrial Revolution
30	SP1010	Livable and Sustainable Cities in e-Governance

From 2019 to August 2023, Project SPARTA has already produced 614 graduates of its learning pathways, and 1189 for micro specialization. In 2024, it also produced 275 and 750 graduates for learning pathways and micro specialization, respectively. This number may contribute to the demand for data analytics professionals in the Philippines. It has been mentioned, as well, that this field offers various training focuses and roles; hence, it could provide an opportunity for career change or development. This study could also help other career shifters determine which training or roles they should focus on as they aspire to careers in data analytics. The offered pathways of SPARTA could support its learners through these career goals. Therefore, it is essential to determine the influence of Project SPARTA, through finishing a pathway, in making career decisions among professionals. Specifically, this study seeks to achieve the following objectives: (a) To know the self-efficacy and outcome expectations of completers after finishing their respective pathways; (b) To describe the interests, goals developed and actions being

taken by pathway completers after finishing their respective pathways; and (c) To develop a model that reflects how pathway completers make career decisions that can serve as a basis for future research studies.

Learning Data Analytics through MOOCs

Data Analytics MOOCs have been valued across the globe, particularly in Asia, Europe, and North America, due to their potential to help identify economic challenges (Nikolskiy et al., 2022). Similarly, data analytics has been recognized as vital for economic and financial planning; therefore, it should be integrated into the curricula of economics majors (Halyna & Volodymyr, 2024). The study also argued that aside from learning digital skills, it is important that they are well-equipped to address the economic challenges that they may face in the future. In regional areas that are also economically challenged, the findings of Ma and Lee (2023) suggest that MOOCs are effective among learners as they provide fulfillment of needs. They also added that these MOOCs may offer innovations in the education sector.

MOOCs have been vital in the education sector. For instance, the Data Analytics MOOCs offered by Johns Hopkins University are noted for their popularity, as evidenced by the enrollment figures highlighted in the study by Kross et al. (2019). One reason that can be assumed is the openness of Data Analytics MOOCs, which can be enrolled in by learners without a background in Information Technology, specifically in programming languages (Liu et al., 2022). This is why MOOCs are being utilized globally, considering their ease of use and accessibility; however, this study of Roy (2022) also recognizes the challenges of interaction and assessments, comparing them to traditional ways of learning. It has also been mentioned that MOOCs are beneficial as they also allow learners to demonstrate knowledge on data analysis, but data, particularly personal information, shall be handled responsibly (Inan & Ebner, 2020).

However, Hidalgo et al. (2020) suggested that further research could focus on creating MOOCs with more specialized subject matter. The study by Almgerbi et al. (2021) highlights the significance of Data Analytics MOOCs and the roles of both the education sector and industry in upskilling their respective stakeholders. Specifically, it found that Data Analytics MOOCs equip professionals with skills to analyze and monitor data, enabling them to develop data-driven predictions (Kew & Tasir, 2021). Regarding predictions, a similar finding was reported in the study by Hoi et al. (2018), which noted that Data Analytics MOOCs, particularly those focused on Machine Learning, support making predictions by monitoring data and work-related tasks.

Key Data Analytics Competencies in the Industry

The industry typically requires candidates to have an undergraduate degree and at least one year of relevant work experience before working as data analysts, according to a study by Zhang et al. (2023). Specifically, the study of Dong and Triche (2020) mentioned that data professionals should have a strong competency in data visualization and analysis, including the use of programming languages: Tableau, R, and Python. It was claimed in the same study that these are widely used by various industries; hence, their continuous demand among employers.

The employers value the technical skills, but aside from these, it was found in the study of Persaud (2020) that social skills are also vital. Additionally, in the mixed-method study of Strengell (2017), in businesses that usually deal with customers, employers find personal and professional skills more important. Schmidt (2020) found that data professionals in managerial positions emphasized the importance of not only having expertise in data analytics but also being adept at identifying the root causes of problems that arise in company operations.

However, it has been mentioned that the root cause of the mismatch in the industry is the alignment of the curricula. The literature points out that the education sector needs to align its curricula with the needs of the industries. For instance, the study of Han and Ren (2024) suggested that higher education institutions incorporate data analytics principles and applications in their curricula. This is why the study conducted by Cao (2019) suggested that companies should establish standard competencies in data analytics, enabling the education sector to align its courses accordingly. Furthermore, the study by Cheon et al. (2024) proposed a method for universities to align their students' skills with industry needs by analyzing curricula and the details of hiring notices. In effect, these key competencies on data analytics will help organizations in improving decision-making processes and enhancing efficiency (Ghasemaghaei et al. 2018).

Factors Affecting Career Shifts

Professional skills and career development have been identified as factors influencing employees' plans to shift careers, as highlighted in the quantitative study by Lipayon (2021). Similarly, openness to change among employees was found to be a reason for career shifts in the study by Carless and Arnup (2011). However, many studies indicate that employees commonly shift careers due to work environment factors (Uy, 2020; Masdonati et al., 2022; Belida et al., 2024). In the field of data analytics, it was found that faculty researchers shifted careers from academia to the data analytics industry, with work stability being the primary reason (Castro et al., 2020). This aligns well with the study of Wang et al. (2019), recognizing that roles in the data analytics industry offer

stability. Additionally, the availability of various roles in the field and professional training opportunities are among the reasons for initiating a career change.

Some literature also mentions geographical and economic reasons as reasons for career change. Opportunities abroad that lead to a shift in career are an example, as stated in the study of Lyons et al. (2014). This is also similar among artists in the creative industries in that they consider finding a new life and career in a different location. The study found that this move provides artists with an opportunity to discover more skills that they can use to improve their careers.

Furthermore, employees who shifted careers were found to experience improved work fulfillment (Carless & Arnup, 2011). This claim is further supported by Longhi et al. (2023) regarding fulfillment. Additionally, the study highlighted improvements in mental health, particularly among women employees (Alacovska, 2020).

Theoretical Framework

This research study utilized the Social Cognitive Career Theory (SCCT) developed by Lent et al. (1994) with the goal of describing, through a model, how individuals develop their career interests, choose their career paths, and take steps in attaining their education and career goals. They added that the theory follows a “cognitive constructivist approach” (Lent et al., 1994, p. 87); hence, it connects to the qualitative research approach in which explores how individuals construct meanings through their interactions. This justifies the utilization of the said method for this qualitative study.

Looking at the concepts present in the framework, which were utilized in this study, Self-Efficacy refers to the individuals’ belief in their capabilities, which were shaped by their interactions with people and the environment (Lent et al., 1994). Segal et al. (2022) also supported this claim and added that these individuals believe they will succeed in obtaining their career goals. Meanwhile, Outcome Expectations refer to the results of performing individuals’ capabilities, whether in social or material outcomes (Lent et al., 1994), which also motivates individuals in their career goals, as claimed in the study of Gore and Leuwerke (2000) as cited in Segal et al. (2022).

Furthermore, the contextual influences were also identified in SCCT. First, it mentions Interests, which refer to the activities that individuals confidently engage in, shaped by the first two concepts mentioned above (Lent et al., 1994). Like Outcome Expectations, the study of Gupta et al. (2024) claimed that Interests also influence career goals, which were examined among Engineering students in Singapore. These interests also allow individuals to make plans and decisions in pursuing specific career paths; hence, identifying their Goals. Lastly, Actions refer to the steps being taken by individuals to achieve their goals anchored on their interests, as well (Lent et al., 1994). Specifically,

taking courses and finding other opportunities were identified as Actions based on the study of Zikic and Saks (2009).

METHODOLOGY

Research Design

This study on the influence of Data Analytics MOOCs utilized a qualitative research design, specifically through the conduct of semi-structured interviews. As demonstrated in the study by Abeer and Miri (2014), qualitative research can effectively capture learners' perspectives on enrolling in and learning through MOOCs. It also helps researchers and subject matter experts identify points for improvement and strategies to increase learners' online engagement. Moreover, Adams (2015) mentioned that semi-structured interviews allow researchers to establish conversations with their informants, which could reveal their motivations or influences, for example, in making choices in various aspects of life. This claim supports the goal of the study, especially in obtaining rich information from the informants.

Selection Criteria

To gather relevant data, the researchers conducted semi-structured interviews with six (6) informants who met the following criteria: (a) a pathway completer of Project SPARTA; (b) has completed 90% of the courses in their enrolled pathway through MOOCs (excluding live course sessions via Zoom); and (c) is a professional currently employed in the private sector. Furthermore, the completers were selected through random purposive sampling, a combination of random sampling and purposive, criteria-based selection. Fifteen completers were randomly selected from each pathway, and based on the order of sampling, each was checked to ensure they satisfied the criteria set by the researchers. Email invitations were sent to the informants through the application data they provided to SPARTA. Consent was given as the learners were informed that they might be contacted by the project team for research studies as part of their return service to the government.

Instrumentation

The researchers developed an interview guide based on the concepts outlined in the Social Cognitive Career Theory. The researchers then ensured that they had questions that were relevant to each of the concepts identified and anchored to the objectives indicated. No pilot testing was conducted, but the questions were reviewed by an expert in qualitative research. This is in consideration that the study is small-scale in nature. Additionally, before conducting the interviews, the researchers ensured that the ethical considerations stated below were mentioned to the informants; hence, seeking their

consent to proceed with the recorded interviews. Lastly, the interviews were conducted via Zoom, and the researchers, considering their prior involvement in the project, ensured they remained objective and avoided providing subjective reactions during the interviews, as reflexivity in research is concerned.

Ethical Considerations

Before the actual questioning, permission to record the interview was obtained. They were assured that their participation in the interview was purely voluntary and that they could withdraw at any time if they had doubts or if they were uncomfortable. Additionally, they were informed that none of their personal or sensitive information, as defined under the Philippines' Data Privacy Act of 2012, would be disclosed in this study. Lastly, the researchers emphasized that all information would be kept confidential, and the interview recordings would be deleted from the Zoom cloud three (3) months after the completion of the research study.

RESULTS

Anchored on the concepts present in SCCT, the researchers conducted interviews with completers of the Data Analytics MOOCs under Project SPARTA. The interview transcripts were analyzed to identify themes that address the first and second objectives of this study. The latter part of this chapter presents a model based on the themes identified in the study, thereby addressing the third and final objective.

Self-Efficacy Expectations

Modular Instructions

The informants were asked about their confidence after completing the Data Analytics MOOCs in their chosen pathways, particularly in handling the tasks assigned to them at their current companies. They affirmed that completing their respective pathways significantly boosted their confidence at work. They attributed this to the skills they acquired through the modular, step-by-step instructions provided in each MOOC. In their words:

It definitely boosted my confidence because I was the only one who was under the program within our team...The pathway-structured modules enhanced my expertise in data analysis, which also equipped me with the advanced tools, as well as the techniques on how to tackle complex data and challenges.

Through Excel and SQL lessons, I had a background on what to do first, or the scripts that I can use. I forgot the term. So, it helped me in presenting the data that I have gathered and the analysis that I see.

I'm very confident, because the methodology was very thought well [well thought out, and the speakers are brilliant, and all of them can provide a lot of learning, and the course material was very organized.

Outcome Expectations

The informants were asked about the expected outcomes they gained and observed after completing the Data Analytics MOOCs in their enrolled pathways. Specifically, these outcomes were explored by identifying situations at work where the pathway completers applied their learnings and how these influenced their performance. The researchers observed that the informants provided detailed examples of their learning application, which contributed to the outcomes they developed and achieved after completing the Data Analytics MOOCs.

Root Cause Identification

One informant mentioned that the knowledge he acquired from the Data Analytics MOOCs enabled him to gather and analyze data to identify the malfunctioning issue in their production machine at work. He added that he utilized SQL scripts and Microsoft Excel to accomplish this task. On the other hand, another informant, who works for a non-governmental organization, emphasized the importance of unifying data gathered from the grassroots to identify the problems of malnutrition and the immediate needs of lactating mothers in the provinces of Mindanao. They shared:

We have this issue that happened in the production line. So, they need to investigate what happened, what was the root cause of that issue, and one of the ways that they connect is through the data that we have gathered from the machine. When I got the data from the database, I was able to use SQL scripts, like the select statements. So, the basic SQL scripts. So, more on Excel formulas that I used.

But the immediate needs of mothers are the ones that are not seen. So, through the data that they provided, we also saw that there is really a need to unify the data from the grassroots. Like the DOH [Department of Health] report is different from the NNC [National Nutrition Council] report.

Dashboard Creation

Most of the informants also mentioned that after completing their respective pathways, they were able to apply their knowledge and skills at work, particularly in creating dashboards for monitoring and generating insights. For instance, one informant shared that their ability to develop insights improved significantly through the use of a dashboard he created to oversee the functionality of the equipment they use. The informants stated:

It's a PostgreSQL that was taught in Project SPARTA, and then from that PostgreSQL, we've created a dashboard for data analytics for the equipment that we use. So, it's helpful for us operators because instead of just looking at the log sheets, we can see the dashboard, so the insights are improved.

I've used some, but not the full-blown dashboards, since I was in a hurry to do it. But at least I've started to use the Pareto charts that were taught.

I was tasked to create dashboards, and these are the projects that I have been working on so far within the company.

Data-Driven Presentations

Most of the informants also stated that they were able to develop data-driven and visualized presentations, which they used for reporting to both internal and external stakeholders. These presentations benefited not only their company but also, as one informant mentioned, the government. It can be inferred that data-driven presentations contribute to a better understanding of various problems and aid in monitoring employee performance. The informants shared:

The clients that we are working with, and saying that the data that I have been presenting to them is really valuable. As far as I know, or how may I describe it, it is really complex, and it is helpful within the company.

Before we entered Malaybalay City to conduct an activity and to talk to the mayor, we asked for the available data related to infants and children prior to the event. So during the event, I presented it to him. The presentation was better and easier to understand by the officers and mayors. It was also easier for the City Nutrition Council to understand their needs.

I was able to present my data visualization skills using graphs like column bars, pie charts, something like that. Then my boss was happy because I was able to... they trusted my presentation, and they applied [adopted] it immediately in our company. They're [The presentation shows how to determine the number of] people online for this week, something like that, then I was able to present [it to] him.

Interests

Data Analytics Specializations

Most of the informants stated that, after completing the Data Analytics MOOCs, they not only applied the knowledge and skills they acquired but also continued to upskill themselves in specialized areas of Data Analytics. One informant mentioned multiple times during the interview that she is particularly interested in further developing her skills in machine learning. While machine learning was covered as part of the SPARTA courses, she expressed a desire to delve deeper into the subject and its practical applications. Additionally, an informant who is an engineer shared that he takes on part-time jobs in Analytics, which motivated him to study Python and its frameworks in greater depth. Lastly, a Computer Science graduate intends to focus on further enhancing his expertise in Data Visualization.

I want to apply this more to my work now. I want to learn more. Currently, I'm still researching what training I can get. I want to delve more into the machine learning side of data analytics.

I'm really developing my interest about data analytics compared to my engineering course. So, I'm doing side work, or it's [I'm making it like a hobby. I'm still learning more about Python now and its frameworks.

It's fun and parang nakakahiligan ko na mag [I'm making it as a hobby to] generate ng mga visualization charts. Saka align din po siya sa course ko kasi graduate po ako ng Computer Science [And it is also aligned to the degree I finished, Computer Science]. It's my personal choice. Then it's also my hobby. I love exploring technology.

Goals

Cross-Functional Transition

The informants were also asked about their career goals, particularly their professional plans. Most of them revealed plans to transition from their current roles into data-related positions aligned with what they learned from the Data Analytics MOOCs. One informant expressed an intention to pursue a more advanced role, Data Scientist, which is considered the most advanced position in the field of data analytics. Another informant emphasized the relevance of the field and, as a result, plans to shift his career from the contact center industry to data analytics. In their words:

I'm planning to apply for a machine learning engineer role or data scientist role. I'm just looking for one. I haven't applied, but I'm researching what are the available job opportunities outside my company are.

Opo, kasi ano parang ang tagal ko na sa call center, stagnant po tsaka lagi may movement, lagi may sunset, yung mga business hindi po nagtatagal. Tapos ito, medyo positive ako sa data analytics career kasi kahit more than 50 years, nandyan pa rin yan eh, kasi we have the data – and it is multiplying, exponentially. [Yes, because, well, I've been in the call center industry for a long time, and it feels stagnant. There's always movement, always sunset; businesses don't last long. But with this, I feel more positive about a career in data analytics because even after more than 50 years, it will still be there, since we have the data—and it's multiplying exponentially.]

I have not applied for any roles in our plant, but I'm trying to find more opportunities online.

Work Promotion

On the other hand, two informants intend to stay in their current roles, considering that, aside from being able to apply their data analytics skills, there are also opportunities for promotion within their respective companies. Another informant specified that his learning from SPARTA's Data Analytics MOOCs have significantly contributed to his professional growth, leading to a promotion in his company. In their words:

There were times that I even tried to apply, but in the end, I decided to stay within the same company for me to get the business intelligence supervisor role as of the moment.

This is also one of the goals that I have during the time that I was studying Project SPARTA under the data analyst pathway, which is to use this for my growth as well as for promotion internally.

Actions

Continuous Skill Expansion

Most of the informants stated that after completing and while completing the Data Analytics MOOCs of SPARTA, they continue to enroll in other MOOCs to further enhance their knowledge and skills, which can contribute to their work and their communities in general. Two informants mentioned enrolling in MOOCs offered by Google and the University of the Philippines Open University (UPOU), while another informant generally

stated that he continues to seek opportunities for upskilling to contribute to his team and company. They said:

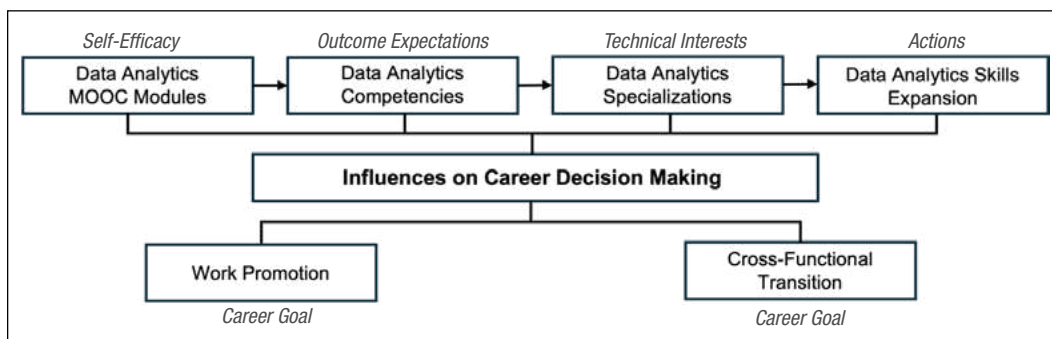
For me, Project SPARTA helped me a lot. And currently, I am also enrolled in Google Certification Data Analytics.

Project SPARTA pushed me on what data I want to get so that we can achieve our goal in Modern Nanays of Mindanao in addressing the gaps and providing support to mothers, especially during the first 1,000 days [after giving birth]. I just have a pending thesis part. So, while doing Project SPARTA, I also went online to the Open University [to study more courses]. Because of SPARTA it gave me motivation to continue my professional development through UPOU.

As a business intelligence supervisor, I am constantly looking for ways to deepen my skills and make meaningful data contributions to my team.

Figure 1

The Researchers' Developed Model on the Influences of Data Analytics MOOCs in Making Career Decisions



The results of the study confirm the assumptions outlined in the Social Cognitive Career Theory (SCCT) and demonstrate its applicability to professionals in the Philippines who have completed Data Analytics MOOCs. The themes revealed from the study's analysis were further examined by the researchers to develop a model and identify the factors influencing career decision-making among data analytics professionals.

The development of Data Analytics MOOCs in the Philippines is relatively new this decade, supporting the claim of Brown and Lent (2017) that SCCT is not limited to psychology but can also be applied to the field of data analytics and MOOCs. The model illustrates that Modular Instructions help with the Self-Efficacy of the informants. In addition, Outcome Expectations, based on the findings of this study, may also refer to the Data Analytics Competencies (Root Cause Identification, Dashboard Creation, and Data-

Driven Presentations) that data professionals may acquire, and these may also deepen their interests and skills through Data Analytics Specializations and Skills Expansion, respectively. This is why they continue setting goals, either Cross-Functional Transition or Work Promotion.

Lastly, the model presented in this study demonstrates that, despite workplace uncertainties, highlighted in Brown and Lent's (2019) research, data professionals recognize the opportunities MOOCs provide in achieving their career goals.

DISCUSSION

The results revealed that the informants' confidence in utilizing their skills was enhanced due to the modular instruction approach of the Data Analytics MOOCs. This is consistent with the findings of Nardo (2017), which, although conducted in a classroom setting, showed that modular instruction helped learners gain confidence in demonstrating skills acquired in their language classes. Similarly, Carabot (2022) observed that modular instruction increased students' confidence. Regarding MOOCs, the findings of this study align with those of Smith-Lickess et al. (2019), which revealed that in the United Kingdom, MOOCs not only improved learners' knowledge but also boosted their confidence, particularly in healthcare-related quality improvement projects. The same finding was also like the study of Rodriguez and Armellini (2017) that adults who completed MOOCs improved their confidence, particularly in acquiring skills.

One of the skill outcomes revealed is Root Cause Identification. This result aligns with the study by Schmidt et al. (2023), which highlights it as a key skill for data professionals in managerial roles. However, among facilitators of MOOCs with a background in analytics, it was found that root cause analysis on MOOC platforms has been challenging due to restrictions in acquiring data (Topal et al., 2020). A similar challenge among analytics learners was observed in the study by Nicolay et al. (2021), which highlighted difficulties in applying their learning to identify root causes in complex educational scenarios. Lastly, the study of Kobi (2024) that utilizes analytical skills at work, through data visualization, helps in identifying processes that do not work effectively. The literature emphasizes challenges in developing root cause identification skills among learners, which align with the findings of the study.

Additionally, Dashboard Creation was also identified as a skill outcome. One of the informants mentioned that developing dashboards helps in identifying insights for effectively monitoring work operations and production. This aligns with the literature study conducted by Kobi (2024), which states that dashboards containing analytical data and visualizations aid in developing insights that guide employees in tracking and monitoring their key performance indicators. In an academic setting, the study findings also align with

those of Charleer et al. (2018), where faculty members and students utilize dashboards to gain analytical and factual insights. One informant also mentioned PostgreSQL in creating dashboards, while the study by Khatuwal and Puri (2022) suggested using Power BI and Tableau for data visualization to present valuable insights effectively.

In medicine, data-driven presentations, particularly those containing visualizations, are more effective and comprehensible for readers. This finding was revealed in the study by In and Lee (2017), which added that data-driven presentations enable medical practitioners to present complex data more effectively. Similarly, the study by Chen et al. (2020) recognized that the practice of developing visualizations, especially for intricate and complex data, leads to more effective presentations. Mathisen et al. (2019) even suggested a system that can be utilized by organizations where data-driven presentations, particularly the data analysis, can be modified by collaborators to generate more useful reports.

The informants also expressed their interests in different data analytics specializations. One informant's interest in machine learning may be connected to its growing demand and suitability across various industries, aligning with the study of Kumar et al. (2020). On the other hand, another informant expressed a continuous interest in learning Python. This finding aligns with the quantitative study by Sharov et al. (2023), which found that more data professionals are interested in learning Python, as reflected in Udemy's offerings, a platform that provides MOOCs. Lastly, there is also increased interest in Data Visualization among the informants, like the findings of Schmidt (2020). However, the study also emphasized the need for data analysts to further understand and practice advanced data visualization techniques.

The informants in this study practice data analytics in their current roles. However, they also mentioned that completing the Data Analytics MOOCs has encouraged them to consider transitioning to other analytics roles by exploring new opportunities. This validates that interests allow individuals to search for new career paths (Gupta et al., 2024). This also aligns with the findings of Shirani (2019), which highlight that professionals upskill in Data Analytics to facilitate career shifts. Similarly, these non-formal education programs being taken by professionals help them in transitioning from one field to a career in data analytics, as mentioned in the study of Castro et al. (2020). On the other hand, Manivel (2023) emphasized that career shifters should have a solid foundation in data analysis and statistical techniques, particularly for those aiming to specialize in big data practices.

Similar findings on continuous learning through MOOCs were observed among learners in the technical-vocational education sector, as highlighted by Zhao and Hu (2022). They identified perceived value and ease of use as key factors driving learners' sustained interest in MOOCs. Likewise, Ahmad et al. (2022) found that accessibility

and adaptability were primary reasons for continued enrollment and engagement with MOOCs. These results closely align with the study of Gonçalves et al. (2016), particularly in the education sector, where MOOCs are recognized as valuable for fostering continuous learning, including the development of MOOCs themselves. Additionally, it was found that acquiring skills through education helps professionals with their career goals, considering the rapid advancements in the tech industry (Ali, 2025).

DIRECTIONS FOR FUTURE RESEARCH

This study shows how Filipino professionals, particularly those in the field of Data Analytics, who continuously upskill themselves, recognize how the industry and the demand are rapidly changing. Given these findings, the use of Social Cognitive Career Theory remains applicable for future research, particularly in fields that are new and innovative. The proposed model above may also be utilized for MOOC completers in other subject areas to identify factors that influence their career decisions. Additionally, the said model may also be proven through other platforms that offer MOOCs on data analytics, both in international and local settings. Therefore, this may also help organizations in developing training programs and career pathways for their employees.

Considering that this is limited to the influences alone, this study recommends further research, such as a textual analysis of dashboards developed and used by Data Analytics MOOC completers, to theorize and create a framework that presents best practices, software, and techniques. This framework could promote efficiency not only for the private sector but also for the government and communities at large. Lastly, to further support the continuity of this study, this study also recommends further research to also conduct semi-structured interviews who have been promoted and transitioned to work on data analytics, and the informants are considering their learning on MOOCs as influences in such actions.

In the study by Holle (2020), career goals, such as aiming for a promotion, were identified as a key reason why data professionals continue to upskill themselves through online platforms like MOOCs, particularly those aspiring to advance to higher roles in data analytics, such as data scientists. Furthermore, the mixed-method study by Lestari et al. (2023) revealed that participating in capability development activities significantly contributes to exploring promotion opportunities at work. This is like the study of Gupta et al. (2025) that MOOCs, to be specific, have influenced professionals in their career advancement. This was realized considering that MOOCs were claimed in their study to be as flexible and affordable means of education. This finding also aligns with the research of Egloffstein and Ifenthaler (2016), which highlights how employees value MOOCs. However, it was noted that companies have a lower acceptance rate of these credentials as valid qualifications.

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Contraceptive Use and Intention Among Educationally Marginalized Women in the Philippines: Evidence from a National Survey

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Abstract

Educationally marginalized women have a lower prevalence of contraceptive use in many studies. However, in the Philippines, its utilization is almost similar across education levels. By applying descriptive statistics and multinomial logistic regression, this study examines the profile of less educated women, variation in their contraceptive use and intention, and its predictors. Results reveal the differences in the distribution of educationally marginalized women in the country. Variation in contraceptive use and intention across socioeconomic, information, cultural, and demographic factors is observed. Multinomial regression reveals that intention to use contraceptives is more likely among employed individuals, with three or more children, internet users, poor households, and Catholic women, while older individuals are less likely. Increased likelihood of using traditional contraceptives is associated with migrants, older, married, with three or more children, internet users, rich and richest households, and Catholic women, while living in a female-headed household is associated with a lower likelihood of traditional contraceptive use. Meanwhile, employed migrants, older, with fertility desire, married, with three or more children, internet users, and Catholic women are more likely to use modern methods, while those who perceive their health as good, belong to the rich and richest households, and live in a female households are less likely. The findings show that non-users with intent, traditional users, and modern users have unique needs. Targeted family planning strategies that expand access to modern methods, particularly for younger, poorer, and unmarried women, and address cultural and informational barriers sustaining traditional method reliance, are recommended.

Keywords: Contraceptives, Educationally Marginalized, Intention, Modern Methods, Traditional Methods,

INTRODUCTION

Education has long been established as a critical determinant of contraceptive use and intention. Generally, women with higher levels of education are more informed

and more confident in making decisions about their fertility. In one study, it was found that an increase in educational attainment is associated with an increased likelihood of using any type of contraception by 9% and modern methods by 6% (Nguyen, 2025). This is not different from what was reported in other countries, where women with higher education tend to have higher contraceptive usage (Jahanfar & Zendehdel, 2024; Osborne et al., 2024; Michael et al., 2024). These findings cannot be generalized, as one study conducted in another context revealed that the changing pattern in the type of contraception has weakened the association between education and its use (Bashir & Guzzo, 2021).

In Southeast Asian countries, nearly half (47%) of the population are contraceptive users (Ejaz et al., 2023). But that was only applicable when all women were included, as several studies have shown that women with low educational attainment have a lower prevalence of contraceptive use (Biswas et al., 2023; Ang & Lai, 2023). This is because women with little or no formal education often have limited exposure to family planning information or are less informed about its importance (Ang & Lai, 2023). The 2022 Philippine National Demographic and Health Survey (NDHS) report, however, shows that there is little difference in the use of any contraceptive method in terms of educational attainment in the Philippines (PSA & ICF, 2023). Despite this, it remains crucial to examine educationally marginalized women, as findings from other countries have demonstrated the disparities in its use, and women with limited education may have different factors that influence their use and intention.

Beyond disparities observed in contraceptive use in terms of education, other socioeconomic, informational, cultural, and demographic factors also shape contraceptive practices. For instance, employment has been consistently linked to higher contraceptive use. Different studies have shown that women who are employed at the time of the survey tend to have better access to reproductive health services (Efendi et al., 2023; Odimegwu et al., 2023). Interestingly, the migration history is also associated with increased contraceptive adoption. To be specific, in the case of those with HIV positive status, there is a low usage of contraceptives (Namusisi et al., 2024). This is an interesting factor, considering that migrant women have other priorities, such as their everyday expenses, than using contraception.

In some of the studies conducted in Indonesia and Cambodia, the results showed that those in their late 40s are less likely to use contraception, while middle-aged women have a higher prevalence (Gafar et al., 2020; Kinfé & Mankelkl, 2024). This pattern reflects changes in reproductive behavior. As women become older, they become more comfortable using contraception to delay or prevent it. Intention to have children and the actual number of children further reinforce contraceptive use, as having more children or those who express no desire for additional children are far more likely to adopt modern methods (Gafar et al., 2020).

As we live in the digital era, the internet and media exposure have become important in influencing reproductive health behaviors. Exposure to mass media campaigns has been proven to influence planned parenthood in the case of women with higher contraceptive use in the Philippines and Myanmar (Das et al., 2021); while internet access in Indonesia increased contraceptive knowledge, this does not always translate into actual use (Harzif et al., 2023).

Religion, household headship, wealth, and geographic location or place of residence are also important factors that shape contraceptive practices. In Pakistan, it was found that religion is being used as a justification for not using contraceptives (Sarfraz et al., 2023). In a literature review conducted by Gozzi et al (2024), religious affiliation serves as a barrier to contraceptive use in several studies. Wealth was also associated with contraceptive use, with wealthier households tending to have better access to contraceptives (Gafar et al., 2020; Michael et al., 2024). Meanwhile, living in a female-headed household has surprisingly shaped women's safe and protected sex practices negatively in Cambodia (Kinfe & Mankelkl, 2024). Finally, geographic context remains important. Urban women generally report higher contraceptive uptake compared to rural women, due to better access to services and information (Kinfe & Mankelkl, 2024).

Most of the studies regarding contraceptive use rely on binary outcomes. These studies only investigated use versus non-use or modern contraceptive use versus non-use. From the methodological standpoint, these types of approaches often overlook some key distinctions, such as intent to use contraception and whether individuals prefer to use traditional or modern methods. For example, a recent mixed-methods study on the sexual practices of youth among Jordanian and Syrian refugees. Luckenbill et al. (2025) reported not only the disparities in contraceptive prevalence but also substantial variation in method mix. To address this complexity, it is appropriate to understand it by using multinomial logistic regression, which models multiple nominal outcome categories without imposing an inherent order. An example of this kind of approach includes a national-level analysis of the 2019 Ethiopian Mini-Demographic and Health Survey. This particular study employed multinomial logistic regression to distinguish traditional and modern contraceptive method use relative to non-use as the reference category (Negash et al., 2023).

While literature on contraceptive usage and reproductive health exists, there remains a gap in these studies. There is a dearth of studies that specifically investigated family planning practices among women with secondary education or below. In most cases, these studies treated education as either the main dependent variable or as a covariate in their models. No study has tried to focus exclusively on how the situation of being in the margin may interact with socioeconomic, informational, cultural, and demographic factors.

This study addresses those gaps by examining the predictors of contraceptive choices among women with secondary education or lower in the Philippines. By disaggregating outcomes into non-use, with intention to use, traditional use, and modern use, and analyzing how these are influenced by key socioeconomic, information, cultural, and demographic variables, this research contributes to a more targeted understanding of educational disadvantage in reproductive health. Moreover, with a focus on educationally marginalized women, this study will contribute to the literature by providing findings that specifically focus on the important role of education on issues related to reproductive health practices of women in the Philippines.

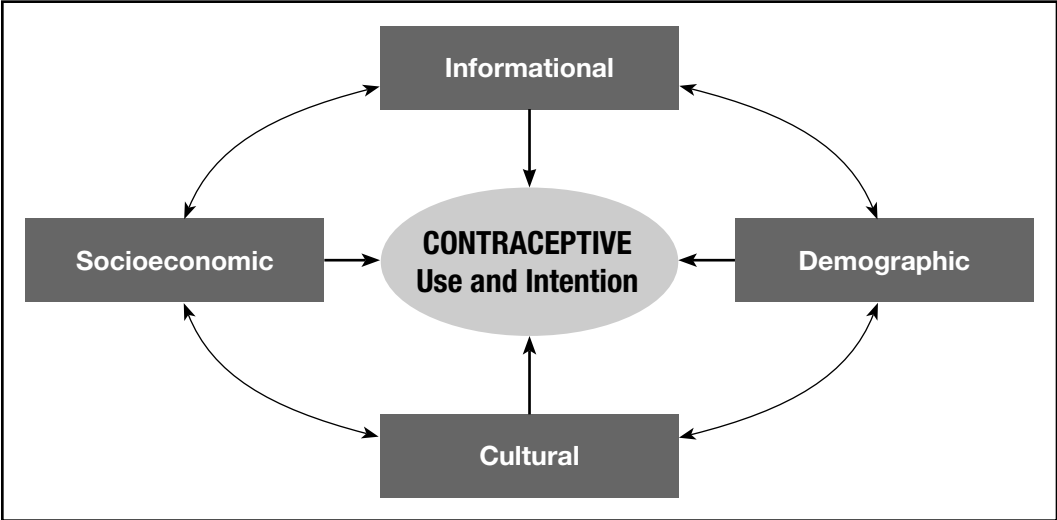
This study aims to present the profile of educationally marginalized women in the Philippines. In addition, part of its objectives is to reveal the variation in contraceptive use and intention by presenting their unweighted percentage according to the selected independent variables, such as residence, employment, migration history, age, desire for children, self-rated health, marital status, number of children, internet use, wealth, religion, and household headship. More importantly, it also seeks to identify factors that may influence women's intention to use contraceptives in the future, their use of traditional contraceptives, and those who use modern methods. By doing this, this study will be able to provide information on the characteristics of educationally marginalized women in the Philippines, how their contraceptive use and intention may vary according to their characteristics, and contribute to the literature on the distinct sets of predictors of contraceptive use and intention in this group. However, given the cross-sectional nature of the data on Filipino reproductive-aged women, this study cannot establish the causal relationship between the selected independent variables in this study and contraceptive use and intention. Therefore, it may only produce results that were observed at a single point in time. Moreover, another limitation of the study is that the participants relied on self-reported information on contraceptive usage, which may present social desirability bias.

Conceptual Framework

The conceptual framework understanding contraceptive use and intention was based on the findings of the reviewed literature, in which the relationship of variables is presented in Figure 1. These four domains capture the hypothesized multifaceted predictors of reproductive health behavior, as identified in numerous studies conducted in different social contexts.

Figure 1

Conceptual Framework for Contraceptive Use and Intention



Socioeconomic factors are those that have something to do with women's economic and social standing, as they can affect their access to reproductive health-related services. In the context of this study, socioeconomic factors are considered as one of the related factors that shape contraceptive use and intention. Education, employment, and wealth are considered socioeconomic factors. Informational factor is their access to the internet, while cultural factors refer to the factors related to social norms and gender roles. In this study, religion and household headship were considered cultural. Meanwhile, demographic factors include personal characteristics such as their current age, marital status, number of children, fertility intention, migration history, and place of residence.

The framework assumes that non-use, intention to use, use of traditional contraceptives, and modern methods vary according to socioeconomic, cultural, informational, and demographic factors. This framework also posits that the four domains are working collectively and significantly shape contraceptive use and intention among educationally marginalized women. Thus, the decision of a woman is not only shaped by her individual choice, but it is the outcome of intersecting structural and individual factors.

METHODS

Data and Sampling

This study utilized data from the 2022 NDHS, which is a nationally representative survey that collected data on women of reproductive age using two-stage stratified

sampling based on the Master Sample Frame derived from the 2010 Census of Population and Housing and updated with the 2015 Census. In the first stage, 1,247 primary sampling units (PSUs) were systematically selected nationwide, and in the second stage, a fixed number of housing units per PSU were randomly chosen, with all eligible households interviewed (PSA & ICF, 2023).

Analytical sample

Our analysis focused primarily on the contraceptive choices of educationally marginalized women. For this study, the analytic sample was restricted to educationally marginalized women of reproductive age (15–49 years old). To identify this subgroup, the education variable in the 2022 NDHS was recoded to combine the categories of secondary, primary, and no education into a single group labeled “educationally marginalized”. Respondents who had attained tertiary education or higher were excluded from the analysis.

In addition to the educational restriction, the sample was further refined by excluding infecund women (i.e., women who reported being unable to bear children) and those who reported never having had sexual intercourse at the time of the survey, as these respondents are not considered to be at risk of becoming pregnant and therefore are not the target population for contraceptive behavior analysis. Moreover, respondents with missing data were excluded to maintain the integrity of the multinomial regression analysis.

After applying these criteria, the final analytic sample consisted of 17,759 women, which represents a substantial sample of the reproductive-aged, educationally marginalized female population in the Philippines. By doing this, we were able to address the missing cases and ensure only variables with complete information on contraceptive use and intention, and the independent variables remained.

With multinomial logistic regression in mind, the independent variables and the dependent variable were recoded appropriately. This process of recoding was crucial in ensuring that every variable is important for categorization, which aligns with the population of interest. Below are their measures and operational definitions.

The dependent variable in this study was contraceptive use and intention. Respondents were asked about their contraceptive usage. The recoding distinguishes between non-users with no intention, non-users who have the intention to use in the future, and current users of either traditional methods or modern methods. The final categories were coded as 0 for those who do not use and have no intention to use (reference group), 1 for those non-users who have the intention to use, 2 for those who are using traditional methods, and 3 for those who use modern methods.

The independent variables were chosen based on theoretical relevance and prior empirical findings. Its availability on the 2022 NDHS was also considered. The first variable is the place of residence of the woman. This variable indicates the respondent's current living environment. It was recoded into a binary variable where Urban = 1 and Rural = 0. Urban residency was hypothesized to be associated with greater access to contraceptive services and information. The second one is the employment status. These variables measure whether the respondent has worked in the past 12 months. It was recoded such that Employed = 1 and Unemployed = 0. Migration History was also theorized to influence contraceptive use. This variable captures whether the respondent has changed place of residence since birth. It was recoded to reflect Migrant = 1 and Non-migrant = 0.

Age was grouped into five categories, which include 0 for the 15-24 age group, 1 for 25-29, 2 for 30-34, 3 for 35-39, and 4 for 40-49 years old. The youngest age group is the reference group for age, and the distribution of the respondents was considered in this categorization. Meanwhile, the desire for children was also included in the list of independent variables in this study. This variable measured whether the respondent had a desire to have children. It was recoded into a binary variable where No desire for children = 1 and With desire = 0. Fertility intentions are central to understanding contraceptive behavior, as those who express no further childbearing desires are more likely to adopt contraceptive methods. While no literature has found the association of self-rated health with contraceptive use, we still included this in the list of predictors. This variable captures the respondent's subjective assessment of their own general health. It was recoded into a binary indicator where Good health = 1 and otherwise = 0.

Marital status is assumed to influence contraceptive use, as they are more directly engaged in family planning decisions. This particular variable was recoded into currently married and not currently married (never married, divorced, separated, and widowed). The categorization of this variable also took into account the distribution of responses. Parity, or the number of children, is also included in the set of predictors in this study. It was recoded as a binary variable. Two or fewer children were recoded as 0, while those with three or more children were recoded as 1. We assumed the women with more children are more inclined to use contraceptives as they may feel they already have enough kids.

Internet use was recoded into a binary indicator where Used recently = 1 and Did not use = 0. Internet use is treated as a proxy for access to information in many traditional media, social media, and other platforms that can influence their awareness and attitudes regarding contraceptive methods. In terms of socioeconomic status, the wealth index serves as a composite measure of a household's cumulative living standard and is constructed using asset ownership, housing characteristics, and access to basic services. For this study, the wealth index was retained. Religion is a variable that indicates

the woman's religious affiliation. It was recoded into a binary variable where Catholic = 1 and Other religions = 0 (including Protestant, Iglesia ni Cristo, Islam, and other minority faiths). As the Philippines is a predominantly Catholic country, it is essential to consider the distribution of the responses, as most women are affiliated with the Catholic religion. Another variable in this study is the household headship, which refers to whether the head of the household is a male or female. It was recoded as Female-headed household = 1 and Male-headed household = 0. The sex of the household head can reflect broader gender dynamics and decision-making authority that may impact.

Statistical Analysis

Descriptive statistics were conducted to provide a comprehensive overview of the sample, specifically focusing on the socioeconomic, information, cultural, and demographic characteristics of sexually active, educationally marginalized women. This initial analysis offered valuable context for interpreting the results before conducting regression analyses. Bivariate analysis using crosstabulation was employed to determine whether socioeconomic, information, cultural, and demographic variables are associated with contraceptive use. Both these tests were done using an unweighted sample. Weights were applied in the multinomial logistic regression model as this is the recommended practice when dealing with secondary data that used a complex sampling survey design, such as the NDHS (PSA & ICF, 2022). Applying weights in a regression model provides accurate parameter estimates, thus reducing underestimation and overestimation of standard error. To account for the complex survey design, we applied the appropriate sampling weights to account for the two-stage stratified sampling design using the SVYSET command. Specifically, weight variables, strata, and primary sampling units were represented appropriately.

We employed a multinomial logistic regression to examine the relationship between socioeconomic, information, cultural, and demographic predictors and contraceptive use and intention. This was performed under the SVY command in Stata 19. This method was chosen because the dependent variable had more than two unordered categories. Coefficients were reported as Relative Risk Ratios (RRRs) with their corresponding confidence intervals (CI) and p-values. Post-estimation diagnostics were also performed, and the results showed no concerning presence of multicollinearity, and the R-squared revealed an acceptable model fit. The Independence of Irrelevant Alternatives was satisfied, and classification statistics verified that the model correctly distinguished the dependent variable categories.

RESULTS AND DISCUSSION

Characteristics of Sexually Active, Educationally Marginalized Women
in the Philippines

Table 1

Profile of Sexually Active, Educationally Marginalized Women: NDHS, 2022

PREDICTOR	FREQUENCY	%
Residence		
Rural	11,243	63.31
Urban	6,516	36.69
Employment		
Unemployed	9,933	55.93
Employed	7,826	44.07
Migration History		
Non-migrant	10,755	60.56
Migrant	7,004	39.44
Age Groups		
Age 15-24	7,638	43.01
Age 25–29	1,823	10.27
Age 30–34	2,065	11.63
Age 35–39	2,039	11.48
Age 40–49	4,194	23.62
Desire for Children		
With Desire	6,549	36.88
No Desire	11,210	63.12
Self-Rated Health		
Bad health perception	5,321	29.96
Good health perception	12,438	70.04
Marital Status		
Not Married	11,127	62.66
Married	6,632	37.34
Number of Children		
Has 2 or fewer children	11,946	67.27
Has 3+ children	5,813	32.73

PREDICTOR	FREQUENCY	%
<i>Internet Use</i>		
Did not use	5,674	31.95
Internet users	12,085	68.05
<i>Wealth Status</i>		
Wealth: Poorest	5,836	32.86
Wealth: Poor	4,595	25.87
Wealth: Middle	3,315	18.67
Wealth: Rich	2,388	15.45
Wealth: Richest	1,625	09.15
<i>Religion</i>		
Other Religions	5,518	31.07
Catholic	12,241	68.93
<i>Household Head</i>		
Male	14,237	80.17
Female	3,522	19.83
TOTAL	17,750	100

The profile shows that most respondents are living in rural areas, while just more than a third live in urban areas. In terms of employment, more than half are unemployed, compared with 44.07% who reported being currently unemployed or have not worked in the last 12 months prior to the survey. Migration patterns reveal that six in ten women are non-migrants, while about four in ten have experienced migration.

When it comes to the distribution of the respondents based on age, a large proportion belongs to the 15-24 age group, demonstrating that the younger age group dominates the sample of educationally marginalized women. When it comes to fertility desire, nearly two-thirds of the participants have no desire to have children, while more than a third reported they want to have children. Seven in ten of the respondents perceive themselves to be in good health, while nearly a third consider themselves unhealthy. In terms of marital status, the majority are currently married, while more than a third are married. More than two-thirds of women have two or fewer children, while nearly a third have three or more.

Access to information appears widespread, as a great majority have internet access compared to those who do not. When it comes to their socioeconomic status, a third of the participants came from the poorest households, a quarter of the respondents are poor, nearly a fifth are in the middle, while nearly a quarter are either rich (15.5%) or

the richest (9.2%). Educationally marginalized women are dominated by Catholic (68.9%), while nearly a third belong to other religions. Four in five educationally marginalized women are living in a male-headed household, with about 1 in five residing in a female-headed household.

Educationally marginalized women in the Philippines have diverse characteristics. They are disproportionately young, reside in rural areas, are poor, and are concentrated in male-headed households. Despite limited educational attainment, a majority report good health and are active internet users, suggesting potential entry points for access to reproductive health communication. Moreover, the fact that a vast majority of women express no further desire for children suggests that the majority of women are willing to have a birth control program, but were perhaps affected by misconceptions and disinformation against different types of contraceptives available.

It is worth noting that the educationally marginalized women in the Philippines have diverse socioeconomic and demographic characteristics, thus it may mean that while they are vulnerable to unequal access to contraceptives, there are also other favorable characteristics we can take advantage of to implement interventions. Living in rural areas, being young adults, and their concentration on the poor and poorest households collectively present a structural disadvantage that may shape their lived realities. These disadvantages may put them at risk of having an unintended pregnancy or may limit their access to contraceptives and family planning services.

Despite these challenges, it is also important to point out that there is widespread internet access, which may serve as an important avenue for intensive reproductive health and family planning information dissemination. As reports revealed that the Philippines is one of the most active countries in internet use (Zamora, 2025), this may provide us window of opportunity for targeted intervention that maximizes social media campaigns. Furthermore, it is a good thing that the majority do not have the desire to have a child soon, which shows an unwillingness to have pregnancies. Thus, it is important to recognize that even though many are vulnerable or at risk of unmet need, there are ways to reduce reproductive health inequalities by recognizing how poverty, household structures, and residence intersect with evolving opportunities such as digital access to reproductive health information.

Varied Realities of Contraceptive Use Across Women's Lives

The unweighted crosstabulation results of contraceptive choices by selected characteristics are presented in Table 2. The table shows variations in contraceptive behavior for non-use, intention to use, traditional method use, and modern method use across selected socioeconomic, information, cultural, and demographic variables.

Table 2
Unweighted Crosstabulation of Contraceptive Choices by Selected Characteristics of Sexually Active Women: NDHS, 2022

PREDICTOR	NON-USERS	%	INTEND TO USE	%	TRADITIONAL USERS	%	MODERN USERS	%
Residence***								
Rural	4,883	43.43	2,454	22.13	840	07.47	3,066	27.27
Urban	2,961	45.44	1,442	21.83	556	08.53	1,557	23.90
Employment***								
Unemployed	4,909	24.02	2,386	24.02	642	06.46	1,996	20.09
Employed	2,935	19.29	1,510	19.29	754	09.63	2,627	33.57
Migration History***								
Non-migrant	4,867	45.25	2,692	25.03	678	06.30	2,518	23.41
Migrant	2,977	42.50	1,204	17.19	718	10.25	2,105	30.05
Age Groups***								
Age 15-24	4,086	53.50	2,809	36.78	192	02.51	551	07.21
Age 25-29	561	30.77	322	17.66	186	10.20	754	41.36
Age 30-34	598	28.96	291	14.09	243	11.77	933	45.18
Age 35-39	622	30.51	219	10.74	243	11.92	955	46.84
Age 40-49	1,977	47.14	255	06.08	532	12.68	1,430	34.10
Desire for Children***								
With Desire	2,873	43.87	2,390	36.49	363	05.54	923	14.09
No Desire	4,971	44.34	1,506	13.43	1,033	09.21	3,700	33.01
Self-Rated Health***								
Bad health perception	2,154	40.48	1,049	19.71	491	09.23	1,627	30.58
Good health perception	5,690	45.75	2,847	22.89	905	07.28	2,996	24.09
Marital Status***								
Not Married	5,577	50.12	3,352	30.12	524	04.71	1,674	15.04
Married	2,267	34.18	544	08.20	872	13.15	2,949	44.47

PREDICTOR	NON-USERS	%	INTEND TO USE	%	TRADITIONAL USERS	%	MODERN USERS	%
Number of Children***								
Has 2 or fewer children	6,103	51.09	3,380	28.29	639	05.35	1,824	15.27
Has 3+ children	1,741	29.95	517	08.88	757	13.02	2,799	48.15
Internet Use***								
Did not use	2,566	45.22	629	11.09	509	08.97	1,970	34.72
Internet Users	5,278	43.67	3,267	27.03	887	07.34	2,653	21.95
Wealth Status***								
Wealth: Poorest	2,602	44.59	1,021	17.49	459	07.86	1,754	30.05
Wealth: Poor	1,831	39.85	1,062	23.11	396	08.62	1,306	28.42
Wealth: Middle	1,423	42.93	745	22.47	276	08.33	871	26.27
Wealth: Rich	1,165	48.79	579	24.25	177	07.41	467	19.56
Wealth: Richest	823	50.65	489	30.09	88	05.42	225	13.85
Religion***								
Other Religions	2,989	54.17	981	17.78	308	05.58	1,240	22.47
Catholic	4,855	39.66	2,915	23.81	1,088	08.89	3,383	27.64
Household Head***								
Male	5,955	41.83	2,978	20.92	1,203	08.45	4,101	28.81
Female	1,889	53.63	918	26.06	193	05.48	544	14.82

Note: **p* < .05 ***p* < .01 *** *p* < .001

Differences were observed in every selected independent variable in this study. The results of this analysis revealed that women living in rural areas have higher modern contraceptive use compared to women from urban areas, while employed women have higher uptake of modern contraceptive methods than women who are not employed in the last 12 months. Migrant women also demonstrated that they have higher reliance on both modern and traditional contraceptive methods compared to those who have lived their entire life in their place of residence. It also observed that non-migrant women have a higher percentage of non-users than migrants.

The age of the woman at the time of the survey, their fertility preference, and marital status further differentiate contraceptive behavior. Non-users of contraceptives are high among young adults and non-users, but have the intention to use eventually, while modern use is highest among women aged 30-34 and 35-39. Those with no intention for a child have a higher prevalence of modern contraceptive use, and those with the intention to use. Married women also have a considerably higher prevalence of modern contraceptive use than unmarried women, while around half of currently not married women are not using contraceptives.

Differences in contraceptive use are also present in terms of the self-reported health, number of children, and internet use of the woman. Those who perceive their health as poor are more likely to be users of modern contraception compared to those who think they are healthy. Similarly, women with three or more children demonstrated have higher reliance on modern methods relative to those with two or fewer children. Surprisingly, in terms of internet use, internet users showed a higher intention to use contraceptives, while those who do not use the internet have a higher rate of using modern contraceptives.

The contraceptive use and intention also vary significantly by wealth, religion, and household headship. Across wealth categories, non-use with no intention to use at all is highest among women from the richest quintile and lowest among the poorest group. Interestingly, intention to use increases with wealth. It is increasing from 17.49% among the poorest women to 30.09% among the richest. However, modern methods decline as wealth increases. In the use of the traditional method, there are no significant differences across wealth categories. Aside from wealth, contraceptive use and intention also vary in terms of religious affiliation. Catholic women are more inclined to use contraception than women from other religions. They also have a higher intention to use and the actual use of traditional and modern methods. When it comes to household headship, women in male-headed households have a higher prevalence of modern contraceptive use compared to those in female-headed households, while non-use is higher among female-headed households.

The differences in contraceptive use and intention among educationally marginalized women in the country show that the socioeconomic, information, cultural, and demographic factors shape reproductive health behaviors, rather than by access alone. Similar to the findings of earlier studies, this study shows that contraceptive use is higher among working and migrant women (Efendi et al., 2023; Odimegwu et al., 2023). However, the finding that rural women have higher modern contraceptive use contradicts the findings in another study (Kinfé & Mankelkl, 2024). This may imply that because of the service delivery efforts, the rural and urban disparities in access to contraceptive and proper information may be narrowing. In agreement with the findings of Gafar et al (2020) and Kinfé and Mankelkl (2024), middle-aged women have the highest prevalence

of modern contraceptive use, while those who do not desire to have children use modern methods higher than those with desire (Gafar et al., 2020).

Unexpectedly, the finding that non-internet users rely more on modern contraceptives than internet users challenges a study that involves the Philippines (Das et al., 2021) but echoes another study where digital access does not necessarily translate to actual contraceptive use (Harzif et al., 2023). Meanwhile, despite contraceptive use being generally higher among wealthier women (Gafar et al., 2020), the finding of this study shows that modern methods decline as wealth increases. This implies that wealthier women may not see the need to use contraception because of their socioeconomic condition. The fact that they can afford to have a child may not concern them. This is probably because they are financially capable of raising a child, or perhaps they are more confident about the potential challenges brought by having a child.

Factors Associated with Contraceptive Use and Intention among Educationally Marginalized Women

The multinomial logistic regression model estimated the relative risk of intending to use contraception, or being a traditional or modern contraceptive user, compared to not intending to use contraception. Several predictors were found to be significantly associated with contraceptive choice.

Table 3. Weighted Multinomial Logistic Regression Predicting Contraceptive Choices: NDHS, 2022

PREDICTOR	INTENDS TO USE (RRR)	95% CI	TRADITIONAL USER (RRR)	95% CI	MODERN USER (RRR)	95% CI
Urban	0.89	[0.76, 1.04]	1.23	[0.99, 1.53]	0.96	[0.82, 1.14]
Employed	1.36***	[1.17, 1.58]	1.25	[0.99, 1.59]	1.45***	[1.26, 1.67]
Migrant	0.89	[0.77, 1.03]	1.33**	[1.10, 1.61]	1.15*	[1.02, 1.30]
Age 25–29	0.80	[0.63, 1.02]	4.76***	[3.41, 6.64]	4.51***	[3.46, 5.87]
Age 30–34	0.62***	[0.49, 0.78]	4.06***	[2.84, 5.81]	3.10***	[2.47, 3.89]
Age 35–39	0.45***	[0.34, 0.59]	3.20***	[2.22, 4.61]	2.70***	[2.07, 3.52]
Age 40–49	0.16***	[0.12, 0.22]	1.99***	[1.38, 2.87]	0.94	[0.72, 1.23]
No desire for a child	0.50***	[0.44, 0.58]	0.90	[0.73, 1.11]	1.34***	[1.14, 1.56]
Good health perception	0.89	[0.78, 1.02]	0.85	[0.67, 1.06]	0.81**	[0.71, 0.94]
Married	1.01	[0.82, 1.26]	2.54***	[2.00, 3.22]	2.43***	[2.06, 2.86]
Has 3+ children	2.30***	[1.82, 2.91]	2.41***	[1.91, 3.04]	3.47***	[2.92, 4.13]
Internet Users	1.60***	[1.35, 1.90]	1.48***	[1.21, 1.81]	1.22*	[1.04, 1.42]
Wealth: Poor	1.21*	[1.00, 1.46]	0.95	[0.74, 1.21]	1.11	[0.93, 1.32]
Wealth: Middle	0.96	[0.80, 1.16]	0.77	[0.57, 1.05]	0.90	[0.73, 1.10]
Wealth: Rich	0.97	[0.77, 1.20]	0.64**	[0.45, 0.89]	0.60***	[0.48, 0.75]
Wealth: Richest	0.99	[0.78, 1.24]	0.52***	[0.36, 0.75]	0.62***	[0.48, 0.78]
Catholic	1.50***	[1.29, 1.75]	1.91***	[1.45, 2.51]	1.91***	[1.64, 2.23]
Female	1.01	[0.86, 1.18]	0.56***	[0.44, 0.72]	0.49***	[0.41, 0.57]

Note: N = 17,759 | RRR = Relative Risk Ratio | CI = Confidence Interval | *p < .05 **p < .01 ***p < .001
Reference category = Does not use contraception

In the multinomial logistic regression model, residence is the only not significant in influencing intention to use, use of traditional contraceptives, and modern use. This may mean that disparities in access to contraceptives between rural and urban residents are narrowing already. Meanwhile, other factors have a significant association with contraceptive use and intention. Employment was associated with contraceptive use and intention. Specifically, results show that employed women were significantly 36% more likely to have the intention to use contraception and 45% more inclined to adopt modern methods relative to unemployed counterparts. Migration status also shaped contraceptive choices, as migrant mothers were 33% and 15% more likely than non-migrants to use traditional and modern methods, respectively.

A life-course pattern was observed when it comes to the woman's age. It shows that those aged 25-39 were several times more likely than young adults to use traditional and modern contraceptives and to have the intention of using them in the near future, but the oldest age group (40-49 year olds) is not significant in the use of modern contraceptives. When it comes to the desire of women to have children, it shows that they are 50% less likely to express their intention to use, but they are 34% more inclined to adopt modern contraceptives. Those women who have three or more children had two to three and a half times higher odds of intention to use and adopt traditional and modern methods. Good health perception was only significant in modern contraceptive use, as having good health increases the odds by 84%. Meanwhile, marital status was around two and a half times more likely to use either traditional or modern contraception.

Internet use was strongly associated with contraceptive outcomes. Internet users were 60% open to use, 48% and 22% more inclined to adopt traditional methods, and to adopt modern methods. Wealth disparities showed mixed results. It was found that women from richer and richest households were significantly less likely to use traditional and modern methods compared to the poorest group, while poorer households showed a small odds in intention to use by only 21%.

Religion emerged as a significant factor, as women affiliated with Catholics were more likely than women of other religions to have the intent to use contraception by 50% and to adopt both traditional and modern methods nearly twice. Household dynamics also mattered in contraceptive use. But surprisingly, women in female-headed households were substantially around 50% less likely to use traditional or modern methods than those in male-headed households.

This study examines factors associated with contraceptive choices among educationally marginalized women in the Philippines. By focusing specifically on educationally marginalized women and by analyzing intention to use, traditional method use, and modern method use, this research extends the current literature in two significant

ways. First, unlike the consulted literature that treated education as a covariate (Jahanfar & Zendehtdel, 2024; Osborne et al., 2024; Michael et al., 2024; Bashir & Guzzo, 2021; Nguyen, 2025), this research shifts its focus from education as the usual covariate to education as the defining condition of vulnerability. Second, it demonstrates that factors that influence contraceptive choices among educationally marginalized women are multidimensional and that they influence intention to use, use of traditional methods, and modern methods vary.

Economic and Structural Dimensions

The positive association between employment and contraceptive use reinforces the argument that economic independence of a woman enhances reproductive autonomy. This finding is congruent with regional and global studies that report higher contraceptive use and intention among working women (Efendi et al., 2023; Odimegwu et al., 2023). However, this study adds nuance by demonstrating that being employed not only increases the chance of using modern contraceptives but also encourages non-users to have the intention to use in the near future. Therefore, employment is not simply about economic access to health services but also a transformative tool in empowering women in making decisions regarding their own reproductive health.

The migration history of the woman also significantly influences contraceptive use. This challenges the results found in rural Uganda, demonstrating that having a migrant history may pressure women not to get pregnant because they may have other priorities (Namusisi et al., 2024). Yet, while the finding demonstrates that migration history encourages *current use*, it does not necessarily influence intention to use. Meanwhile, unlike what was found in other studies (Kinfé & Mankelkl, 2024), residence has no significant influence on contraceptive usage. This may mean that national family planning initiatives in the Philippines may have succeeded in narrowing geographic disparities between urban and rural women. This may imply that inequalities in contraceptive access are no longer primarily based on the location where the woman lives.

Life Journey and Fertility Intentions

The influence of the current age of women stresses that reproductive behavior may vary depending on the age cohort to which they belong. Similar to what was found in Cambodia and Indonesia (Gafar et al., 2021; Kinfé & Mankelkl, 2024), the use of birth control among Filipino women peaks during their mid-reproductive years and declines sharply after age 40. This is possibly because women in their late reproductive age are starting to become less sexually active. Meanwhile, it is also worth noting that one thing that these findings contributed is that the future intention to use also decreases as the age

of the woman increases, suggesting that this may be due to biological reasons or negative social expectations about childbearing among older women.

Fertility desire and the number of children remain among the strongest predictors of use, with women desiring no more children and those with three or more children already being more likely to adopt modern methods. While this finding is consistent with global literature (Odimegwu et al., 2023), the Philippine case features that even educationally marginalized women, despite being often assumed to have limited agency, demonstrate clear strategic use of contraception to align fertility with personal goals. This also demonstrates that while the goals of the women and their current condition are important influenced them to use modern contraceptives.

Informational and Cultural Pathways

Access to the internet significantly shapes intention to use among non-users and current use of both traditional and modern methods. This aligns with studies in Southeast Asia that demonstrate the power of disseminating reproductive health knowledge in shaping reproductive practices (Das et al., 2021; Harzif et al., 2023). Yet this study contributes by showing that, even among women with limited schooling, digital exposure bridges informational gaps. This provides the potential of technology-driven interventions in narrowing reproductive health inequalities. Therefore, it is important to note that policymakers should take advantage of social media as an avenue to inform reproductive-aged women in the country on the importance and proper use of contraceptives.

Some of the most striking insights were provided by the religious affiliation of the woman and the status of household headship. While the most common expectation is that religion hinders contraceptive use, the results demonstrated that Catholic women in the Philippines are more inclined to use both modern and traditional methods. It is a reflection of how Catholicism allows for a pragmatic family planning (Michael et al., 2024). This is in contrast to the deterministic framing that religion serves as a barrier to contraceptive use. While the Catholic church in the country has been challenging laws related to different population control programs, its members are not necessarily discouraged from deciding to plan for their own family size.

Similarly, while there were conflicting findings on the influence of household headship in other studies, the finding on household headship aligns with what was found in Cambodia, that women in female-headed households are less likely to use contraception (Kinfé & Mankelkl, 2024). This contributes to debates on household power dynamics by demonstrating that female headship does not automatically imply greater reproductive autonomy; instead, it may reflect economic vulnerability or the absence of supportive partners.

CONCLUSION AND RECOMMENDATIONS

This study offers three important insights into understanding contraceptive use and intention among educationally marginalized women. First, instead of using the education variable as a predictor of contraceptive use, it is reframed as a condition of marginalization. Second, as opposed to the existing literature, this research presents a within-group difference of contraceptive choices. And lastly, it contextualizes the existing global and local findings in the context of educationally marginalized populations. Moreover, the study also disaggregated contraceptive use into four categories, revealing that there is generally a heterogeneity in its use. An example of this is that some factors shape the use of traditional methods, but not the modern method, nor the intention to use. These complexities cannot be observed by simply conducting a binary analysis. In addition, while most of the results align with the global findings, this study offers a distinct dynamic. An example of this is that religious affiliation, such as Catholic membership, challenges the most common assumptions that religion restricts family planning practices.

This paper recommends that policymakers should not rely on education campaigns alone. Economic empowerment programs and digital literacy campaigns play a crucial role in shaping women's reproductive behavior. In addition, it is also important to have a context-specific approach to other religious groups, as they are less likely to use family planning services compared to Catholic women. It is also equally important to note that having a woman as a household head does not guarantee that they have more autonomy in using contraceptives. Lastly, the heterogeneity of educationally marginalized women in the Philippines must be recognized to avoid mechanical programs and to ensure that interventions address unequal access to family planning services.

The study posits that giving attention to having an integrated reproductive health program in the country, which not only offers access to contraceptives but also has gender-sensitive and context-specific initiatives. Future research may use this study and investigate contraceptive usage more comprehensively by employing a longitudinal design or by employing qualitative approaches to capture the lived experiences of women in disadvantaged positions, such as women with lower levels of education.

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