

International Journal of Research Studies in

Education



2025 Volume 14 Number 5
Special IJRSE Luminary Issue



ISSN: 2243-7703
Online ISSN: 2243-7711

International Journal of Research Studies in Education

Volume 14, Issue Number 5

2025

<http://consortiacademia.org/ijrse/>



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Abstracted & Indexed by:

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Inclusive education: Its impact on differently-abled students

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ISSN: 2243-7703
Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25803

Abstract

Education is a fundamental building block of any society. Educated people are encouraged to have better health outcomes, participate in civic life, and contribute more to the economy (Kibin, 2024). In inclusive education, students with disabilities are educated alongside peers who do not have disabilities in the mainstream educational setting. The data showed the answers of the twenty (20) teacher conversation participants; out of the twenty (20), the researchers got a sample of ten (10) for the in-depth interview—the same as for student conversation partners. The order of the participants is based on the order of the interview. The researchers used focused group discussion, in-depth interviews, and interview guide protocol to gather the data from the participants in the study. Data will be analyzed using Lehman's 3Cs. The study's findings highlight the diverse impact of inclusive education on children with disabilities. Peer connections, a sophisticated awareness of diversity, and the implementation of inclusive pedagogies in higher education settings are all critical to the success of inclusive education. Intentional changes to pedagogical approaches, a focus on student participation, and an acceptance of varied learning strategies are necessary to cultivate an inclusive learning environment in the classroom.

Keywords: inclusive education, differently-abled students, diversity, educational policies

Inclusive education: Its impact on differently-abled students

1. Introduction

Education is a fundamental building block of any society. Educated people are encouraged to have better health outcomes, participate in civic life, and contribute more to the economy (Kibin, 2024). In inclusive education, students with disabilities are educated alongside peers who do not have disabilities in the mainstream educational setting. The impact of inclusion, not just on students with disabilities but also on typical learners, must be examined if inclusive education is to spread (Rivi, 2022). Positive side-by-side interactions among differently-abled and typically-abled students can remove prejudices and give all students a personal voice in creative thought and production (Whiteland et al., 2020).

Moriña (2020) identifies that Inclusive education was initially developed for younger students before being adopted in higher education. Nevertheless, as more students with disabilities complete early education, the need to move towards inclusive practices in higher education is growing. Many universities are expanding disability support services, demonstrating a growing commitment to inclusion. Resources and training programs for faculty on inclusive pedagogy are becoming more prevalent, signifying a rise in the importance of inclusive practices. National and international policies promoting inclusive education drive universities to create more accessible learning environments (Sutherland et al., 2019).

According to the Commission on Higher Education (CHED), all higher education institutions must make significant accommodations for all students with disabilities through programs and policies. Inclusive Education models such as Universal Design for Learning (UDL), A framework for creating flexible learning environments that cater to a wide range of learners (McMaster & Web, 2021), spearheaded the implementation of inclusive education programs in which educational institutions embody students with special needs into in the regular program and learn side by side with peers in any school setting (Rosales, 2019). Furthermore, regular classroom learning towards inclusive education recognizes that students with disabilities have a fundamental right to attend mainstream schools. However, during the course of their studies, students with disabilities are less able to access relevant work experience that would help them make decisions and take action regarding their futures (Freedman, 2022). Inclusive education policies should be integrated into overall education planning (Hazar et al., 2019).

Silay Institute, the lone higher education institution in Silay City, is among the schools that advocate inclusive education. For instance, to cater to students with disabilities, it built resource rooms and accessible infrastructure to support learning for them. With the presented data, the present study determined the impact of inclusive education and the factors that affect its implementation. The results of this study will be used to make recommendations for differently abled students. Additionally, Silay Institute Incorporated offers a warm invitation and a welcoming teaching-learning environment where diversity is recognized and respected.

Objectives of the Study - This study explored inclusive education and its impact on differently-abled students at Silay Institute, Incorporated. Specifically, this study aims to: 1) enumerate the factors that affect the implementation of inclusive education; 2) identify the impact of inclusive education in terms of a. Educational Involvement/ Engagement; b. Holistic Development; c. Family Involvement; and 3. recommend creating a program for teachers and student-led clubs for differently-abled students' cultivation of shared meanings and values.

2. Review of Related Literature

The succeeding body of knowledge, data, and studies significantly affect the present study on the impact of inclusive education on differently-abled learners.

The Purpose of Inclusive Education - Inclusive education aims to support students with special needs, where the integration of a flexible learning environment is available. Quality inclusive education optimizes learners' potential for comprehensive development, with the goal of integrating into the educational system the formation of positive values, provision of knowledge, and development of skills for exceptional students in facing life's challenges. The honing of exceptional learners can be attributed to teachers who have also influenced the students' human development. Applying this perspective, the study documents the experiences of 43 university instructors with deaf students in inclusive classrooms at a higher education institution in the Philippines. Teachers report a need for more expertise in teaching the primary curriculum. Teachers have been hindered in communicating with deaf and hard-hearing students and their parents by differences in sign language interpretation, which affects learner engagement. Professional training needs, including collaboration, consultation, assessment tools, and language skills, were reported to be needed by teachers in the services (Dela Fuente, 2021).

According to Banister and Valenzuela (2021), various strategies to expand educational access for children with special needs (CSN) are being implemented in the Philippines. Given the country's existing inclusive education definitions, policies, and programs, collaboration among stakeholders will be essential to achieving a more inclusive environment. This study arose from the need to learn more about inclusive education practices in the Philippines. The lack of a common approach to education in the country for all students suggests that a solid conceptual basis for inclusive education still needs to be established (Valenzuela, 2021). The lack of engagement with good IE practice makes it difficult to determine the appropriate level of Involvement that school community members should have in the education of children with special needs (CSN). To date, the practice of EI in primary education in the Philippines has been determined mainly by Order No. A move to ensure high-quality inclusion in Philippine schools is underway. However, the Special Education Act (Philippine Senate Bill 3002), which aims to define practice integration in general education schools, still needs to be considered. Understanding the educational requirements of children with disabilities and those from socially and economically disadvantaged backgrounds is the primary goal of this contemporary textbook. It clarifies and evaluates how these needs are now met at different educational levels and suggests improvements that could be made. To make the many facets of inclusive education more accessible, the book creates vital connections between theory and practice and explains a wide range of concepts (Delhi, 2019).

Challenges of Inclusive Education - An educational system where all students are welcomed and fully included socially and academically is called inclusive education. The inclusion process is proving difficult in developing nations like South Africa, which adopted it later than developed nations. The results showed that the main reasons educators felt unqualified to teach in an inclusive classroom were overcrowding, inadequate training, and a lack of knowledge and skills. The study will address the difficulties encountered in putting inclusive education into practice. Thus, regardless of disability, the study suggests that inclusive education should serve all students (Yolanda & Adu, 2021). There is still disagreement regarding the definition of inclusion and related inclusive practice models, even in the face of laws and policy demands about inclusive education (Ainscow & Sandill, 2010, 2020). Creating inclusive learning environments that are sustainable and productive in schools is a challenging but worthwhile task that calls for patience, perseverance, constant reflection, and a common goal. Practice changes, especially those about teachers' daily planning and pedagogy, are gradual and will be aided by continuous professional learning that is well-designed and integrated into the school environment, together with strong leadership and an inclusive school climate (McMillan et al., 2020).

Implementation of Inclusive Education - Dela Fuente (2021) states that Inclusive education aims to include students with special needs in flexible learning environments to obtain quality education that optimizes their overall developmental potential. This goal depends on teachers who can achieve inclusion in the education system by inculcating positive values, imparting knowledge, and developing good student skills to cope with life's challenges. Using a whole school approach allows essential areas to be planned for ahead of time and considered collaboratively. These areas include leadership, school values and culture, staff capacity building, and coordinated frameworks for inclusive practice (Jarvis et al., 2020). Attention to attitudes, values, and broad

understandings is fundamental; inclusion goals will only be achieved when principles are consistently enacted in daily classroom practice. At the classroom level, inclusion relies on teachers' willingness and capacity to apply evidenceinformed inclusive practices, such as Universal Design for Learning (UDL) and Differentiated Instruction (Van Miegheem et al., 2020).

Magna Carta for Disabled Persons - According to Magsambol (2022), Duterte signed a law promoting inclusive education for students with disabilities. The new law requires inclusive education for students with disabilities to be implemented in all public and private schools' early childhood and basic education curricula. Establishing an Inclusive Learning Resource Center (ILCR) for students with disabilities is also required by law. The Philippine government's law on providing comprehensive special education and the rights of learners highlights the potential for educational interventions to supplement learning and address educational, socio-emotional, and mental health needs amid the pandemic. Provides recommendations on legislative policy and emergency response services—number of students with disabilities during the pandemic (Toquero, 2020). The concept of human rights is continuously evolving. One of the developments in the field of human rights was the integration of fundamental human rights norms of the Universal Declaration of Human Rights (UDHR). This declaration was supplemented by two of his conventions: the International Convention on Civil and Human Rights. Additionally, the UDHR was supplemented by two human rights instruments: the ICCPR and the ICESR. On the one hand, the ICCPR generally regulates, for example, freedom of expression and freedom from fear (Rohman et al., 2020).

Accommodations for Differently-abled Students - According to Durian and Perena (2020), there is a lack of student facilities, policies, and support services to meet the needs of students with disabilities in higher education. The challenges students faced were due to the limitations of these regulations. Therefore, it was recommended that essential mobility and accessibility facilities be provided. Similarly, clear admissions policies and guidelines can be established to ensure equal opportunity, provisions for support services, and facilitate documentation of student disabilities.

Stigma and Discrimination - Many studies on how textbooks present disability-related material and analyze how that might affect students' perceptions of those with disabilities are available in the global literature (Gulya & Fehérvári, 2021). A substantial amount of research has been done on the negative stereotypes and disabilityrelated content in children's literature in the worldwide literature (Grzelka, 2019).

Differently-abled social Involvement - Nijs et al. (2023) stated that the high support needs of persons with profound intellectual and multiple disabilities hamper their possibilities for self-determination. It is essential that they understand what this means for the group to support their own determination. Social relationships between students with typical development and their disabled peers in inclusive education, as well as the relationship between social distance between age and gender and the type of disability. Social distance was lower among students with typical development; it increased emotional and physical closeness, suggesting that students with typical development do not typically reject social contact with their peers with disabilities. Students showed the most significant social distancing from peers who had autism and the least social distancing from peers who had sensory impairments (Jasmin, 2023).

Disability is a societal issue affecting a wide range of populations, with people experiencing disabilities accounting for 15% of the world's population (WHO, 2021). The diversity of literature on inclusive education reveals the complexity of practical implementation and highlights the similarities and differences. The importance of ensuring equal opportunities, creating flexible learning environments, and promoting good values is unanimous. The commitment to inclusion is reinforced by legislative measures such as the Magna Carta for Persons with Disabilities. However, effective implementation is hampered by challenges such as inadequate training and divergence of interpretation. Persistent debates on definitions and models of inclusive education and issues of stigma and discrimination call for ongoing research and dialogue. In order to ensure that all students have equal access to quality education, policymakers, teachers, and stakeholders need to resolve these issues.

Inclusive education supports students with special needs by integrating them into flexible learning environments that promote comprehensive development. This approach seeks to optimize learners' potential by incorporating positive values, providing knowledge, and developing essential skills to face life's challenges (Dela Fuente, 2021). This study underscores the importance of creating flexible learning environments that support the holistic development of students with special needs. Teachers play a crucial role in the success of inclusive education, as their influence significantly impacts the human development of exceptional learners. Implementing inclusive education in developing countries faces several challenges, including overcrowded classrooms, inadequate training, and insufficient knowledge and skills among educators (Yolanda & Adu, 2021). These issues are compounded by differing interpretations of sign language, which hinder effective communication with deaf and hard-of-hearing students (Dela Fuente, 2021).

Additionally, the need for a common approach to inclusive education in the Philippines highlights the need for a solid conceptual basis and better engagement with effective practices (Valenzuela, 2021). Higher education institutions must provide adequate facilities, policies, and support services to meet the needs of students with disabilities (Durian & Perena, 2020). This includes ensuring essential mobility and accessibility, establishing clear admissions policies, and offering support services to facilitate the documentation of student disabilities. To ensure equal access to quality education for all students, policymakers, educators, and stakeholders must address the challenges of inclusive education. Continuous training and skill development, enhanced safety protocols, customer education programs, team collaboration initiatives, and robust feedback mechanisms are essential for improving inclusive education practices. Inclusive education goals can be more effectively achieved by fostering collaboration and understanding among all school community members.

3. Method

Research Design - In this research, the researchers used the qualitative design. Qualitative research is based on interpretivist and constructivist paradigms and aims to develop a deep understanding of the research topic. Interpretivism aims to build knowledge by understanding individuals' unique perspectives and the meanings ascribed to those perspectives (Tomazewski et al., 2020).

Research Locale - Silay Institute is situated geographically at Rizal Street, Barangay III, Silay City, Negros Occidental, Philippines. It is one of the most well-known, prestigious, and esteemed private schools in Silay City, where anyone can enroll. Silay Institute, Incorporated is known for its unique structure and top-of-the-line facilities. Additionally, it is located near the road. As to its origin, Silay Institute was established in 1925 under the initiative of the late Dr. Luis Gamboa. It is about to celebrate its centennial year in 2025.

Participants of the Study - The number of participants will be identified through data saturation. Data Saturation is a concept developed by Glaser and Strauss in 1967 for the grounded theory approach (Hennink & Kaiser, 2022). Data saturation occurs when researchers repeatedly receive predictable information, and no new information is generated. Therefore, data saturation considerations focus on how much data is needed to determine what data is redundant. The importance of data saturation in qualitative research relies on a situated, time-limited, first-hand research practice that uses face-to-face, semi-structured interviews to sample and collect high-quality data.

Research Instrument - The researchers made use of an interview guide as an instrument to gather data. The interview guide was composed of open-ended questions to determine inclusive education's impact on differently-abled students in Silay Institute, Incorporated, Silay City. The interview guide provides questions that would address the study's objectives.

Data Gathering Procedure - The researchers gathered data from the study participants using focused group discussions, in-depth interviews, and an interview guide protocol. The open-ended questions interview guide was employed to gather data and saturation to identify the participants; moreover, the student researchers focused merely on the differently abled college students at Silay Institute, Incorporated. The interview guide was an

instrument for exploring inclusive education, its impact on differently abled students, and factors that had affected its implementation. It consisted of questions that would answer the research objectives.

Data Analysis Procedure - Data were analyzed using Lehman's 3Cs: a) They argue that to grasp the meaning of authenticity, we need to know who or what the reference point for determining authenticity refers to, either internal to the entity in question; b) The meaning of authenticity also depends on whom or what the authenticity judgment is directed; and c) It is necessary to consider the audience making the authenticity judgment and whether that audience is the same as the entity. It refers to the audience judging the authenticity of a product (Lehman et al., 2019).

Ethical Considerations - Respondents gave their free consent after being thoroughly informed that participation in the study would be voluntary and that they could opt-out at any time if they felt uncomfortable with the information collection process. They were guaranteed complete confidentiality, and no information revealing their identity was published or shared without consent. The raw data was manually shredded once the data was processed within a specified time frame.

Inclusion Criteria - This study's participants were the teachers and students of Silay Institute. Teachers enrolled in the academic year 2023-2024 met the following criteria: Teachers implementing inclusive education and students with various types of disabilities, such as low vision and locomotor disabilities.

4. Results

The data showed the answers of the twenty (20) teacher conversation participants; out of the twenty (20), the researchers got a sample of ten (10) for the in-depth interview. The same was true for student conversation partners. The order of the participants is based on the order of the interview. As a result, the researchers determined the impact of inclusive education among differently-abled students. Furthermore, the researchers were able to discover the factors affecting the implementation of inclusive education inside the classroom. Based on the results, researchers recommended school and teacher development and addressed the needs of the differently abled alongside the school program "Paaralang Walang Hangganan." The recommendation will stop the stigma or barriers between differently-abled students and others and enhance the professional development of educators as implementers of inclusive education. This plan can also be beneficial for the relationship of differently-abled students to others and as a way to attract or encourage other differently-abled students outside the institution. Silay Institute Inc. offers excellent accommodations for our differently-abled students.

The participants were classified into two (2) categories: teachers implementing inclusive education and differently abled students. The first category consisted of ten (10) teachers from various departments, and the second category consisted of ten (10) differently abled student participants.

Profile	Frequency		Percentage	
A. Educational Involvement	Yes	No	Yes	No
1. Did you take part in any extracurricular activities while you were in school?	15	5	75%	25%
2. Did you have access to learning materials that were accessible throughout your educational journey?	16	4	80%	20%
3. Did you participate in any group activities or collaborative projects during your education?	19	1	95%	5%
4. Did your teachers provide sufficient support in adapting to various learning environments?	18	2	90%	10%
5. Did you find the educational resources, such as materials provided by your teachers, to be inclusive and accessible?	16	4	80%	20%
B. Holistic Development				
1. Did you participate in physical activities or sports programs to improve your well-being?	12	8	60%	40%
2. Did you regularly engage in activities that support your emotional and mental well-being?	9	11	45%	55%
3. Were you being provided with educational experiences that are inclusive and foster your intellectual growth and curiosity?	15	5	75%	25%

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4. Did you participate in any programs or activities that help you develop your interpersonal skills and promote social interaction?	16	4	60%	40%
5. Were there any opportunities within your educational experiences that allowed you to contribute to environmental awareness and responsibility?	19	1	95%	5%
C. Family Involvement				
1. Are your loved ones actively engaged in understanding and supporting your unique needs and abilities?	15	5	75%	25%
2. Do your family members participate in discussions with your educators to ensure your educational plan meets your requirements?	14	6	70%	30%
3. Do your family members provide emotional support and encouragement to boost your confidence and well-being?	15	5	75%	25%
4. Do your family members actively seek information to understand your needs better?	11	9	55%	45%
5. Do your family members actively involve you in decision-making processes related to your life and plans?	15	5	75%	25%

Result of the questions asked to the participants, Sample (n=10) In the case of differently-abled students their educational involvement, out of twenty (20) students, fifteen (15) of them do take part in any extracurricular activities while they are in school, five (5) of them do not take part in any extracurricular activities due to personal reasons. Regarding access to learning materials that were accessible throughout their educational journey, the majority of the students, 95%, say they have access to learning materials. On the other hand, most students say that their teachers provide sufficient support in adapting to various learning environments. Regarding educational resources, 80% of the students say their teacher provided inclusive and accessible materials.

In the case of their participant's holistic development, out of twenty (20) students, twelve (12) of them participated in physical activities or sports programs to improve wellbeing, eight (8) of them did not participate in any physical activities because these students are a person with disabilities (PWD) or students in a wheelchair or with locomotor disability. On the other hand, 55% of students say that they do not regularly engage in activities supporting their emotional and mental well-being. In terms of educational experiences, 75% of the students say that they are provided with inclusive educational experiences that foster their intellectual growth and curiosity. Most students say they are participating in any programs or activities that help them develop their interpersonal skills and promote social interaction. On the other hand, most students say that there are opportunities within their educational experiences that allow them to contribute to environmental awareness and responsibility.

In the case of the student's involvement, 75% of the students said that their loved ones actively engaged in understanding and supporting their unique needs and abilities. In terms of active participation of their family in discussions, out of twenty (20) students, fourteen (14) students say yes that their family members participate in discussions with teachers to ensure that the educational plan meets the student requirements, four (4) of the students says that their family members do not participate in any discussion regarding for their educational plan. On the other hand, 75% of the students say that their family members provide emotional support and encouragement to boost their confidence and well-being. Eleven (11) out of twenty (20) students say that their family members actively seek information to understand their needs, and 75% say that their family members actively involve the students in the decision-making process related to the student's plans. Only five (5) students say their family members do not involve them in their decision-making process.

For Objective 1: Enumerate the factors that affect the implementation of inclusive education. The factors identified encompass a wide range of elements, including social relationships; as highlighted in Code 1, positive peer relationships were associated with higher academic achievement, better social-emotional outcomes, and reduced loneliness for students with disabilities (McDougall et al., 2020). Environmental considerations and family dynamics have a significant correlation between parents' and children's environmental attitudes and behaviors. External factors like geographical distance and technology also contribute to the challenges and opportunities of implementing inclusive education for differently abled students.

For Objective 2, Identify the impact of inclusive education on differently-abled students regarding their educational involvement. Zhang et al. 2020, found that students with intellectual disabilities in inclusive classrooms had significantly higher reading and math scores than those in segregated settings. Inclusive environments foster social interaction and collaboration, leading to better communication skills, empathy, and emotional regulation for disabled and non-disabled students. (Fryberg et al, 2021). Holistic Development and Family Involvement. Increased sense of empowerment and belonging: When families see their children included and valued in school, they feel more empowered and involved in their education. A 2023 study by Spooner et al. found that families of students with disabilities in inclusive schools reported higher satisfaction and collaboration with teachers than in segregated settings. It is important to note that the effectiveness of inclusive education can vary depending on various factors, such as the quality of implementation, teacher training, and available resources. However, the growing body of research consistently demonstrates the positive impact of inclusive education on the educational involvement, holistic development, and family involvement of differently-abled students (Rintala et al., 2020).

For Objective 3, the researchers recommend a development program for teachers and student-led clubs for differently-abled students' socialization. Provide comprehensive training on inclusive pedagogy, addressing diverse learning needs, and differentiation strategies (Avramidis & Kalyva, 2020). Collaborate with external organizations to provide club members with meaningful social interaction and engagement opportunities. (For example, a 2023 study by Gilson et al. showed that community engagement activities in inclusive clubs promoted positive identity development and social confidence). Successful development programs require ongoing evaluation, feedback, and adaptation to specific school contexts and student needs. Collaboration between teachers, students, families, and communities is crucial for creating truly inclusive and empowering experiences for all.

This study offers insightful information about the experiences of educators implementing inclusive education and students with impairments at the Silay Institute. It draws attention to their struggles, hidden battles, desire to learn and improve the instructors' methods of instruction with adequate training, and the significant advantages of the school program. The suggestions provide helpful direction for enhancing program productivity and accessibility, which would eventually help teachers and differently-abled students' educational progress. This study provides insightful information and suggestions that can guide school and government efforts to increase differently-abled students and teachers' professional development access to and achievement in education.

5. Discussion

This study aimed to know inclusive education and its impact on differently-abled students at Silay Institute Inc. Specifically, this study aimed to Enumerate the factors that affect the implementation of inclusive education. Identify the impact of inclusive education on differently-abled students in terms of their educational involvement, Holistic Development, and Family Involvement. Recommendation for a development program for teachers and student clubs for differently-abled students' socialization.

For Objective 1, Enumerate the factors that affect the implementation of inclusive education. The factors identified encompass a wide range of elements, including social relationships; as highlighted in Code 1, positive peer relationships were associated with higher academic achievement, better social-emotional outcomes, and reduced loneliness for students with disabilities (McDougall et al., 2020). Environmental considerations, family dynamics, and external factors like geographical distance and technology. These factors collectively contribute to the challenges and opportunities associated with implementing inclusive education for differently-abled students.

For Objective 2, Identify the impact of inclusive education on differently-abled students in terms of their educational involvement. Zhang et al. 2020, found that students with intellectual disabilities in inclusive classrooms had significantly higher reading and math scores than those in segregated settings. Inclusive environments foster social interaction and collaboration, leading to better communication skills, empathy, and

emotional regulation for both disabled and non-disabled students. (Fryberg et al, 2021). Holistic Development and

Family Involvement. Increased sense of empowerment and belonging: When families see their children included and valued in school, they feel more empowered and involved in their education. A 2023 study by Spooner et al. found that families of students with disabilities in inclusive schools reported higher levels of satisfaction and collaboration with teachers compared to those in segregated settings. It's important to note that the effectiveness of inclusive education can vary depending on various factors, such as the quality of implementation, teacher training, and available resources. However, the growing body of research consistently demonstrates the positive impact of inclusive education on the educational involvement, holistic development, and family involvement of differently-abled students (Rintala et al., 2020).

For Objective 3, Recommendation for a development program for teachers and studentled clubs for differently-abled students' socialization. Provide comprehensive training on inclusive pedagogy, addressing diverse learning needs, and differentiation strategies (Avramidis & Kalyva, 2020). Collaborate with external organizations to provide meaningful social interaction and engagement opportunities for club members. (For example, a 2023 study by Gilson et al. showed community engagement activities in inclusive clubs promoted positive identity development and social confidence). Successful development programs require ongoing evaluation, feedback, and adaptation to specific school contexts and student needs. Collaboration between teachers, students, families, and communities is crucial for creating truly inclusive and empowering experiences for all.

This study offers insightful information about the experiences of educators implementing inclusive education and students who have impairments at the Silay Institute. It draws attention to their struggles, their hidden battles, their desire to learn and improve the instructors' methods of instruction with adequate training, and the major advantages of the school program. The suggestions provide helpful direction for enhancing program productivity and accessibility, which would eventually help teachers and differently-abled students' educational progress. This study provides insightful information and suggestions that can guide school and government efforts to increase differently-abled students and teachers' professional development access to and achievement in education.

Themes	Sub-themes
1. Educational Involvement	• Peer Relationship • Pedagogical Approaches and Educational Strategies
2. Holistic Development	• Environmental Impact and Societal Understanding • Expression of Creativity and Success • Development opportunities
3. Family Involvement	• Family as a support system • Open communication with the family
4. External Factors	• Geographical Distance • Technological advances
5. Recommendations	• Enforcement of government and school policies • Professional Development • Resource inadequacy

Thematic Analysis. The data shows the diverse range of experiences of differently-abled students and teachers, providing insight into the complex interactions between the difficulties encountered and the numerous approaches taken by the teachers while providing inclusive education to all students, especially to those differently-abled students.

5.1 Educational Involvement.

Objective 1. The factor that influences the implementation of inclusive education regarding educational involvement

Teachers stated that factors influencing the implementation of inclusive education include students' understanding of diversity and institutions. They also noted that a key factor in enhancing education or learning is students' ability to form strong relationships with their peers and teachers. This suggests that the respondents believe students' capacity to build strong connections with their instructors and classmates is a major component. Fostering solid relationships in both areas is vital for creating an environment that supports academic progress.

Pedagogical Approaches and Educational Strategies: Emphasizing student engagement in learning involves various pedagogical approaches and educational strategies. These dynamic elements, aimed at maximizing learning outcomes and fostering deep understanding, include the intentional choice of teaching methods, innovative curriculum design, and modern techniques used in the classroom. One of the conversation partners remarked, "I can ensure an inclusive learning environment for all students by providing them the opportunity to enhance learning and employ teaching strategies that cater to the different needs of students." Stentiford and Koutsouris (2021) state that inclusive pedagogies have been recommended to address the increasing diversity among students in university classrooms.

5.2 Holistic Development

Objective 2. Factor that affects the implementation of inclusive education in terms of Holistic Development

Environmental and Societal Impact. Students with disabilities can impact the environment and society. Institutions of higher learning must modify their facilities and resources to meet the requirements of a diverse student body while nurturing inclusivity. Empowering students with disabilities via education promotes a more equal society by dispelling misconceptions and building workforce that celebrates variety and recognizes each person's talents and perspectives. One teacher stated, "The school's overall environment, culture, and attitude towards diversity and inclusion play a significant role." They also added, "A supportive environment encourages teachers to embrace Differently-abled students who often face discrimination and prejudice based on negative stereotypes and societal misconceptions about their abilities" (UNESCO, 2020). Expression of creativity and Success. Despite various challenges, differently abled students possess an immense creative potential that can be expressed in diverse and captivating ways. Understanding and nurturing this creativity is crucial for their overall development and wellbeing. One of the Student partners said, "... there is an art subject, so we draw and paint in that way, we express our creativity." Creative activities provide an outlet for expressing emotions, reducing stress, and promoting mental health (Sharma et al., 2020).

5.3 Family Involvement

Objective 3. The factor that affects the implementation of inclusive education in terms of Family Involvement

Family as a support system plays an essential role in the educational success of all students, but it becomes especially critical when supporting students with diverse abilities. These students often need extra support and resources beyond what schools can offer, making family engagement a crucial piece of the puzzle. Student A expressed, "... we are not from here. We have guardians. They are the ones who encouraged us, as they said, "Go ahead." They serve as a second family to us." Family-based interventions to promote social and emotional learning in children with disabilities by McGoey et al. (2021).

5.4 External Factors

Objective 4. Enumerate the factors that affect the implementation of inclusive education. Geographical

Distance. The geographical distance between a student's home and school can significantly impact their educational experience, especially for students with Geographical Distance. The geographical distance between a student's home and school can significantly impact their educational experience, especially for students with disabilities. This barrier presents unique challenges that can hinder access, inclusion, and academic success. One of the Teacher conversation partners said, "... for me, the external factors that may affect the process of inclusive education is if the students are quite far from the school location, travel time is one of the most considerate reasons." Remote locations can restrict opportunities for social interaction and peer support for students with disabilities, potentially leading to feelings of isolation and impeding their social and emotional growth (UNESCO, 2020). Technological Integration. The educational landscape is swiftly evolving due to technological integration, offering significant potential for students with disabilities. Innovations such as specialized hardware and software, AI-powered tools, and immersive technologies enable differently-abled learners to overcome obstacles and reach their full potential. According to teachers, the key factors influencing inclusive education are the availability of resources for diverse students and technology integration. A 2023 study by Chang et al. examined the effect of adaptive learning technologies on the academic performance of students with learning disabilities. They found that these technologies significantly improved students' reading comprehension, vocabulary acquisition, and writing skills. The study highlights the potential of technology to personalize.

5.5 Recommendations from the Conversation Partners

Objective 5. Develop recommendations to create a program for teachers' enhancement seminars and student-led clubs for differently-abled students

Enforcement of government and school policies. Effectively enforcing these policies is essential for the success of inclusive education. It ensures adherence to regulations, allocates funds wisely, and promotes equity within the educational system, creating an environment that nurtures each student's growth. The government supports inclusive education for students with disabilities, enabling other students to learn in the same environment. Policy implementers must uphold government policies. Professional development involves the ongoing acquisition and enhancement of the skills, knowledge, and abilities necessary for effective growth in one's chosen field. It involves intentional actions to keep up with industry trends, refine skills, and encourage personal growth, such as attending conferences, workshops, training sessions, or pursuing further education. Individuals need to participate in professional development to thrive in their careers and adapt to changing work environments.

6. Conclusions

In conclusion, the study's findings highlighted the diverse impact of inclusive education on children with disabilities. Peer connections, a sophisticated awareness of diversity, and the implementation of inclusive pedagogies in higher education settings are all critical to the success of inclusive education. Intentional changes to pedagogical approaches, a focus on student participation, and an acceptance of varied learning strategies are necessary to cultivate an inclusive learning environment in the classroom. Additionally, the study emphasized the need for environmental and sociological changes inside educational institutions to support the complete development of students with disabilities. Encouraging confidence and skill development in these students requires acknowledging their creative potential and offering various development options. Family support and open communication are essential, as family involvement is crucial to the academic success of students with disabilities. Additionally, external factors like technological advancements and geographic distance significantly impact the educational experiences of these learners. The study's conclusions suggested that effective policy enforcement, prioritizing teachers' professional development, and resolving resource shortages are essential. The amalgamation of these suggestions aids in establishing a more welcoming educational setting that meets the particular requirements of students with disabilities.

In conclusion, this study offered a critical new understanding of the complicated connections between

variables affecting the effectiveness of inclusive education for students with disabilities. It deepened our understanding of the challenges faced by students with disabilities. It offered valuable recommendations for creating an inclusive educational environment that promotes family involvement, holistic development, and adaptability to external influences. This study lays a foundation for future efforts to enhance the educational experiences of students with disabilities and adds to the ongoing discussion on inclusive education.

Recommendations - Based on the study's findings, the researchers recommend the following:

- **Differently-abled students.** To encourage good peer connections and increase diversity awareness, participate in inclusive projects and suggest student-led clubs.
- **Silay Institute Inc.** Incorporating study findings into teacher training through frequent workshops will enable adequate support. Implement study recommendations for improved inclusive programs and better facilities to accommodate varied student requirements.
- **Teachers.** Incorporate diversity training into professional development programs to advance cultural competency.
- **Future Researchers.** Examine additional difficulties that differently-abled students encounter, considering a range of requirements and limitations. Examine the long-term effects of interventions in inclusive education on academic and individual outcomes. Consider using technology integration to help differently abled students in various learning situations with their difficulties.

Translational Implications - The study's observations and recommendations have translational implications highlighting concrete measures that Silay Institute Incorporated. may take to establish a more inclusive learning environment. Specifically, there are doable tactics that can immediately improve positive peer relationships and increase knowledge of diversity within Silay Institute Incorporated. These include actively incorporating differently-abled students in inclusive efforts, suggesting student-led organizations, and exhibiting their creative potential. Fostering candid communication with family members and pushing for an institutionwide family support network goes beyond one-on-one conversations to create a more comprehensive support network for students with disabilities. This implies understanding families' critical role in these students' academic and personal development. The institute's dedication to implementing inclusive education programs, upgrading facilities, and offering teacher training seminars demonstrates a proactive approach to meeting the various requirements of students with disabilities. The institute's ongoing financial support for scholarships and pursuit of outside partnerships demonstrate its commitment to improving financial assistance possibilities, ensuring that students with disabilities are not hindered by financial constraints, and promoting equity and accessibility. This commitment, alongside supporting government and educational policies for inclusive education and implementing adjustments at the institutional level, ensures a sustainable, inclusive learning environment at Silay Institute Incorporated.

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Register ng Wikang de Bangka sa mga piling lungsod ng Zamboanga del Norte: Isang kalipunan

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ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25843

Abstract

Ang pangunahing layunin ng pananaliksik na ito ay makabuo ng leksikograpiya ng mga register ng wikang de Bangka sa Zamboanga del Norte batay sa katawagan at deskripsyon ng mga isda; katawagan ng mga kagamitan sa pangangisda at klasipikasyon ng mga isdang makukuha ayon sa iba't ibang uri ng kagamitan sa pangangisda para magamit, mapreserba at maipamana sa mga susunod na henerasyon ang mga register ng wikang de Bangka sa mga piling pook ng Zamboanga del Norte. Ang pananaliksik ay ginamitan ng kwalitatibong pamamaraan na uri ng pananaliksik. Ang mga instrumentong ginamit sa pangangalap ng datos ay obserbasyon, pakikipanayam o (FGD) at talatanungan at ang mga kalahok ay napili sa pamamagitan ng purposive sampling. Batay sa resulta ng pag-aaral, natukoy ang katawagan at deskripsyon ng mga isda, katawagan at deskripsyon ng mga kagamitan sa pangangisda at klasipikasyon ng mga isdang nahuhuli ayon sa gamit at ayon sa haba ng karanasan, minanang tradisyon at kinagisnang kultura. Iminumungkahi ng pag-aaral na maipakilala ang register ng wikang de-bangka sa lokal, nasyonal at internasyonal na larang para sa preserbasyon ng pamanang kultura at tradisyon ng wikang de bangka sa pamamagitan ng distribusyon ng awtput ng pag-aaral sa lahat ng opisina ng gobyerno maging sa social media.

Keywords: register, wikang de-bangka, isang kalipunan, katawagan ng mga isda, katawagan ng mga kagamitan sa pangangisda

Register ng Wikang de Bangka sa mga piling lungsod ng Zamboanga del Norte: Isang kalipunan

1. Introduksiyon

Kahalagahan ng Pag-aaral - Isa sa mandato ng Saligang Batas ng Konstitusyon ng Pilipinas Artikulo XIV Seksyon 7 ay ang paglinang, pagpapayabong at pagpapayaman ng wikang pambansa ng Pilipinas na nasasalig sa ibat-ibang wikain sa Pilipinas. Kung kaya, ang konggreso ay nagpatupad ng isang batas para sa pangangasiwa ng wikang pambansa. Ayon sa batas Republika Blg 7104 naitatag ang Komisyon ng Wikang Filipino o KWF noong Agosto 14, 1991 para sa pangangasiwa sa pagpapayabong ng wikang pambansa. Isa sa mga tungkulin ng Komisyon ng wikang Filipino (KWF) ay repositoryo ng mga wika at kultura. Ang preserbasyon, pagpapakilala at pagdebelop ng kulturang sakop ng karagatan o register ng wikang de bangka ay isang malaking hakbang para maisakatuparan ang adhikain ng Komisyon ng Wikang Filipino alinsunod sa tuntunin ng batas.

Pangunahing Layunin - Ang pangunahing layunin ng pananaliksik na ito ay makabuo ng leksikograpiya ng mga register ng wikang de Bangka sa Zamboanga del Norte batay sa katawagan at deskripsyon ng mga isda, katawagan ng mga kagamitan sa pangangisda at klasipikasyon ng mga isdang makukuha ayon sa iba't ibang uri ng kagamitan sa pangangisda para magamit, mapreserba at maipamana sa mga susunod na henerasyon ang mga register ng wikang de bangka sa piling pook ng Zamboanga del Norte.

Kaugnay na Literatura at Kaugnay na Pag-aaral - Ang bansang Pilipinas ay mayroong humigit-kumulang 135 na wika at dayalek (KWF, 2024). Isa sa mga dahilan ng pagkakaroon ng maraming wika sa isang bansa ay dahil sa heyograpiya o lokasyon nito. Ang pagiging hiwalay na kapuluan ng bansa ay isang dahilan ng pagkakaroon ng iba't ibang anyo at hugis ng wika sa iba't ibang kapuluan sa Pilipinas. Ang ganitong pangyayari ay nagpapaliwanag ng pagkakaroon ng iba't ibang barayti ng wika na katulad ng register ng wikang de Bangka sa Zamboanga del Norte na kailangang unawain. Nagkakaroon ng varyasyon maging sa mga katawagang kultural dahil sa ganap na naisasakultura ang mga gawaing kultural na napahiwalay sa maliit na pangkat.

Pinatotohanan ito sa nagawang pag-aaral ni Gorumba (2021) na pinamagatang “Morpholohikal na Pagsusuri sa Wikang Ceb-Waray”, ang Pilipinas ay magkahiwa-hiwalay na pulo at hindi maiiwasan kahit na kasama sa rehiyon ay may iba't ibang register ng wika at may pagkakaiba ng mga termino at salita kaya nagkaroon ng partikular na katawagan ang wikang ginagamit ng mga tao na bumubuo sa rehiyon. Sinang-ayunan naman ito sa nagawang pag-aaral ni Hernandez (2020) na pinamagatang “Language Register in Dried Fish Preservation in Calatagan, Batangas, Philippines” na mayroong register ng wika na ikinategorya ayon sa klase ng tagapagsalita, lokasyon, heograpikal, trabaho at iba pa.

2. Pamamaraan ng Pag-aaral (Methodology)

Ang pananaliksik ay ginamitan ng kwalitatibong pamamaraan na uri ng pananaliksik. Ang mga instrumentong ginamit sa pangangalap ng datos ay obserbasyon, pakikipanayam o (FGD) at talatanungan. Ang mananaliksik ay gumamit ng talatanungan na naglalaman ng mga larawan ng mga isda at mga kagamitan sa pangangisda habang nakikipanayam para mapadali ang pagkuha ng mga datos sa katawagan at deskripsyon ng mga isda na nasa talatanungan at gayundin sa katawagan ng mga kagamitan sa pangangisda na nasa larawan din ng talatanungan. Ang balidasyon ng instrumento o talatanungan na ginamit sa pananaliksik ay dumaan sa mga eksperto kung kaya ang mga talatanungan na nabuo at ginamit ng mga mananaliksik ay maayos at balido.

Ang pananaliksik na ito ay naganap sa mga piling lungsod ng Zamboanga del Norte, Ikalawang Semestre ng Taong Panuruan 2022- 2023 hanggang Unang Semestre, Taong Panuruan 2023-2024. Ang pananaliksik ay naganap sa Barangay ng Tamil sa lungsod ng Jose Dalman at Barangay Barra sa Siyudad ng Dipolog na

matatagpuan sa hilagang kanluran sa probinsya ng Zamboanga Del Norte. Ang mga kalahok ng pananaliksik ay ang mga piling mangingisda ng Barangay Tamil sa lungsod ng Jose Dalman at Barangay Barra sa Siyudad ng Dipolog. Ang naging batayan sa pagpili ng naging kalahok na mga mangingisda sa Brgy. Tamil, Jose, Dalman at kalahok na mula sa Brgy. Barra, Dipolog City ay ayon sa edad mula sa pinakamatanda hanggang sa pinakabata na mangingisda, bilang ng taon ng paninirahan sa kung saan sila nangingisda, at ang bilang ng taon sa pagiging mangingisda na ginamitan ng purposive sampling na pamamaraan ng pagpili.

Ang mananaliksik ay gumawa ng Work Plan o GAANT chart (Apendiks A) para maging gabay sa pangangalap at pagkolekta ng datos. Para makakuha ng Certificate of Instrument Validation ang mga mananaliksik ay pumunta sa Bureau of Fisheries and Aquatic Resources (BFAR)- Zamboanga del Norte noong Setyembre 1, 2023 at kasunod na pinuntahan ng mga mananaliksik ay ang dalawang guro sa agham ng Jose Rizal Memorial State University- Dipolog Campus. Ang mananaliksik ay pumunta rin sa Brgy. Tamil, Jose Dalman noong ika- 20 ng Oktubre, 2023 upang humingi ng permiso sa Punong Barangay at noong ika- 25 ng Oktubre, 2023 ay pumunta ang mananaliksik sa Pangulo ng mga mangingisda upang humingi ng permiso sa pamamagitan ng liham pahintulot sa Punong barangay at Pangulo ng mangingisda kung kalian gagawin ang surbey at pakikipanayam. Naisakatuparan ang mga gawain ng pangangalap at pagkolekta ng datos at maayos na nailahad sa mga panelist ang pag-aaral para sa mga kawastuhan at suhestiyon na ikabubuti ng pag-aaral.

Ang mga mananaliksik ay naghanda ng gabay na tanong para sa Focus Group Discussion (FGD) at pumunta noong ika- 7 ng Enero, 2024 sa Brgy. Tamil, lungsod ng Jose Dalman, Zamboanga del Norte upang doon unang isagawa ang aktwal na surbey na batay sa napagkasunduang araw sa paggawa ng surbey at gayundin sa Brgy. Barra na naisagawa ang aktwal na surbey noong Enero 9, 2024. Ang mga mananaliksik ay gumamit ng rekorder upang mas makuha ang kanilang mga kasagutan at mas maging madali ang pag-aanalisa. Ang pananaliksik ay natapos at nailahad sa mga panelist noong Abril, 2024.

3. Resulta ng Pag-aaral

Ang mga nakalap na datos mula sa isinagawang sarbey at ang mga voice recorded ng pakikipanayam ng mga mananaliksik sa mga kalahok ay naitala kung saan parehong hinango ang konsepto at phenomenal na tema ng pag-aaral. Ang mga naging tugon ng mga mangingisda na naging kalahok ay nilapatan ng masusing interpretasyon o analisis.

3.1 Paglalahad, Interpretasyon, at Pagpapakahulugan ng Resulta ng Pag-aaral

Napag-alaman ng mananaliksik batay sa pakikipanayam o Focus Group Discussion na magkapareho ang naging tugon ng mga kalahok na mula sa Brgy. Barra, Syudad ng Dipolog at Brgy Tamil, Jose Dalman ng mga katawagan at deskripsyon ng mga isda at kagamitan maging sa klasipikasyon ng mga isdang makukuha ayon sa gamit ng pangangisda na ang dahilan ay maaaring dahil magkalapit lang ang dalawang piling lugar ng pag-aaral. Sinang-ayunan ito sa pag-aaral nina Si,et. al., (2023) na pinamagatang “Patterns in fish naming ability in two fishing communities of Myanmar”, na maaaring magkaroon ng mataas na antas ng pagkakaiba-iba sa tradisyonal na kaalamang ekolohikal lalo na sa katawagan sa mga isda at sa pangangisda ang isang komunidad mula sa iba’t ibang malalayong lugar. Ang pagkakaroon ng lokal na kaalaman ayon sa katawagan sa pangangisda sa loob isang komunidad ay hindi magkaiba sapagkat ito na ang nakanasanayan nilang mga katawagan sa mga isda na naging parte na ng kanilang kultura bilang isang mangingisda ngunit pagdating naman sa ibang lugar ay mayroon din silang sariling katawagan ng mga isda na nakabatay sa kanilang nakasanayang katawagan.

3.2 Katawagan at deskripsyon ng mga Isda

Mapapansin sa naging tugon ng mga kalahok na ang katawagan at deskripsyon ng mga isda ay natutukoy ayon sa haba ng karanasan ng mga kalahok at ayon din sa anyo, hugis, laki, at kulay ng isda. Ayon sa mga kalahok na mangingisda na lahat ng mga nabuong katawagan ng mga isda ay nakuha at natutunan din nila mula sa mga nakatatanda.

Sinusuportahan ito sa pag-aaral nina Suatengco at Joaquin (2019), nabanggit sa kanilang pag-aral na sa pamamagitan ng lokal na kaalaman ay naipakita nito ang pinagmulan ng wika at ang pagkakaroon ng mga impormasyon ayon sa pagkamalikhaing gamit ng wika na naaayon sa katangian na pinaggagamitan ng isang wika at dahil ang wika ang nagiging representasyon ng mga karanasan sa kapaligiran. Pinapangalawahan naman ito sa pag-aaral nina Nakagawa, et. al., (2021) na ang *local ecological knowledge* ay nagmula sa karanasan ng mga tao sa pakikipag-ugnayan na may mga sistemang ekolohikal sa kanilang pang-araw-araw na buhay at ang pagkakaroon ng katawagan ng mga isda ay isang lokal na kaalaman na maaaring napapaloob sa kontekstong pangkasaysayan at kultural sa loob ng isang lokal na pamayanan. Naniniwala rin ang mga kalahok na lahat ng mga nabuong katawagan ng mga isda ay nakuha at natutunan din nila mula sa mga nakakatanda. Pinatunayan ito sa pag-aaral nina Ramires, et. al., (2015) na ang kaalaman sa katawagan sa mga isda ay maaaring ituring bilang isang intelektwal na tradisyon, na maaring mailipat sa mga tao at sa pagitan ng mga henerasyon kung kaya naipamamana ng mga matatandang mangingisda ang katawagan ng mga isda na malimit nilang mahuhuli.

3.3 Katawagan ng mga kagamitan sa pangngisda

Batay sa mga naging tugon ng mga kalahok, ang dahilan sa pagkakaroon ng kaalaman tungkol sa mga katawagan sa mga kagamitan sa pangngisda ay dahil sa pangangailangan ng pagagamitan ng mga ito; kung paano ito ginagamit at ano ang pinaggagamitan nito. Sinusuportahan ito sa pag-aaral ni Singh (2021) dahil nabanggit sa kanyang pag-aaral na mayroong iba't ibang uri ng mga gamit sa pangngisda na may iba't ibang sukat at haba, kasama na ang lugar kung saan ito gagamitin at karamihan sa mga gamit sa pangngisda ay ginamit sa lahat ng panahon at ang iilan ay ginagamit lalo na kapag ang antas ng tubig ay natuklasang angkop para sa kanilang paggamit at nakadepende rin sa mga katangian ng mga isda na kung saan pinagbabatayan ayon sa wastong paggamit nito. Ang mga katawagan ng mga kagamitan sa pangngisda ay namana rin mula sa mga matatandang mangingisdang gumamit nito. Ang mga kaalaman sa katawagan ng mga kagamitan sa pangngisda mula sa mga naunang mangingisda na hanggang sa kasalukuyan ay gayudin ang katawagan nito. Pinatunayan ito sa pag-aaral ni Abdullah (2015) na ang lokal na kaalaman ay masasalamain ayon sa paraan ng paggamit ng mga mangingisda batay sa likas na kapaligiran at ang mga katawagan sa mga kagamitan sa pangngisda at ang mga paraan ng paggamit nito ay minanang mga alituntunin na ibinigay ng mga ninuno na sumasalamain sa kultural na karunungan, pang-ekonomiyang karunungan at heyograpikal na karunungan kung kaya naipamamana rin sa mga matatandang mangingisda sa mga batang mangingisda ang mga kagamitan sa pangngisda.

3.4 Klasipikasyon ng mga isdang makukuha ayon sa iba't ibang uri ng kagamitan sa pangngisda

Likas sa mga mangingisda ang pagkakaroon ng iba't ibang huli ayon sa kagamitan at sa paraan ng paggamit nito katulad na lamang ng mga kagamitan sa pangngisda na pangkamay, mga bitag, at lambat. Bawat kagamitan ay may taglay na kakayahan na makahuli ng iba't ibang uri ng isda batay sa wastong paraan at sapat na kaalaman kung paano gamitin ang iba't ibang uri ng mga kagamitan sa pangngisda.

Talahanayan 1

Mga Tema ng Pag-aaral

Tema	Pangunahing Kategoriya	Pangalawang Kategoriya
Katawagan at deskripsyon ng mga isda	1.a.Pamanang kultural	Narinig at natutunan ang mga katawagan ng mga isda mula sa matatandang mangingisda. Naipapasa ng mga matatandang mangingisda sa mga batang mangingisda ang katawagan ng mga isda sa piling lugar na kinabibilangan. Ang katawagan ng mga isda ay nagsisilbing kasaysayan at pagkakilanlan ng wikang de bangka na magiging representasyon ng nakaraan, kasalukuyan at hinaharap.
	1.b. Batay sa Karanasan	Ang karanasan sa pangngisda ay nagbibigay ng kaalaman sa mga mangingisda sa pagtukoy ng katawagan at deskripsyon ng mga isda. Ang kinagisnang gawi o karanasan ay sapat na kaalaman para matukoy ang katawagan at deskripsyon ng iba't ibang uri ng isda na batay sa kulay, laki at hugis ang pinagbabatayan ng

Katawagan ng mga kagamitan sa pangingisda	2.a. Pang-ekonomiyang karunungan	deskripsyon. Pagkabuo ng katawagan ng mga kagamitan sa pangingisda dahil sa pangangailangan at pag-aaral ng paraan ng paggamit nito.
	2.b. Pangheyograpikal na karunungan	Nabuo ang mga katawagan sa mga kagamitan sa pangingisda dahil sa kinagisnang gawi at karanasan na kalimitan sa mga mangingisda ay nakataira sa tabi ng dagat.
	2.c.Kultural na Karunungan	Nakuha ng mga mangingisda ang katawagan ng mga kagamitan sa pangingisda at sa paraan ng paggamit nito dahil naituro at naipamana ang katawagan at gamit nito mula sa mga matatandang mangingisda.
Klasipikasyon ng mga isdang makukuha ayon sa iba't ibang uri ng kagamitan sa pangingisda	3.a. Tamang kagamitan sa pangingisda	Paggamit ng angkop na kagamitan na naayon sa kapaligiran ng tubig.
	3.b. Pamanang kultural	Natutukoy ang iba't ibang uri ng isda ayon sa iba't ibang uri ng kagamitan sa pangingisda dahil naituro at naipamana ang mga paraan at paggamit nito para sa ibat ibang uri ng isda mula sa mga matatandang mangingisda.
	3.c. Sapat na kaalaman at karanasan	Pagkakaroon ng sapat na kaalaman sa paggamit ng iba't ibang uri ng kagamitan sa pangingisda. Nakakuha ng ideya kung saan makukuha ang uri ng isda ayon sa kung anong uri ng kagamitan sa pangingisda ang gagamitin.

3.5 Pala- palagay na nabuo sa pag-aaral (Assumption)

Batay sa mga natuklasan tungkol sa mga katawagan ng mga isda, katawagan ng mga kagamitan sa pangingisda, at klasipikasyon ng isdang makukuha ayon sa iba't ibang uri ng mga kagamitan sa pangingisda, ang pala-palagay ng kasalukuyang pag-aaral ay binalangkas:

KulPaKa: Kultural; Pamana; Karanasan

Kultural. Ang mga katawagan sa register ng wikang de bangka tulad ng katawagan at deskripsyon ng mga isda, katawagan ng mga kagamitan sa pangingisda, at klasipikasyon ng mga isdang makukuha ayon sa iba't ibang uri ng kagamitan sa pangingisda ay maituturing na isang likas na proseso ng paglikha at pagpapanatili ng kultural na kaugalian. Ang mga katawagan na ginamit sa register ng wikang de bangka ay maaaring mayroong kultural na konteksto na nauugnay sa mga tradisyon, paniniwala, at kaugalian ng komunidad ng mga mangingisda. Ang gawaing pangingisda ay maaaring magkaroon ng espesyal na kahalagahan o kahulugan sa loob ng kultura ng mga mangingisda, na kung saan ay maaaring maipapahayag sa pamamagitan ng katawagan. Ang paggamit ng partikular na register ng wika ng mga mangingisda ay maaaring maging bahagi ng kanilang identidad at pagiging bahagi ng isang komunidad. Ito ay maaaring magpapalakas sa kanilang pagkakakilanlan bilang mga mangingisda at pagpapakita ng kanilang ugnayan sa kanilang kapaligiran.

Pamana. Ang kontekstwal na kasaysayan na tumutukoy sa sosyal, ekonomikal, politikal at panrelihiyon ay may malaking impluwensya sa pagsulat at pagbuo ng register ng wikang de bangka ayon sa katawagan at deskripsyon ng mga isda, katawagan ng mga kagamitan sa pangingisda, at klasipikasyon ng mga isdang makukuha ayon sa iba't ibang kagamitan sa pangingisda. Ang register ng wikang de bangka noong kapanahunan ng mga matatanda ay naipapamana ngayon sa mga batang mangingisda na walang pagbabago sa kaligiran, kaugalian, at kondisyon na umiiral sa bawat henerasyon. Ang pagpapasa ng kaalaman mula sa henerasyon sa henerasyon ay maaaring magresulta sa pagpapanatili at pagpapalawak ng mga terminolohiyang nauugnay sa mga register ng wikang de bangka. Ang mga nakatatanda sa komunidad ay maaaring nagbigay ng mga katawagan at kahulugan sa mga bagong henerasyon, na nagbibigay ng patuloy na koneksyon sa kanilang mga pinagmulan at minanang alituntunin. Ang bawat kagamitan sa pangingisda ay may sariling terminolohiya at teknikal na pangalan na hindi basta-basta matutunan ng sinumang hindi bahagi ng komunidad.

Karanasan. Ang karanasan ay nagbibigay ng sapat na kaalaman. Ang register ng wikang de-bangka ng mga

mangingisda ay maituturing na mula sa karanasan dahil ito ay nakabatay sa pang-araw-araw na gawain at pakikipamuhay sa dagat. Ang paggamit ng mga katawagan ng mga isda at pagtukoy sa deskripsyon ng iba't ibang uri ng isda, pagtukoy sa katawagan ng mga kagamitan sa pangingisda, at pagtukoy sa klasipikasyon ng mga isdang makukuha ayon sa iba't ibang uri ng kagamitan sa pangingisda ay nagpapakita ng mataas na antas ng kaalaman sa uri ng pamumuhay mayroon ang mga mangingisda. Ang pagtukoy ng mga katawagan at deskripsyon ng mga isda ay nagpapakita ng karanasan at kaalaman sa iba't ibang uri ng isda, kung saan ito matutunan lamang ito sa mahabang panahon sa pamamagitan ng obserbasyon at pakikipag-ugnayan sa kapwa mangingisda. Ang pagkaklasipika ng mga isda ayon sa iba't ibang uri ng kagamitan sa pangingisda ay nagpapakita ng kaalaman sa mga teknik at estratehiya sa pangingisda.

Pinatutunayan ng mga pala-palagay na ang wika ay may espesyalisadong mga terminolohiya na nagpapakita ng malalim na kaalaman, karanasan at kultural na kaugalian sa uri ng pamumuhay mayroon ang mga kalahok na mangingisda

4. Kongklusyon

Ang register ng wikang de bangka ay may malalim na ugnayan sa kultura at pamumuhay ng mga taong namumuhay sa tabi ng dagat. Ang pag-aaral ng mga katawagan at deskripsyon ng mga isda, kagamitan sa pangingisda, at klasipikasyon ng mga isda ay nagpapakita ng kahalagahan ng preserbasyon ng register ng wikang de bangka. Ang pag-unawa sa register ng wikang de bangka ay nagbibigay-daan sa mas malalim na pagtuklas sa kultura at tradisyon ng isang komunidad na nakabatay ang paghahanapbuhay sa karagatan. Ang pag-aaral na ito ay mayroong malaking tulong sa sosyo-ekonomiko, preserbasyon ng kultura, at kahalagahan sa edukasyon ng isang komunidad.

Rekomendasyon

- Ang Local Government Unit (LGU) at ang Bureau of Fisheries and Aquatic Resources (BFAR) ay dapat na hikayatin ang mga nagbebenta ng isda sa mga pamilihan na lagyan ng mga label ng pangalan ng isda ang bawat isdang binebenta nang sa ganoon ay hindi ito magdulot ng kalituhan sa mga mamimili.
- Ang Local Government Unit (LGU); ang Bureau of Fisheries and Aquatic Resources o BFAR; at ang Komisyon ng Wikang Filipino (KWF) ay may malaking partisipasyon na maipakilala ang register ng wikang de bangka sa lokal, nasyonal at internasyonal na larang para sa preserbasyon ng pamanang kultura at tradisyon ng wikang de bangka (katawagan at deskripsyon ng mga isda; katawagan ng mga kagamitan sa pangingisda at klasipikasyon ng mga isdang nahuhuli sa bawat kagamitan) sa pamamagitan ng distribusyon ng awtput ng pag-aaral sa lahat ng opisina ng gobyerno maging sa social media.
- Ang Department of Education (DEPED) at Commission on Higher Education (CHED) ay may partisipasyon sa pagsusulong ng pagkakaroon ng teksbuk sa lahat ng antas ng edukasyon na naglalaman ng awtput ng pag-aaral lalo na sa mga batang hindi pa lubos na naaabot ng kanilang malay ang register ng wikang de bangka.

Awtput ng pag-aaral

Ang awtput ng pag-aaral ay kinapapalooban ng leksikal na katawagan at deskripsyon ng mga isda, katawagan ng mga kagamitan sa pangingisda at klasipikasyon ng mga isdang makukuha ayon sa iba't ibang uri ng kagamitan sa pangingisda.

A. Katawagan at deskripsyon ng mga Isda (Sample only)

LARAWAN NG MGA ISDA	KATAWAGAN NG MGA ISDA	DESKRIPSYON
	Samin- Samin Scientific name: <u>Pseudocaranx dentex</u> Mula sa: <u>www.fishbase.se</u>	Malapad ang katawan at manipis, kaunti lamang ang kaliskis, may kulay puti at dilaw na katawan at matulis ang ngipin.
	Malangsi Scientific name: <u>Spratelloides delicatulus</u> Mula sa: <u>www.fishbase.se</u>	Katulad lamang ito sa isdang tuloy ngunit mas maliit at mas manipis ang katawan at kaliskis nito. Karaniwang ginagamit pang-pain sa palangre at makukuha ito gamit ang pamo,pukot at sibot.
	Sigarilyo Scientific name: <u>Decapterus macrosoma</u> Mula sa: <u>www.fishbase.se</u>	Ang balat ng isdang ito ay hawig sa isdang pirit. Makinis at walang kaliskis at karaniwang makukuha sa pukot, pamo, at pakpakan.
	Pulag-ikog Scientific name: <u>Decapterus kurroides</u> Mula sa: <u>www.fishbase.se</u>	Hugis obal ang katawan, kulay pula ang parte ng buntot o “ikug”; nasa parte ng buntot ang kaliskis, kulay asul ang parte ng likod at maputi naman sa tiyan.

B. KATAWAGAN NG MGA KAGAMITAN SA PANGINGISDA (Sample only)

LARAWAN NG MGA KAGAMITAN	KATAWAGAN NG MGA KAGAMITAN SA PANGINGISDA	DESKRIPSYON NG MGA KAGAMITAN SA PANGINGISDA
	Pasul	Ang hawakan ay maaaring gawa sa kahoy o kawayan na may habang tatlong (3) metro. May nakasabit na mataas na nylon sa dulo ng hawakan at sa dulo ng nylon ay may nakasabit na “taga”.
	Taga	Ang taga ay gawa sa matulis at manipis na metal na may nakasabit na pain. Mayroong iba’t-ibang sukat ang taga kung saan ito ay ginagamit ng mga mangingisda para mahuli ang isda .
	Palangre	Isa itong pormang kahon na ginawa mula sa plastik na nilagyan ng naylon sa loob at pinalibutan ng pira-pirasong goma at taga .

	Sintenyal	Makikita ang sintenyal na nakadikit sa taga. Layon nitong akitin ang paningin ng mga isda .Ito ay may iba’t-ibang kulay katulad ng puti,pula at berde.
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B. KLASIPIKASYON NG MGA ISDANG MAKUKUHA AYON SA IBA’T IBANG URI NG KAGAMITAN SA PANGINGISDA (Sample only)

MGA KAGAMITAN	MGA ISDA NA MAKUKUHA	
 Pasol	• Kitong • Balawis • Salampani • Ubod • Tamarong • Asu-os • Bugaong • Talakitok • Bakasi • Kikib • Pang-an	
 Pana	• Danggit • Pugita • Lukon • Nukos • Bagis • Tuna • Tilapia • Ubod • Maya-maya • Kasag • Bangus • Pagi,	• Kitong • Sunghan • Mulmol • Mamsa • Pargo • Kikilo • Dalapugan • Mungit • Mameng

 Palangre	• Tabas • Lagao • Mamsa • Ubod • Maya-maya • Lalagan • Suno • Pugapo • Samin-samin • Bulgan • Pagi • Katambak • Diwit •Malitubong •Pulag-ikog •Pandawan •Manulsog •Ekyang •Barla •Sambagon
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An indigenous perspective and attitude on the distribution of land to the Haduan Aeta per R.A. No. 8371

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ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25844

Abstract

This study examined the perceptions and attitudes of the Haduan Indigenous Aeta community on the grant of their ancestral land per Republic Act No. 8371 (Philippine Ancestral Domain Law). The descriptive quantitative designed was adopted as the research design of the undertaking. A purposive convenience sampling approach was facilitated to determine the respondents of the study that involved twenty elder individuals from Sition Haduan, Mabalacat City. An adopted survey questionnaire was employed to gather the data on their perception and attitudes towards the granting of their ancestral land. The questionnaire considered the culture, aspect of recognition of the ancestral land, fairness of the granting process, and respect for their local beliefs and traditions, trust in the government process, and overall well-being. Significant findings of the study revealed that indigenous aeta were highly satisfied with the granting process evident in the mean of 4.79. this means that the government process on granting their land is within the premise of the law. Further, their attitude accumulated a total mean of 4.72 which is interpreted as highly satisfied. This means that the processes conducted by the authorities were accepted by the Haduan Aeta. Results of the study may imply that the distribution of ancestral land is within the parameters of the R.A. 8371.

Keywords: ancestral domain, Haduan Indigenous Aeta

An indigenous perspective and attitude on the distribution of land to the Haduan Aeta per R.A. No. 8371

1. Introduction

Indigenous peoples' rights to claim and benefit from their lands are safeguarded by the Law of Ancestral Domain, which applies to the Philippines and other parts of the world. It is through the establishment of this kind of law that a bridge is created to guarantee that the indigenous people would be able to obtain land grants. Indigenous people are communities with historical ties to particular areas and continue to uphold cultural traditions that distinguish them from cultures at the dominant level in the present day. Indigenous peoples are communities with historical ties to specific regions, maintaining distinct cultural traditions and often unique languages, social structures, and worldviews. Ancestral domain laws are complex and multifaceted, relying on developing indigenous rights, preserving cultural traditions, and promoting sustainable development. These laws respect the rights of indigenous peoples to their ancestral lands and territories. The degree of usefulness and effectiveness of these laws varies from country to country, which is to the fact that different countries have distinct legal systems and varied historical circumstances.

According to (Cola, 2019), Indigenous Peoples, like the Aetas of the Philippines, have deep-rooted connections to specific lands predating modern states and colonization. The Aeta people, primarily in Luzon's mountainous regions, are among the Philippines' earliest inhabitants, with a distinct culture and lifestyle centered around hunting, gathering, and sustainable farming (Headland, 1997). Their intimate knowledge of the environment, including medicinal plants and sustainable practices, is passed down through generations, showcasing profound understanding of their ancestral lands (Headland, 1997). However, they face significant challenges, including land disputes, discrimination, and threats to their way of life (Cola, 2019), prompting various efforts to protect their rights and preserve their cultural heritage. According to (Lemaitre, 2011), The creation of REDD ("Reducing Emissions from Deforestation and Forest Degradation") strategy carries significant implications for indigenous peoples, particularly concerning land rights and benefit distribution. While REDD has the potential to benefit these communities, concerns still need to be addressed about the inadequate respect for their rights during REDD activities. Lemaitre (2011) emphasizes that despite international instruments recognizing Indigenous land rights, a gap often exists between legal protection and practical implementation. REDD may exacerbate this discrepancy, as illustrated in an analysis of Guyana's REDD plan, highlighting the risks faced by indigenous peoples in this context.

According to (AIPP, 2014), In Vietnam, over 90,000 people, primarily ethnic Thai, were relocated to make way for the Son La hydropower plant, a move that Vietnamese scientists reported left many without access to agricultural land by 2010. In Cambodia's Prey Lang Forest region, home to the Kui indigenous peoples, official land grants for mineral extraction, timber, and rubber plantations have displaced numerous communities from their conventional means of making a living. Between 1996 and 2013, a total of 117 firms were awarded economic land concessions (ELCs) totaling 1.5 million hectares, representing over 50% of Cambodia's arable land and encompassing a significant portion of indigenous lands (Ministry of Agriculture, Forestry and Fisheries, as cited in AIPP, 2014). Despite a 2012 moratorium on new ELCs, there view process for existing concessions has sparked conflicts within communities, leading to the privatization of communal lands and threats against those opposing individual land titles (AIPP, 2014). These conflicts often saw local and national authorities aligned with ELC companies against indigenous communities (AIPP, 2014).

According to (Molintas, 2015), Indigenous peoples are often distinguished by four key characteristics: the preservation of their vernacular languages, traditional socio-economic institutions, and cultural/religious practices; self-identification as distinct societies; subsistence-oriented economies; and a special relationship with their ancestral lands. This unique connection to land, often rooted in a collective concept of ownership and

stewardship, is crucial in defining their struggle for self-determination and cultural survival (Colchester, 2002).

In the Philippines, this concept of land as a sacred gift from a divine creator, not to be owned or traded, has historically permeated indigenous cultures (Gaspar, 2011). This belief fostered a system of communal land ownership and usufruct rights, where land was shared and used for the collective benefit of the community (Molintas, 2015). While early indigenous groups were nomadic, shifting their settlements based on available resources (Jocano, 1998), the transition to sedentary agriculture led to the establishment of communal ownership systems, a practice that continues to hold significance today, especially in the face of threats to ancestral lands (Blaser et al., 2004).

According to (Tauli-Corpuz, 2008), Self-determination is a fundamental aspiration for Indigenous Peoples (IPs). However, their ability to participate in local governance decision-making is often limited due to systemic barriers such as historical marginalization, lack of resources, and discriminatory practices. However, legal frameworks like the Indigenous Peoples Rights Act (IPRA) of 1997 in the Philippines explicitly recognize and mandate their right to participate fully in all levels of decision-making that affect their lives, rights, and destinies (Republic of the Philippines, 1997). This includes the right to maintain and develop Indigenous political structures, ensuring their voices are heard and respected in matters that directly impact their communities (ILO Convention 169, 1989). Despite this legal recognition, challenges still need to be solved in translating these rights into meaningful participation and influence within local governance structures. These challenges can include inadequate implementation of legal provisions, lack of capacity building for Indigenous communities, and resistance from non-indigenous stakeholders (Rodil, 2006).

The Indigenous Peoples Rights Act (IPRA) of 1997 mandates that Indigenous Cultural Communities/Indigenous Peoples (ICCs/I.P.s) be given representation in local policy-making bodies and legislative councils (Republic of the Philippines, 1997). To ensure effective participation, the Local Government Code of 1991 (Republic Act No. 7160) further stipulates the inclusion of one representative from either the urban poor, indigenous cultural communities, or disabled persons in Sangguniang Bayan, Sangguniang Panlungsod, and Sangguniang Panlalawigan (Republic of the Philippines, 1991). However, (Hirai, 2016) argues that these provisions often need to be fully understood and implemented by Local Government Units (LGUs), hindering the meaningful participation of indigenous peoples in local governance. In the Philippines context, the Indigenous Peoples' Rights Act (IPRA) of 1997 declares that the State shall recognize and promote all the rights of Indigenous Cultural Communities/Indigenous Peoples (ICCs/I.P.s) to the Government, essential services health included. It stands as a landmark legislation that recognizes and protects the ancestral domains of Indigenous communities. Enacted to uphold the rights of indigenous peoples, the IPRA provides mechanisms for delineating, identifying, and managing ancestral domains, empowering indigenous communities to govern and preserve their ancestral lands (Republic Act No. 8371).

In the Philippines context, The Indigenous Peoples' Rights Act (IPRA) of 1997 mandates the State to acknowledge and advance the full range of rights possessed by Indigenous Cultural Communities/Indigenous Peoples (ICCs/I.P. s). to the Government, essential services health included. It is a landmark legislation that recognizes and protects the ancestral domains of Indigenous communities. Enacted to uphold the rights of indigenous peoples, the IPRA provides mechanisms for delineating, identifying, and managing ancestral domains, empowering indigenous communities to govern and preserve their ancestral lands (Republic Act No. 8371).

The National Commission on Indigenous Peoples (NCIP) is the main government agency responsible for the implementation and enforcement of the Indigenous Peoples' Rights Act (IPRA) of 1997. As mandated by the IPRA, the NCIP Provides an essential part in protecting and advancing the rights of Indigenous Peoples (IPs) in the country (NCIP). This includes the critical tasks of delineating and recognizing ancestral domains and issuing Certificates of Ancestral Domain Titles (CADTs) to indigenous communities (NCIP Administrative Order No. 1, 1998). The NCIP also actively works to resolve conflicts arising from ancestral domain claims and promotes

the sustainable development of indigenous communities by the provisions of the IPRA.

The Indigenous Peoples' Rights Act (IPRA) of 1997 in the Philippines is a landmark law that aims to protect the ancestral lands of indigenous communities and empower them with greater control over their resources (Gatmaytan, 2016). However, despite these legal provisions, a significant gap often exists between the law's intent and its actual implementation on the ground (Brillantes, 2014). This gap can be particularly evident in development projects that encroach upon indigenous territories, as seen in cases from Vietnam and Cambodia, where large-scale initiatives have displaced communities and disrupted traditional livelihoods (AIPP, 2014). The lack of effective enforcement of legal protections often leaves Indigenous communities vulnerable to land grabs and dispossession, even in the presence of seemingly robust legal frameworks (Blaser et al., 2004).

Based on UNDRP (2007), one crucial method to bridge the gap between legal protections and practical implementation of Indigenous rights is to ensure meaningful and culturally appropriate consultation with Indigenous communities before any decisions affecting their lands and livelihoods. This process should involve obtaining free, prior, and informed consent (FPIC) from Indigenous groups, ensuring their active participation in decision-making that directly impacts their communities and territories (Colchester, 2002). The researcher believes that intensifying the enforcement of existing law, guaranteeing an actual engagement of Indigenous communities in decision-making processes, and supporting their active participation in local governance is necessary, and actively supporting their participation in local governance are crucial steps towards empowering Indigenous communities and safeguarding their rights (Blaser et al., 2004). The researchers agreed to undertake a study to evaluate the perspectives and attitudes of the Haduan Indigenous Aeta community regarding the grant of land under Ancestral Domain law. Moreover, the primary objective of this study was to determine the level of respect and recognition given to the Indigenous People of our nation as an essential part of Filipino heritage.

1.1 Theoretical Framework

Social identity theory, developed by Henri Tajfel and John Turner in the 1970s, is a psychological concept that explains how individuals develop a sense of self and belonging through membership in various social groups. According to this principle, individuals classify themselves and others into distinct groups based on common attributes such as nationality, ethnicity, religion, occupation, or even hobbies. Indigenous peoples' strong connection to their ancestral lands is a core component of their social identity (Tajfel et al., 1986). This deep-rooted relationship, often grounded in collective ownership and stewardship, shapes their self-perception and distinguishes them as distinct societies (Berry, 1999). Disrupting this relationship through land dispossession or forced displacement can have severe consequences for their cultural identity and well-being (Kymlicka, 2001). According to (Nakashima et al., 2012), the preservation and protection of Indigenous lands is not merely a matter of legal rights but also a crucial aspect of upholding their social identity and collective resilience. Indigenous peoples' participation in decision-making processes concerning their territories is vital to ensure that their cultural values and traditional knowledge are respected and integrated into development and conservation initiatives.

1.2 Conceptual Framework

This study is adapted on the Input-Process-Output (IPO) model, which is an often-employed framework for approach assessment. The IPO model helps to explain how inputs, processes, and outputs are related in an ecosystem (Harris & Taylor, 2018). It is a visual representation that demonstrates the conversion of specific inputs into desired outputs through well-defined processes (Studer et al., 2020). Studying the perceptions and attitudes of the Haduan Indigenous Aeta towards the allocation of land under the Ancestral Domain Law (Republic Act No. 8371) entails analyzing the connection between the independent variable (land allocation through the law) and dependent variables (Aeta's perceptions and attitudes). This study aims to investigate the impact of implementing a legal instrument, which aims to acknowledge and safeguard the land rights of indigenous communities (Cariño, 2005), on the Aeta's understanding of the law, their satisfaction with the

process of obtaining land grants, their perceived benefits and drawbacks, and their overall position on the recognition of their ancestral domain. This study enhances our understanding of the effectiveness of legal systems in resolving indigenous land disputes and advancing social equity.

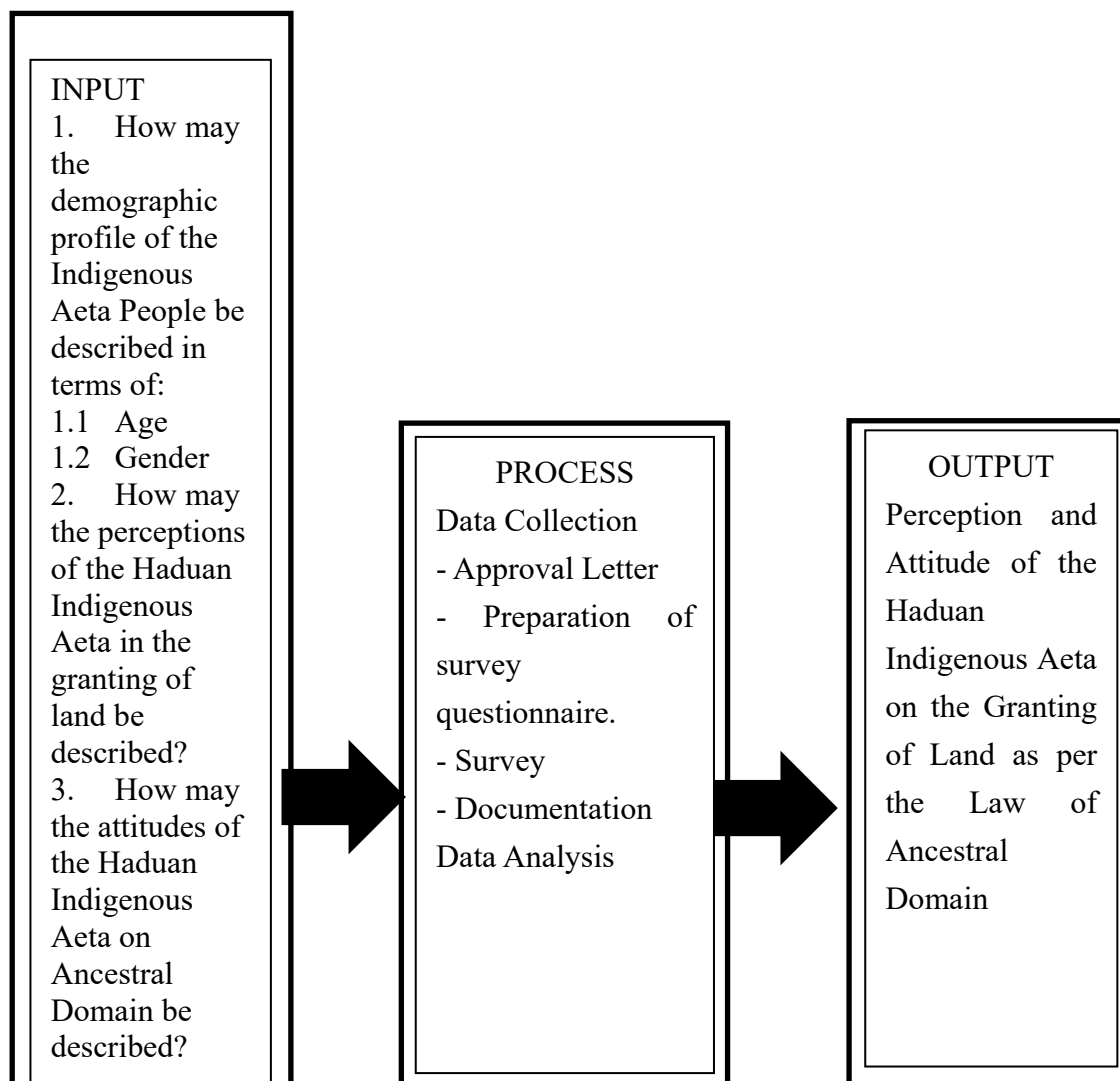


Figure 1. Paradigm of the study

1.3 Statement of the Problem

- How may the demographic profile of the Indigenous Aeta People be described in terms of: Age and gender
- How may the perceptions of the Haduan Indigenous Aeta in the granting of land be described?
- How may the attitudes of the Haduan Indigenous Aeta on Ancestral Domain be described?

1.4 Significance of the Study

The researchers will conduct this research because it will benefit many people, institutions, and society. Initially, it provides insight into the sociocultural basis and historical progression of the Haduan Indigenous Aeta community. Understanding their perspective and attitude on land ownership is essential for comprehending their overall perspective, traditions, and principles, all of which are essential in promoting cultural appreciation and conservation. The AB History Students, The Haduan Indigenous Aeta's perception and attitude toward granting

lands under the Law of Ancestral Domain provides a unique chance to expand their understanding of Indigenous history, legacies, and present land battles. By exploring these challenging dialogues, students broaden their academic understanding and develop empathy, solidarity, and ethical involvement with other communities and landscapes.

The AB History Teachers. Integrating the study of the Haduan Indigenous Aeta's perceptions and attitudes about land grants under the Law of Ancestral Domain into the A.B. History lessons provides teachers with a transformative opportunity to promote critical thinking, empathy, and ethical leadership in students. Teachers are essential in crafting a more inclusive, equal, and sustainable future for the Philippines and beyond by prioritizing Indigenous perspectives, encouraging creative thinking, and supporting social justice. This research will also help the Government. By engaging with indigenous perspectives and attitudes, advocating inclusive policies, and encouraging discussion and collaboration, the Government may help create a more just, equitable, and sustainable society for all Filipinos. The Department of Environmental and Natural Resources (DENR) and the National Commission on Indigenous Peoples (NCIP) will also benefit from this research. They urgently need to study further and understand the perceptions and attitudes of the Haduan Indigenous Aetas, which will help them and lead them to strictly implement the Law of Ancestral Domain. Future Researchers will study this particular topic further, which might boost the campaign of many Indigenous People for granting lands under the Law of Ancestral Domain.

2. Methodology

Research Design - The researcher will employ a quantitative approach with a descriptive design to investigate the perspectives and attitudes of Indigenous Aetas about land grants under ancestral domain law. This methodology, based on descriptive research (McLeod, 2019), is consistent with Qualtrics' (2023) claim that these designs allow for the discovery and evaluation of characteristics in a sample population to guide decision-making. According to Groves et al. (2009), survey methodology is essential for gathering data in descriptive research.

Participants - The study focuses on the Indigenous Aetas population residing in Sitio Haduan, Mabalacat City. A purposive convenience sampling approach (Etikan et al., (2016), a non-probability method where subjects are selected primarily on their ease of access and being close to the researcher, will be employed to select respondents and validate the study's findings. This aligns with the concept of convenience sampling described in (Gravetter et al., 2021), where participants are selected for ease and availability, regardless of their social status within the community.

Instrument - A survey questionnaire designed to accomplish the study's objectives is the primary instrument to collect the necessary information. The questionnaires encompass the degree of perception and attitudes among the Indigenous Aetas residing in Sitio Haduan. Data collection will start in June and finish within the same month. The semi-guided questionnaire goes through validation by the language editor and researcher adviser. The scorecard that the researchers will use is indicated using the following: The 5-point Likert scale was employed to evaluate variables, reflecting the extent of performance from low to high. This scale has 5 ranges: 1-1.80 for Very dissatisfied, 1.80-2.60 for Dissatisfied, 2.61-3.40 for Neutral, 3.41-4.20 for Satisfied, 4.21-5 for Very satisfied (Bhuiyan & Islam, 2023).

Scale	Ranges	Interpretation
5	4.21 - 5.00	Very satisfied
4	3.41 - 4.20	Satisfied
3	2.61 - 3.40	Neutral
2	1.81 - 2.60	Dissatisfied
1	1.00 - 1.80	Very dissatisfied

Data Gathering Procedure - The researchers wrote a letter seeking approval to conduct the study at Sitio Haduan Mabalacat City through Mr. Roy Tanglao, Tribal leader. The data gathering will start in June 2024 and

end in the same month. The researcher prepared a survey questionnaire for the Indigenous Aetas of Sitio Haduan together the needed information. Afterward, they had the language editor and research adviser validate their questionnaire. Consent, together with the approval letter, will be given to the tribal leader prior to the collection of data. Data were collected and compiled through individual discussion among participants, referring to the Indigenous Aetas of Sitio Haduan. All information and data collected are carefully handled. After the compilation and collection of data for interpretation, the researchers employ descriptive statistics to show a more precise representation. Based on the data gathered and analyzed, the researchers came up with conclusions and recommendations for this study.

Ethical Consideration - The study will be committed to free, prior, and informed consent principles, guaranteeing the Aeta community's active involvement and decision-making at every stage of the research endeavor. All encounters will be guided by cultural sensitivity and respect for Indigenous knowledge systems. The study will give utmost importance to ensuring the confidentiality and anonymity of participants, effectively protecting their personal information and viewpoints. The research will transparently indicate any possible dangers or benefits to protect the well-being and interests of the Aeta community. The primary objective of the research is to empower the Haduan Aeta community by giving more importance to their voices and viewpoints regarding their rights to ancestral land.

Data Analysis/ Statistical Treatment - The researchers will use descriptive analysis as the primary analytical method for analyzing the statistical elements within the opinions and attitudes of the Haduan Indigenous Aeta community regarding land grants under the Ancestral Domain Law. The researchers claim that this approach would offer a detailed and systematic overview of the current perception and attitudes common among the Haduan Indigenous Aeta population regarding land rights and regulations about the ancestral domain. Through the analysis of survey data, researchers aim to identify patterns, trends, and correlations, which will offer a comprehensive evaluation of the community's perspectives on this crucial subject. Researchers attempt to offer valuable insights through descriptive analysis, which can inform legislation, advocacy efforts, and community initiatives focused on improving human rights and well-being. The researchers will use mean and standard deviation to precisely determine the most common perspective and attitude.

3. Results and discussion

In this chapter, researchers present the results obtained from the study of the Perception and Attitude of the Haduan Indigenous Aeta on the Granting of Land as per the Law of Ancestral Domain, discuss the findings, analyze the data, and provide an in-depth discussion of the results.

3.1 Demographic Profile of Indigenous Aeta People

3.1.1 Age

Table 1
Profile of respondents in terms of their age

Age	Frequency	Percentage
21-30 years old	8	40.0
31-40 years old	6	30.0
41-50 years old	2	10.0
51-60 years old	2	10.0
61-70 years old	2	10.0
Total	20	100

The demographic data gathered from a sample of Aeta individuals reveals a predominantly young population, with 40% of respondents falling within the 21-30 age range (Table 1). This finding aligns with observations of other indigenous communities in the Philippines, which often exhibit a youthful demographic structure (Perez & Reyes, 2022). The significant presence of individuals aged 31-40 (30%) further underscores the importance of this group in the Aeta community, likely representing a vital workforce and contributors to

community life. While older adults (41-70 years old) comprise a smaller proportion of the sample (10% for each age group), their presence remains significant. This distribution could reflect various factors, such as lower life expectancy in marginalized communities or potential out-migration of younger individuals seeking economic opportunities elsewhere (dela Cruz et al., 2019).

3.1.2 Gender

Table 2

Profile of respondents in terms of their gender

Gender	Frequency	Percentage
Female	12	60.0
Male	8	40.0
Total	20	100

Table 2 reveals a significant gap in gender among the Haduan Indigenous Aeta participants, with a majority (60%) identifying as female and minority (40%) as male. The disproportionate number of female voices in the survey highlights inquiries regarding the diversity of decision-making procedures for ancestral domain claims. It is important to assess if women's viewpoints are sufficiently taken into account in discussions regarding land use and management, and if men's opinions are neglected, despite the fact that the imbalance may accurately represent the community's demographics. Moreover, this discrepancy may suggest that there are socioeconomic factors at stake that influence how gender impacts perceptions and involvement in land rights matters.

3.1.3 Perceptions of the Haduan Indigenous Aeta in the Granting of their Land

Table 3

Perceptions of the Haduan Indigenous Aeta in the Granting of their Land

Indicators	Mean	SD	Description
How satisfied are you with the overall recognition of your ancestral domain by the government?	4.70	0.47	Very Satisfied
How fair do you feel the process of land granting has been under the Law of Ancestral Domain?	4.75	0.44	Very Satisfied
How well do you believe your community's traditional land use practices are respected in the land granting process?	4.60	0.50	Very Satisfied
How much trust do you have in government agencies to uphold the Law of Ancestral Domain and protect your land rights?	4.90	0.31	Very Satisfied
How well-informed do you feel about your rights and options under the Law of Ancestral Domain?	4.90	0.31	Very Satisfied
How empowered do you feel to participate in decision-making processes related to your ancestral land?	4.85	0.37	Very Satisfied
How much support do you feel you receive from government agencies and non-governmental organizations in navigating the land granting process?	4.75	0.44	Very Satisfied
How satisfied are you with the pace at which land claims are processed and resolved under the law?	4.80	0.41	Very Satisfied
How adequately do you feel the law addresses the unique needs and concerns of the Haduan Indigenous Aeta community?	4.75	0.44	Very Satisfied
How much has the granting of land improved the overall well-being of your community?	4.80	0.41	Very Satisfied
How secure do you feel about the future of your community and your ancestral land under the Law of Ancestral Domain?	4.95	0.22	Very Satisfied
How important is the Law of Ancestral Domain for preserving your cultural heritage and identity?	4.85	0.37	Very Satisfied
How much do you believe the law has contributed to environmental conservation and sustainable land use practices in your ancestral domain?	4.70	0.57	Very Satisfied
How much potential do you see for economic development and livelihood improvement within your community due to the granting of land?	4.75	0.44	Very Satisfied
How satisfied are you with the overall implementation and impact of the Law of Ancestral Domain on the Haduan Indigenous Aeta community?	4.75	0.44	Very Satisfied
Average Perception	4.79	0.19	Very Satisfied

The data presented in Table 3 demonstrates the generally positive perceptions of the Haduan Indigenous Aeta population toward the Law of Ancestral Domain and its influence on their livelihoods. The results continuously fall within the "Very Satisfied" category, with mean scores ranging from 4.60 to 4.95 and standard

deviations never reaching 0.57. This demonstrates a significant level of contentment with the acknowledgment of ancestral domain, the fairness of the land allocation procedure, compliance to traditional land utilization practices, and confidence in government institutions. The Haduan community also expresses a sense of being knowledgeable about their rights, empowered to engage in decision-making, and receiving support from both governmental and non-governmental organizations. The individuals express contentment with the efficiency of land claim processing, the law's adaptability to their distinct requirements, and the general enhancement of their welfare. In addition, they demonstrate a strong confidence in their future and emphasize the significance of the law in protecting cultural heritage, preserving the environment, promoting economic progress, and enhancing livelihoods.

3.1.4 Attitudes of the Haduan Indigenous Aeta on Ancestral Domain

Table 4

Attitudes of the Haduan Indigenous Aeta on Ancestral Domain

Indicators	Mean	SD	Description
How satisfied are you with the overall process of land granting under the Law of Ancestral Domain?	4.95	0.22	Very Satisfied
How satisfied are you with the speed at which land claims are processed and resolved?	4.75	0.64	Very Satisfied
How satisfied are you with the clarity and transparency of the information provided about the land granting process?	4.90	0.31	Very Satisfied
How satisfied are you with the level of involvement and participation you have had in the land granting process?	4.75	0.44	Very Satisfied
How satisfied are you with the fairness and equity of the land allocation decisions made under the law?	4.85	0.37	Very Satisfied
How satisfied are you with the recognition and respect given to your traditional land use practices in the land granting process?	4.80	0.41	Very Satisfied
How satisfied are you with the protection and preservation of sacred sites and culturally significant areas during the land granting process?	4.65	0.49	Very Satisfied
How satisfied are you with the support and assistance provided by government agencies throughout the land granting process?	4.55	0.76	Very Satisfied
How satisfied are you with the consultation and collaboration with other stakeholders (e.g., neighboring communities, government agencies) during the land granting process?	4.80	0.41	Very Satisfied
How satisfied are you with the enforcement and protection of your land rights after the land has been granted?	4.80	0.41	Very Satisfied
How satisfied are you with the opportunities for economic development and livelihood improvement that have resulted from the land granting process?	4.60	0.50	Very Satisfied
How satisfied are you with the social and cultural benefits that have resulted from the land granting process?	4.50	0.51	Very Satisfied
How satisfied are you with the overall impact of the land granting process on the well-being of the Haduan Indigenous Aeta community?	4.55	0.51	Very Satisfied
How satisfied are you with the government's commitment to upholding the Law of Ancestral Domain?	4.70	0.47	Very Satisfied
How satisfied are you with the future prospects for the Haduan Indigenous Aeta community under the Law of Ancestral Domain?	4.65	0.49	Very Satisfied
Average Attitude	4.72	0.24	Very Satisfied

The data provided in Table 4 presents an in depth and complete evaluation of the Haduan Indigenous Aeta's perspectives on the Ancestral Domain Law. The average satisfaction scores, measured across 15 indicators, consistently fall within the range of 4.50 to 4.95. The variation in these values, as indicated by the standard deviations, ranges from 0.22 to 0.76. The constantly high satisfaction is emphasized by the descriptive title "Very Satisfied" assigned to each indicator. The Aeta community is quite satisfied with the entire process of providing land, the clarity of information provided, the acknowledgment of traditional land usage, and the involvement of stakeholders in the consultation. Furthermore, they demonstrate considerable contentment regarding the speed of processing, fairness of judgments, preservation of sacred places, governmental assistance, implementation of land rights, and economic prospects arising from the law. The results indicate a significantly positive impression

of the Ancestral Domain Law among the Haduan Indigenous Aeta. The consistent "Very Satisfied" ratings across all parameters highlight the efficacy of the law in resolving their requirements and concerns pertaining to land ownership, rights, and cultural preservation. This implies that the law functions as an effective guideline for acknowledging and protecting the land rights of indigenous people in the Philippines.

4. Conclusion and recommendation

4.1 Summary of Findings

The Aeta community studied is characterized by a young population, with 40% aged 21-30, reflecting trends in other Philippine indigenous groups. A substantial 30% fall within the 31-40 age range, highlighting their key role in the community and workforce. The 10% in each age group above 40, though smaller, remain significant, possibly due to decreased life expectancy or migration patterns common in marginalized populations. The survey also reveals a gender disparity, with 60% female and 40% male participants among the Haduan Indigenous Aeta community. The Haduan Indigenous Aeta community expresses a significant level of contentment with the Law of Ancestral Domain. This is supported by consistently high average scores (ranging from 4.60 to 4.95) in many areas of its execution and influence on their means of living. They viewed the law as just, efficient, and advantageous to their welfare, cultural conservation, and economic progress. The community experiences a sense of empowerment, knowledge, and assistance from both governmental and non-governmental organizations in establishing land claims and decision-making procedures. The Haduan Indigenous Aeta community demonstrates a significant degree of contentment with the Ancestral Domain Law, as indicated by consistently high average ratings across 15 indicators pertaining to land allocation, transparency of information, acknowledgement of ancestral procedures, involvement of relevant parties, and economic prospects. The data indicates that the law effectively provides the Aeta's requirements and concerns over land possession, entitlements, and cultural conservation, therefore functioning as a beneficial guideline for protecting indigenous land rights in the Philippines.

4.2 Conclusions

The demographic breakdown of the studied Aeta community indicates a primarily youthful population, which corresponds to patterns reported in comparable indigenous communities. The substantial percentage of individuals between the ages of 31 and 40 highlights their essential contribution to the community's labor force and social structure. Although the older age groups constitute a lesser proportion, their significance should not be overlooked. The survey brings attention to the gender gap in the Haduan Indigenous Aeta community, indicating the necessity of conducting more research to understand the root causes and potential consequences on social interactions and distribution of resources. The Law of Ancestral Domain has proven remarkable effectiveness in meeting the requirements of the Haduan Indigenous Aeta community. The law's beneficial influence is clearly apparent in the community's higher degrees of satisfaction, particularly in regards to livelihood, cultural preservation, and economic advancement. In addition, the law has given the community the authority to own and manage their ancestral lands, as well as granting them access to essential resources and assistance from both governmental and non-governmental groups. In whole, the Law of Ancestral Domain serves as an effective framework for empowering indigenous communities and safeguarding their rights and welfare. The Ancestral Domain Law has shown to be highly effective in fulfilling the land rights, cultural preservation, and economic needs of the Haduan Indigenous Aeta people, as seen by their strong satisfaction. The law's effectiveness in meeting these essential aspects stands as evidence of its beneficial influence on the Aeta community. The Ancestral Domain Law in the Philippines has proven to be a useful instrument by establishing a strong framework to protect the land rights of indigenous people. This act can be seen as a blueprint for future laws designed to empower and protect indigenous people across the nation.

4.3 Recommendations

To promote equitable and sustainable development within the Haduan Aeta community, it is important for the government and NGOs to prioritize specific investment in youth-focused education and vocational training programs, family planning initiatives, and healthcare services that specifically cater to the needs of young women and girls. This is due to the community's young population, with 70% aged 21-40, and the gender differences, with 60% being female. This is essential for the government and NGOs to uphold their dedication to the Law of Ancestral Domain by persistently enforcing its provisions and allocating resources for its implementation. The ongoing assistance will empower the Haduan Indigenous Aeta community to assert their autonomy, enhance their economic well-being through sustainable land conservation methods, and protect their unique cultural customs and ancestral lands for future generations. The Ancestral Domain Law has received highly favorable comments from the Haduan Aeta community, which highlights the need for its implementation as a national standard for law on indigenous land rights. This law efficiently ensures the protection of the Aeta's land ownership, rights, and heritage of culture, serving as a successful paradigm for empowering indigenous people throughout the Philippines. It is essential for the government and NGOs to give top priority to replicating this achievement on a national scale, ensuring that all indigenous communities can legally claim and protect their ancestral lands and experience the same degree of contentment and empowerment as the Haduan Aeta.

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Comparative phytochemical analysis and antimicrobial activity of Abaca (*Musa textilis* [Neé]) processing wastes

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ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25845

Abstract

The Philippines is the world's best manufacturer of *Musa* textiles commonly known as abaca, supplying 87.5% of the world's leading demands. However, in an abaca stalk, the farmer could only recover 0.3-0.5 kg of fresh fiber, and the rest would go to waste. Baybay City, Leyte, and other abaca-producing areas also struggle with abaca production and seek additional applications for its waste. Hence, looking for ways to utilize abaca is empirical. The knowledge generated from this research may give us an insight into how we can use the abaca plants processing wastes as resources, such as its antimicrobial properties. This study was conducted to determine the antimicrobial properties of the different parts of abaca (corm, flower, leaves, pseudostem, and roots) against *Escherichia coli*, compare the antimicrobial properties of the extract by testing it against the bacterial wilt of tomato, *Ralstonia solanacearum*, using preventive and curative methods, quantify the total phytochemical content of *M. textilis* extracts in terms of total phenolic and flavonoid contents and evaluate the toxicity of the extracts using yeast cell model. The Results showed that the different parts of abaca can inhibit the growth of *E. coli* at concentrations of 5,000ppm, 10,000ppm, and 15,000ppm. Minimal differences in preventive and curative data across various extracts and concentrations prevent us from confirming a significant impact. The different parts of the abaca plant were analyzed for phytochemical content, revealing high levels of flavonoids and phenols. Additionally, toxicity tests confirmed all the abaca extracts were non-toxic.

Keywords: *Musa* textiles (Nee), antimicrobial properties, bacterial wilt, abaca extract, abaca phytochemicals

Comparative phytochemical analysis and antimicrobial activity of Abaca (*Musa textilis* [Néé]) processing wastes

1. Introduction

Abaca, commonly known as Manila hemp (Britannica, 2014), is mostly grown for its natural fiber in tropical areas such as - Costa Rica, Ecuador, and the Philippines (Kadolph, 2017). Abaca is an important asset to the Philippines which supplies around 87.5 % of the world's requirement for abaca fiber and as such is the world's leading abaca producer. The key abaca-producing areas nationwide are the Bicol Region and Mindoro in Luzon; Leyte, Samar, Negros Oriental, Iloilo, and Aklan in the Visayas; and all the provinces of Mindanao (Vancouver Philippine Consulate General, 2020). However, these key areas including Baybay City, Leyte face an incredible hurdle in terms of abaca production and utilization of abaca's waste. The challenge in abaca production is how to increase farm productivity and look for value, as in a stalk of abaca the farmer could only recover 0.3 - 0.5 kg of fresh fiber. And all the rest will go to waste. The abaca plant % is also composed of 90% water and sap. This sap will go to waste come harvesting of the plant. Hence, looking for ways how to utilize abaca is empirical. Adding technologies so that abaca farmers can increase their income from abaca farming and the development of novel products from abaca and its production wastes is one way to increase the utilization of abaca.

Abaca farming also acts as a source of livelihood for an estimated amount of 200,000 farming families from 56 provinces within the Philippines. And as of recent years, the Bicol Region and Mindoro in Luzon; Leyte, Samar, Negros Oriental, Iloilo, and Aklan in the Visayas; and all the provinces of Mindanao have been the main key abaca-producing areas found in the Philippines. (Vancouver Philippine Consulate General, 2020).

Abaca is a large suckering plant with succulent stalks rising from a perennial rootstock, the true stem or corm. Each stalk comprises tightly wound leaf sheaths and is topped by leaf blades more than one meter long in mature plants. Its stalk contains fiber equivalent to 3-4% of its weight depending on the variety, maturity, and source (Halos, 2008). The Philippine Department of Science and Technology (PhilDOST) and the Philippine Fiber Industry Development Authority (PhilFIDA) regard abaca as the "strongest natural fiber in the world" (Vancouver Philippine Consulate General, 2020). Due to its versatile strength and resistance against salt water, abaca was widely used as ropes, twines, fishing lines and nets, rope cordages, and more. As the abaca industry expanded, so did the products. In the present time, most of the abaca fibers are pulped and processed into specialty papers, which is why the Philippines has such an abundant amount of quality grade papers compared to other countries. Abaca fiber is also used in currency notes, with the Philippine Peso bills made up of 20% abaca and Japanese yen containing up to 60% abaca. Other specialty paper products made from abaca include but are not limited to, tea/coffee bags, cigarette filter papers, sausage casings, adhesive materials, and even surgical masks. With the recent events of COVID-19, abaca was also manufactured into masks to prevent the further spread of the disease (Vancouver Philippine Consulate General, 2020). Abaca is also used to make furniture and has been incorporated into fashion. With the Republic Act No. 9242, otherwise known as "An Act Prescribing the Use of the Philippine Tropical Fabrics for Uniform of Public Officials and Employees and for Other Purposes," having been enacted on February 10, 2004, to strengthen the local demand for tropical fabrics and natural fibers, including Abaca. (Arellano Law Foundation, 2004).

The knowledge generated from this research may give us an insight as to how we can use its antimicrobial properties as a treatment for plants infected by bacterial pathogens such as the bacterial wilt of *Solanum lycopersicum* Linn commonly known as tomato wilt. Furthermore, the antimicrobial compounds in the corm, heart/flower, leaf, pseudostem, root, and seeds will be compared and analyzed to maximize their potential utilization. The general objective of this study is to determine the antimicrobial potential of abaca extracts, whilst using it against *Escherichia coli* the bacterial wilt pathogen of tomato, *Ralstonia solanacearum*. This study

specifically aims to determine and compare the antimicrobial properties of the different parts of abaca (roots, leaves, pseudostem, corm, and flower) against *E. coli*, to examine the antimicrobial properties of the extract by testing it against the bacterial wilt of tomato, *R. solanacearum*, using a preventive and curative method, to quantify the total phytochemical content of *M. textilis* extracts in terms of total phenolic and total flavonoid contents, to evaluate the toxicity of the extracts using a yeast cell model.

2. Related literature

2.1 Botanical Description of Abaca

Abaca is a monocot, indigenous to the Philippines, that belongs to the Banana Family Musaceae of the Order Zingiberales, Genus *Musa*, Section Australimusa. The banana and abaca trees look similar to each other which, at times, causes confusion. However, the banana tree's leaves have a lighter shade of green and a much broader and round shape compared to abaca leaves. The abaca plant is usually smaller than the banana plant, which can grow up to 20-40 ft tall. And in regards to the fruit they bear, the banana fruit is edible, unlike the abaca fruit. (Cindy, 2012). The abaca plant produces up to 25 fleshy, fibreless stalks. Each stalk is about 5 cm in diameter and produces about 12 to 25 leaves with overlapping leaf stalks, or petioles, forming a herbaceous (nonwoody) false trunk that is 30 to 40 cm in diameter. The leaf blade, described to be oblong and bright green on the surface while yellow-green below, can grow up to 1 to 2.5 m in length and 20 to 30 cm in width at its widest portion. The oldest leaves are on the outside and the youngest on the inside, extending to the top, which eventually reaches a height of 8 m (Britannica, 2014).

2.2 Center of Origin

Abaca originally came from the Philippines. Its germplasm found in other countries can be traced back to the Philippines. And different varieties of abaca still possess the same names such as Bongolanon, Libuton, Putian, Sinaba, and Putian. (Castillo, 1956). Filipinos cultivated, processed, traded, and used abaca products for tax payments and enjoyed a century-old monopoly in the world trade market (Corpuz, 1997). Abaca was spread and introduced to numerous countries with similar climates for abaca to prosper and break the Philippine monopoly on abaca. It began when in 1818 an officer from the US Navy, Lt. John White, brought 41 tons of abaca fiber from the Philippines to the United States for the purpose of making marine cordage (Dempsey, 1963). In 1822, an attempt was made to introduce abaca to other countries such as Borneo, Florida, German East Africa, India, and West Indies. But it ended up unsuccessful and commercially unviable (Copeland, 1911).

In 1923, the US Navy began to solely rely on the Philippines to supply them with abaca and use them as raw materials for their marine cordage. This sparked a reaction where the US government introduced abaca to many Latin American countries with a humid, tropical, and warm climate similar to that of the Philippines in able to have a reliable supply of abaca fiber (Spencer, 1953). The Philippine abaca was introduced in Panama, Ecuador, Costa Rica, Guatemala, Honduras, Dominican Republic, Brazil, British and French Guiana, Cuba, Jamaica, Puerto Rico, Martinique, Guadeloupe, Trinidad, Mexico, St. Vincent, Bolivia, Peru, Nicaragua and El Salvador (Dempsey, 1963). In 1925, several abaca plantations were established in British Borneo, Malaya, New Caledonia, Queensland, and Sumatra using abaca seed pieces from the Philippines (Torres & Garrido, 1939). In 1958, abaca was introduced in Vietnam using seed pieces from Costa Rica. However, Among the several countries introduced to abaca, only Ecuador was ever able to produce abaca for export. Abaca was successfully cultivated in Ecuador after World War II when a Japanese abaca farm owner from Davao conducted a field trial. And now, Ecuador supplies an estimated 10% of abaca to the world (PhilFIDA, 2015). While the Philippines remains the world's leading abaca producer, supplying 87.5% of the world's abaca (Vancouver Philippine Consulate General, 2020).

2.3 Uses of Abaca

The Philippine Department of Science and Technology (PhilDOST) and the Philippine Fiber Industry

Development Authority (PhilFIDA) regard abaca as the “strongest natural fiber in the world” (PhilFIDA, 2022). During the 19th century, due to its versatile strength and resistance against salt water, abaca was widely used as ropes, twines, fishing lines and nets, rope cordages, and more. The abaca industry was and still is flourishing to this day with the Philippines as the world’s leading abaca producer. However, as the world began to change and evolve, so did the abaca industry. The industry has expanded and has found different ways to utilize abaca over the years. (FAO, 2022).

Most of the abaca fibers are pulped and processed into specialty papers, which is why the Philippines has such an abundant amount of quality grade papers compared to other countries. Abaca fiber is also used in currency notes, with the Philippine Peso bills made up of 20% abaca and Japanese yen containing up to 60% abaca. Other specialty paper products made from abaca include but are not limited to, tea/coffee bags, cigarette filter papers, sausage casings, adhesive materials, and even surgical masks (Vancouver Philippine Consulate General, 2020). During the early stages of the Covid-19 pandemic, a mask mandate was placed in an attempt to lessen the spread of the disease. Abaca was manufactured into a face mask by Salay Handmade Products Industries, Inc., in Misamis Oriental in Mindanao². The Philippine Department of Science and Technology (DOST) approved and tested the material. The test results revealed that the product could filter 7 times better compared to ordinary cloth materials. (Vancouver Philippine Consulate General, 2020).

Abaca has also been incorporated into furniture and fashion. Abaca furniture. Now in terms of fashion, abaca is used as a textile in making Baro’t saya, which is the traditional Filipino wear for women and Barong Tagalog for men (Vancouver Philippine Consulate General, 2020). And on top of that, Republic Act No. 9242, otherwise known as “An Act Prescribing the Use of the Philippine Tropical Fabrics for Uniform of Public Officials and Employees and Other Purposes,” was enacted on February 10, 2004, to strengthen the local demand for tropical fabrics and natural fibers, including Abaca (Arellano Law Foundation, 2004).

2.4 Economic Importance of Abaca in the Philippines

The Philippines is regarded as the largest abaca fiber producer, attributing to 87.5% of the world’s abaca imports. Abaca farming also acts as a source of livelihood for an estimated amount of 200,000 farming families from 56 provinces within the Philippines. And as of recent years, the Bicol Region and Mindoro in Luzon; Leyte, Samar, Negros Oriental, Iloilo, and Aklan in the Visayas; and all the provinces of Mindanao have been the main key abaca-producing areas found in the Philippines. (Vancouverpcg 2020). During the years 2006 – 2016, for a decade, the country’s production of abaca fiber was relatively stable, generating an average of 67,329 metric tons and US\$100 million in foreign earnings per year from the different varieties of abaca products. (Vancouverpcg 2020). In the course of the year 2020, the estimated global abaca fiber market size was an astounding USD\$420.9 million and is still expected to increase in the upcoming years. (Grand View Research, 2022). While the abaca industry in the Philippines has been steadily expanding over the past years, abaca fiber production is faced with a massive problem, stemming from major abaca growing regions being hit by viral diseases, which need to be handled and addressed accordingly if the Philippines wishes to maintain its title as the world’s leading abaca supplier.

2.5 Problems and Concerns in the Abaca Industry

A few years ago, in Leyte alone, the abaca industry underwent a crisis, in which thousands of hectares of abaca were destroyed due to the bunchy-top disease which is considered the most injurious disease among the two other diseases – abaca mosaic and abaca bract mosaic- that affect the country. The loss of income due to the destruction of the crops caused by the bunchy-top disease led to flow-on impacts on households’ food security, education, health, and even psychosocial well-being. It also caused the government and research efforts to become more committed to finding means to eradicate this disease (Nuñez, 2013). The challenge in abaca production is how to increase farm productivity and look for value. Adding technologies so that abaca farmers can increase their income from abaca farming. Development of novel products from abaca and its production

wastes is one way to increase the utilization of abaca (Sinon et al., 2011), in a stalk of abaca the farmer could only recover 0.3 - 0.5 kg of fresh fiber. And all the rest will go to waste. Hence, looking for ways on how to utilize abaca is empirical.

2.6 Antimicrobial Compounds Found in Abaca

Traditionally, crude extracts are collected from the different parts of medicinal plants, these plant parts may include the fruit, flower, leaves, roots, stems, etc., and were used as herbal medicine to treat and combat human diseases (Khan et al., 2013). These medicinal plants contain several phytochemicals namely, alkaloids, flavonoids, tannins, terpenoids, and more, which hold both antimicrobial and antioxidant properties (Talib & Mahasneh, 2010). Tribes originating from the Philippines have used abaca as a treatment for certain conditions and injuries. The Higaonon tribe of Rogongon, Iligan City from Mindanao uses the sap from young abaca shoots to treat diarrhea, they partially roast it then squeeze out the sap from the shoot and drink the juice thrice a day (Olowa et al., 2012). In Davao, Philippines, the Matigsalug tribe uses the abaca plant for relapse (Guevara & Garcia, 2018).

Studies on the chemical composition of abaca fiber have been conducted in the past several years. In this study, conducted by José C. del Río and Ana Gutiérrez, the leaf fibers of Abaca used in manufacturing high-quality paper pulp production were studied in depth and the results revealed that the total fiber's lignin content was 13.2%. The analysis of the abaca fibers by pyrolysis coupled with chromatography-mass spectrometry (Py-GC/MS) predominantly released compounds that arise from both lignin and p-hydroxycinnamic acids, while also showing high amounts of 4-vinyl phenol. In the presence of tetramethylammonium hydroxide, the pyrolysis of the abaca fibers released high amounts of p-coumaric acid (as the methyl derivative) (Rio & Gutiérrez 2006). p-coumaric acid has dual mechanisms of bacterial activity which disrupts cell membranes and the binding of bacterial genomic DNA that effectively inhibits cellular function, replication, transcription, and expression of bacterial pathogens, which later on leads to the cell's death (Lou et al 2011). The results also revealed after Py-GC/MS of the abaca fibers, products deom p-hydroxyphenyl (H), guaiacyl (G), and syringyl (S) propanoid units, with a predominance of the later (H:G:S molar ratio of 1:5:1:4:9) were released. Sinapyl and coniferyl acetates were also found in the abaca. The most predominant compounds found in the abaca fiber were free sterols which made up 24% of the total extract and 24% of fatty acids. Furthermore, significant amounts of steroid ketones (10%), triglyceridse (6%), ω -hydroxyfatty acids (6%), monoglycerides (4%), fatty alcohols (4%), and a series of p-hydroxycinnamyl (p-coumaric and ferulic acids) esterified with long chain alcohols and ω -hydroxyfatty acids together with minor amounts of α -hydroxyfatty acids, diglycerides, steroid hydrocarbons, sterol esters, and sterol glycosides. (Rio & Gutiérrez 2006)

2.7 Importance of Tomato in the Philippines

Tomato, scientifically known as *S. lycopersicum*, is considered one of the most profitable crops and the second most important fruit vegetable, right after eggplant, in the Philippines (Altoveros & Borromeo 2007). In 2021, tomato production of 75,127.03 metric tons in Ilocos Region was 2.30 percent higher than the 73,435.34 metric tons output in 2020. (Table 1). Ilocos Region topped all the tomato producing regions, contributing 33.32 percent to the national output of 225,450.60 metric tons. Out of the total production of the Ilocos Region, the provinces of Ilocos Norte and Ilocos Sur contributed 35.82 percent and 35.21 percent respectively while Pangasinan and La Union had shares of 25.82 percent and 3.15 percent, respectively (Phil. Statistics Authority, 2021). And consumption of tomatoes amongst Filipinos continues to rise due to the vegetable's wide variety of uses and nutritional value. Tomatoes have been widely studied and found to have health properties such as; carotenoids, chlorophylls, dietary fibers, glycoalkaloids, minerals, organic acids, polyphenols, and vitamins C and E (Asensio et al 2019; Martínez-Huélamo et al 2016).

2.8 Importance of tomato diseases

Tomatoes, while being one of the most profitable crops in the Philippines and extensively cultivated all around the world, face an array of pest and disease problems which leads to lower yield and quality of the products. Tomato is susceptible to multiple diseases namely fusarium wilt, root rot, verticillium, and many other diseases. However, bacterial wilt's pathogen also scientifically known as *Ralstonia solanacearum* Smith., is one of the most important and serious soil-borne diseases not only in the tomato industry but also in many plants that are situated in tropical/subtropical warm climates (Hayward 1991). This disease has become a major biotic factor limiting the growth and development of crops throughout the world as it affects over 200 plant species in 50 families (Hayward 2000). And one of the families that the bacterial wilt affects is the solanaceous family including the eggplant, pepper, potato, tobacco, and tomato, most of which, contribute to the Philippines' economy (Anith et al 2004).

2.9 Management of Tomato Wilt

The use of soil organic amendments can be considered as a way to control bacterial wilt in a sustainable manner. The application of soil organic amendments is a traditional practice for maintaining not only soil health but also fertility. Which in turn causes an increase in yield and quality of crops. These organic amendments contain growth-promoting hormones such as IAA and GA, macro and micronutrients, vitamins, as well as beneficial microorganisms. This does not only provide nutrients to the soil but is also a viable method for controlling soil-borne diseases (Sreenivasa et al 2010). In addition, the increase of beneficial microbes improves the physiochemical of the soil and generates biological competition and antagonism which naturally suppresses soil-borne pathogens. (Janvier et al 2007). Streptomycin is an antibiotic that acts against both gram-positive and gram-negative bacteria, it kills the bacteria by disrupting the function of bacterial cell's ribosomes, which are responsible for creating the proteins linking amino acids together. This is why streptomycin is considered a good drug that can fight against Tomato wilt, a gram-positive bacteria. (One Secret Hunt 2012-2022).

In November 1953, a sudden outbreak in a tomato hydroponic farm of Land Authority at Vega Alta, P.R. was reported. Due to the special conditions in the hydroponic farm, quick measures for identification and control of the disease were crucial. The pure culture was obtained by extracting the ooze from pieces of the infected stems placed in water. The isolated bacterium was then later on identified to be *Pseudomonas solanacearum* E.F.S, now known as *R. solanacearum*. Since broth cultures were accessible, sensitivity tests with antibiotic discs (Difco) 2 were carried out by seeding nutrient agar plates with 24-hour-old broth cultures (Perez, 1969). The results of the sensitivity test revealed that the bacterium was very sensitive to a concentration of 1 fig. of streptomycin in vitro. Based on the test results, it was recommended to apply streptomycin sulfate directly into the main tank of the nutrient solution in the affected areas, for the final concentration of approximately 4 ng. of streptomycin could be reached. The heavily affected plants were all removed while the slightly affected plants were left. And within a few days, the slightly affected plants recovered completely, and no more cases appeared. In the following week, a second dose of streptomycin was given to ensure the affected area completely recovered (Perez 1969).

3. Materials and methods

Collection and Preparation of Abaca Plant Samples - The Abaca plant samples were collected from a mature Abaca plant at the National Abaca Research Center (NARC) Waterwheel area. The samples were then washed and cleaned thoroughly, segregating the plant parts into leaves, roots, flowers, corm, and pseudostem, labeled, and then weighed. It was air-dried for a month. After a month of air drying, the different plant parts were once again weighed to determine the moisture content within each plant part.

Abaca Plant Extraction & Drying in Vacuo - After weighing, the plant samples were cut and milled. Each plant sample was then soaked in 40% ethanol using a 1:2 ratio (sample weight: ethanol volume) and secured in sealed containers under refrigerated conditions for 3 days in the dark. After soaking, the plant samples were then

Comparative phytochemical analysis and antimicrobial activity of Abaca (*Musa textilis* [Neé]) processing wastes filtered to collect the extract. The pseudostem was shredded and squeezed for the collection of its sap. The collected extracts, excluding the pseudostem sap, were then dried in vacuo.



Figure 1. The collected abaca extracts after drying in vacuo

Antimicrobial Activity of Abaca Plant Extracts Against *E.coli* - The abaca plant extracts were subjected to the bacteria *Escherichia coli* at rates of 15,000, 10,000, and 5,000 ppm, with three replications per ppm. Each abaca plant extract was then individually tested in vitro. The tests were done at the Plant Disease Diagnostic Laboratory.

Preparation of Culture Medium - Forty-two (42) grams of nutrient agar powder was mixed into 1500 mL of sterilized water and heated in an oven for 10 minutes to make 1500 mL of Nutrient Agar. 15mL of the nutrient agar was poured into 63 test tubes with 51 of those test tubes transferred into the petri dishes. Three hundred microliter of the pathogen *E. coli*, provided by the Plant Disease Diagnostic Laboratory (PDDL) which provides such services, was placed into each petri dish and spread all over the plate's surface using an L-shaped rod. A total of two hundred fifty-five (255) sterile disks and fifty-one (51) sterile petri dishes were prepared. Each petri dish contained 5 disks that were soaked in the abaca extracts; roots, corm, leaf, flower, and pseudostem sap, as well as the positive control which was streptomycin, and the sterilized water acting as the negative control. It was then sealed with masking tape and the growth inhibition was monitored and measured for 24 hours.

Treatment Application - The different parts of the Abaca served as the treatments of the study. The following treatments are as follows. The experiment was arranged in Completely Randomized Design (CRD). The abaca plant extracts were subjected to the bacteria *Escherichia coli* at rates of 15,000, 10,000, and 5,000 ppm, with three replications per ppm. Each abaca plant extract was then individually tested in vitro. The set-up was incubated for 48 hours to collect the zone of inhibition using a ruler. After the experiment, the set-up was properly disposed of following the standard protocol of the Plant Disease Diagnostic Laboratory (PPDL) for *E. coli*.

T ₁ = Negatice Control (H ₂ O)	
T ₂ = Roots	T ₂ C ₁ = Roots (5,000ppm) T ₂ C ₂ = Roots (10,000ppm) T ₂ C ₃ = Roots (15,000ppm)
T ₃ = Pseudostem	T ₃ C ₁ = Pseudostem (5,000ppm) T ₃ C ₂ = Pseudostem (10,000ppm) T ₃ C ₃ = Pseudostem (15,000ppm)
T ₄ = Flower	T ₄ C ₁ = Flower (5,000ppm) T ₄ C ₂ = Flower (10,000ppm) T ₄ C ₃ = Flower (15,000ppm)
T ₅ = Corm	T ₅ C ₁ = Corm (5,000ppm) T ₅ C ₂ = Corm (10,000ppm) T ₅ C ₃ = Corm (15,000ppm)
T ₆ = Leaves	T ₆ C ₁ = Leaves (5,000ppm) T ₆ C ₂ = Leaves (10,000ppm) T ₆ C ₃ = Leaves (15,000ppm)
T ₇ = Positive Control (Streptomycin)	

Antimicrobial Assay of Abaca Against *R. solanacearum* - The tomato seedlings were inoculated with *R. solanacearum* using the method of Singh et al. (2018). The Abaca Plant Extracts were subjected to the bacterial wilt pathogen of *S. lycopersicum* at the same rates of 15,000, 10,000, and 5,000 ppm. The tests were done at the Plant Disease Diagnostic Laboratory.

Planting of Tomato Seedlings - Two hundred tomato seedlings were prepared and soaked for two days straight. It was then transferred into sterile plastic containers that had three (3) layers of sterilized paper. This was sprayed daily with distilled water and was monitored for seven (7) days.



Figure 2. Tomato seedlings soaked in water

Treatment Application - The *R. solanacearum* was provided by the Plant Disease Diagnostic Laboratory (PDDL). Two methods were used, preventive and curative, to see how effective the extracts were against the bacterial wilt. The different parts of Abaca were used as the treatments of the study. The following treatments are as followed for both methods:

T ₁ = Negatice Control (H ₂ O)	
T ₂ = Roots	T ₂ C ₁ = Roots (5,000ppm) T ₂ C ₂ = Roots (10,000ppm) T ₂ C ₃ = Roots (15,000ppm)
T ₃ = Pseudostem	T ₃ C ₁ = Pseudostem (5,000ppm) T ₃ C ₂ = Pseudostem (10,000ppm) T ₃ C ₃ = Pseudostem (15,000ppm)
T ₄ = Flower	T ₄ C ₁ = Flower (5,000ppm) T ₄ C ₂ = Flower (10,000ppm) T ₄ C ₃ = Flower (15,000ppm)
T ₅ = Corm	T ₅ C ₁ = Corm (5,000ppm) T ₅ C ₂ = Corm (10,000ppm) T ₅ C ₃ = Corm (15,000ppm)
T ₆ = Leaves	T ₆ C ₁ = Leaves (5,000ppm) T ₆ C ₂ = Leaves (10,000ppm) T ₆ C ₃ = Leaves (15,000ppm)
T ₇ = Positive Control (Streptomycin)	

Preventive Method - The preventive method used seedlings dipped in the bacterial suspension and with a minute dipping interval into the extract then placed into the microtube. The experiment was arranged in Completely Randomized Design (CRD). The abaca plant extracts were subjected to the bacteria *Ralstonia solanacearum* at rates of 15,000, 10,000, and 5,000 ppm, with four (4) replications per ppm. Each abaca plant extract was then individually tested in vitro. The mortality rate of each test subject was monitored every 24 hours for 2 days.



Figure 3. Tomato seedlings afflicted by *R.solanacearum* at 24 hours after treatment application using preventive method

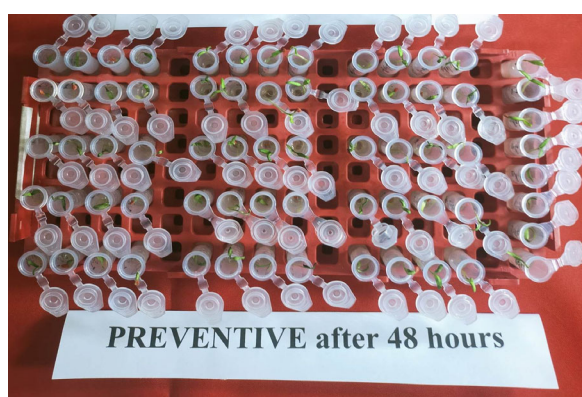


Figure 4. Tomato seedlings afflicted by *R.solanacearum* at 48 hours after treatment application using preventive method

Curative Method - The curative method used seedlings dipped in the different abaca extracts and with a minute dipping interval into the bacterial suspension then placed into the microtube. The experiment was arranged in Completely Randomized Design (CRD). The abaca plant extracts were subjected to the bacteria *Ralstonia solanacearum* at rates of 15,000, 10,000, and 5,000 ppm, with four (4) replications per ppm. Each abaca plant extract was then individually tested in vitro. These were monitored every 24 hours for 2 days.



Figure 5. Tomato seedlings afflicted by *R.solanacearum* at 24 hours after treatment application using curative method



Figure 6. Tomato seedlings afflicted by *R. solanacearum* at 48 hours after treatment application using curative method

Toxicity Test of Abaca Plant Extracts - Test solutions were prepared for the toxicity tests according to Table 1. The exact amounts of each liquid component were measured using a 5-mL micropipette. The contents of each tube were gently shaken to homogenize and the reaction time began after the addition of methylene blue and yeast as the mixture was shaken. The tubes were allowed to sit undisturbed for about 30 minutes while observing the color change. As the blue color fades, the time estimate necessary to reach a color matching that of the control color is the end of the test. Each test sample was performed in triplicates.

Table 1

Sample solutions prepared for the toxicity test

	Vol. of water, mL	Vol. of extract, mL	Vol. of yeast/sugar mixture, mL	Vol. of methylene blue, drop	Vol. of mineral oil, mL
Blank	11.0	-	-	1.0	1.0
Control	1.0	-	1.0	1.0	1.0
Root Extract	-	0.5	5.0	0.5	0.5
Pseudostem Sap	-	1.0	1.0	1.0	1.0
Flowers Extract	-	1.0	1.0	1.0	1.0
Corm Extract	-	1.0	1.0	1.0	1.0
Leaves Extract	-	1.0	1.0	1.0	1.0

Total Flavonoid Content (TFC) - The Total flavonoid content was determined according to the most commonly used procedure for total flavonoid determination, the Spectrophotometric Assay, of Christ and Müller (1960).

Preparation of standard samples and ethanolic extracts - Of the test solution (standard or sample), 1 mL was mixed with 0.3 mL of NaNO_2 (5 %, w/v) and after 5 min, 0.5 mL of AlCl_3 (2 %, w/v) was added. Flavonoid standard solutions of 50, 75, 100, 125, 150, 200, 250, 300, 350, 400, 500 μM were used. The sample was mixed and 6 min later was neutralized with 0.5 mL of 1 M NaOH solution. The mixture was left for 10 min at room temperature and then subjected to spectral analysis in the range of 300–600 nm against the blank, where AlCl_3 solution was substituted by water. Catechin (in the 50–500- μM concentration range) was the standard of choice for the expression of results at 510 nm.

Total Phenolic Content (TPC) - The total phenolic contents of the ethanolic abaca extracts were estimated using the Folin-Ciocalteu reagent as described by Singleton and Rossi (1965).

Preparation of standard samples - Blank sample, 1.0, 0.1, 0.01, and 0.001 $\mu\text{g/mL}$ Gallic acid solutions with 5.0 mL of Folin-Ciocalteu reagent (diluted tenfold) and 4.0 mL of sodium carbonate solution (75 g/L) were used as the standard. The absorbance was measured after 30 min. at 765 nm.

Preparation of ethanolic extracts - For the ethanolic extracts (1 g/ 100 mL), 1 mL was mixed separately

with the same reagents, as performed for constructing the standard samples. After 1 h, the absorbance was measured to determine the total phenolic contents in both extracts separately using the formula, $C = C_1 \times V/m$; where C = total phenolic content in mg/g, in GAE (Gallic acid equivalent), C_1 = concentration of Gallic acid established from the standard samples in mg/mL, V = volume of extract in mL, and m = the weight of the plant extract in g (Siddiqui et al., 2017).

Statistical Design and Analysis - Data was consolidated and analyzed using ANOVA through Statistical Tool for Agricultural Research (STAR). Treatment means were compared using Turkey's Honest Significant Difference (Turkey's HSD).

4. Results and discussion

4.1 Percent Recovery of the *M. textilis* Plant Extracts

After vacuum drying, the extracts of the different components of the abaca plants were collected and determined as percentage yield per fresh weight of the different plant samples. Table 2 shows the amount of the collected extracts from the individual plant component and each corresponding percent yield of recovered extracts. The determined percent yield of the recovered extracts can be used to estimate the amount of extract that can be collected from a predetermined amount of fresh abaca plant sample required for a series of tests. The results show that the abaca roots had the highest amount of recovered extract per weight sample prepared, followed by the abaca flowers, leaves, and corm. This suggests that more abaca fresh corm were required to recover and extract comparable to that of the abaca roots.

Table 2

The percent yield of crude abaca extracts per weight of fresh plant samples

Samples	Weight of fresh plant sample (g)	Weight of dry plant sample (g)	Moisture content of plant sample (%)	Weight of collected extract (g)	Percent Yield of Extract (%)
Roots	250.00	125.00	50.00	23.60	9.44
Leaves	750.00	250.00	66.67	38.20	5.09
Flowers	500.00	250.00	50.00	36.30	7.26
Corm	2000.00	500.00	75.00	46.80	2.34
Pseudostem	-	-	-	-	-

4.2 Antimicrobial Activity of Abaca Plant Extracts Against *E. coli*

Escherichia coli is a gram-negative bacterium responsible for numerous diarrheal diseases like traveler's diarrhea and dysentery. It is the primary pathogen causing uncomplicated cystitis and contributes to various extraintestinal conditions such as pneumonia, bacteremia, and abdominal infections like spontaneous bacterial peritonitis (Mueller and Tainter, 2013). Its growth inhibition against abaca extract was observed for 48 hours and measured every 24 hours.

Inhibition Zone of *E. coli* 24 Hours After Treatment Application - At 5,000 ppm, none of the treatments exhibited similarities with the positive control (streptomycin). However, as illustrated in Table 1, both the pseudostem sap and corm extract did not significantly differ from the negative control (H_2O). This suggests a resemblance between the pseudostem sap, corm extract, and the H_2O treatment. All treatments showed similarities, with the root extract that displayed a higher level of variance. Overall, the root treatment demonstrated the highest inhibition measurement compared to the other extracts at this concentration. At a higher concentration of 10,000 ppm, the measurement of the inhibition zones of the pseudostem sap, corm extract, and leaves extract increased, indicating similarities among them. The pseudostem sap no longer shared any similarities with the H_2O treatment, while the leaves extract showed the highest inhibition measurement and variance compared to the other treatments. However, the root extract maintained its inhibition measurement and did not significantly differ from the corm extract, sharing some similarities with the remaining extracts.

Meanwhile, the inhibition measurement of the flower extract decreased, no longer significantly varying from the H₂O treatment. At 15,000 ppm, the root extract's measurement of inhibition significantly increased, becoming the highest in both variance and inhibition measurement among all the extracts. The inhibition measurements of the flower and leaves extracts also increased but did not significantly differ from each other. Conversely, the corm extract's inhibition measurement decreased, no longer varying significantly from the pseudostem sap and flower extract, while showing minimal similarities with the leaves extract. The pseudostem sap maintained its inhibition measurement while continuing to share no similarities with the H₂O treatment. The consistent increase in inhibition measurements across most extracts indicates that the antimicrobial efficacy of abaca is concentration-dependent, with higher concentrations yielding more efficient results. Additionally, extracts with higher water content show improved outcomes at higher concentrations, reducing their resemblance to the H₂O treatment. It is also observed that the higher the inhibition measurement, the more significantly varied it becomes from the rest of the treatments.

Table 3

Average Inhibition Zone of E.coli affected by different abaca extracts at 24 hours after treatment applications

Treatments	24 HOURS INHIBITION ZONE		
	Concentrations		
	5,000 ppm*	10,000 ppm*	15,000 ppm*
H ₂ O	0.71 ^e		
Roots Extract	1.32 ^{bcd}	1.32 ^{bcd}	1.73 ^b
Pseudostem Sap	1.13 ^{cde}	1.23 ^{cd}	1.23 ^{cd}
Flower Extract	1.22 ^{cd}	1.08 ^{de}	1.32 ^{bcd}
Corm Extract	1.11 ^{de}	1.36 ^{bcd}	1.28 ^{cd}
Leaves Extract	1.18 ^{cd}	1.29 ^{cd}	1.54 ^{bc}
Streptomycin	4.12 ^a		
CV (%)	9.83		

* Means in a column followed by the same letter are not significantly different at 5% HSD

Inhibition Zone of E. coli 48 Hours After Treatment Application - As shown in Table 3, after 48 hours, the inhibition measurements of the treatments showed a decrease. At 5,000 ppm, the extracts did not exhibit significant variation from each other or the H₂O treatment. However, there was a slight deviation observed in the pseudostem sap and leaves extract compared to the other treatments, with the leaves extract displaying the highest inhibition measurement followed by the pseudostem sap. It's worth mentioning that at this concentration, the leaves extract showed the highest inhibition measurement. Moving on to 10,000 ppm, most of the extracts demonstrated an increase in inhibition measurement, except for the flower and leaves treatments, which showed a decrease. The variance remained consistent, with the pseudostem sap and leaves extract showing slight variation from the other extracts but not significantly varying from each other.

Additionally, the inhibition measurements of the extracts did not significantly vary from the previous concentration of 5,000 ppm. At 15,000 ppm, all extracts exhibited higher inhibition measurements compared to those at lower concentrations. The significance of variation was not observed among the extracts, except for the leaves extract, which showed slight variance from the other extracts but no longer resembled the H₂O treatment. The extracts at higher concentrations also displayed slight variation from the measurements at lower concentrations. This further indicates that the higher the concentration the more varied it becomes from the rest of treatments. The longer the time continues to pass, the less effective the antimicrobial properties become, especially at lower concentrations, meaning that higher concentrations should be used to maximize the efficacy of extracts.

4.3 Antimicrobial Assay of Abaca Against *R. solanocearum*

Among the soil-borne diseases, tomatoes are highly susceptible to bacterial wilt caused by which is one of the most important and widely distributed plant pathogenic bacteria in the tropical, subtropical, and warm temperate climates of the world (Hayward, 1991). It causes bacterial wilt disease on over 200 plant species in 50 families (Hayward, 2000) and remains the major biotic factor limiting the growth and development of several

important solanaceous crops including potato, tomato, eggplant, pepper, and tobacco (Anith et al., 2004). The survival rate of tomato seedlings was determined using preventive and curative methods and compared to identify which method was better suited to increase the survival rate of tomato seedlings against *R. solanacearum*.

Table 4

Average Inhibition Zone of E.coli affected by different abaca extracts at 48 hours after treatment applications

Treatments	48 HOURS INHIBITION ZONE		
	Concentrations		
	5,000 ppm*	10,000 ppm*	15,000 ppm*
H ₂ O	0.71 ^c		
Roots Extract	0.79 ^c	0.81 ^c	0.93 ^{bc}
Pseudostem Sap	0.98 ^{bc}	1.03 ^{bc}	1.09 ^{bc}
Flower Extract	0.77 ^c	0.75 ^c	1.05 ^{bc}
Corm Extract	0.77 ^c	0.88 ^c	0.94 ^{bc}
Leaves Extract	1.03 ^{bc}	1.01 ^{bc}	1.29 ^b
Streptomycin	4.16 ^a		
CV (%)	11.17		

* Means in a column followed by the same letter are not significantly different at 5% HSD

Survival Rate of Tomato Seedlings Afflicted by *R. solanacearum* at 24 Hours After Treatment Application Using Curative Method - After 24 hours it was observed that the treatments do not vary significantly among each other. This could indicate that the sample size was too small leading to a more random result from the data. However, higher survival rates were observed at higher concentrations, indicating that the efficacy of the abaca extract's antimicrobial properties is dependent on its concentration. In other words, the higher the concentration of abaca extract used, the more effective the treatment becomes.

Table 5

*Average survival rate of tomato seedlings 24 hours after being afflicted by *R. solanacearum* and treated by abaca extracts using curative method*

Treatments	24 HOURS SURVIVAL RATE		
	Concentrations		
	5,000 ppm ^{ns}	10,000 ppm ^{ns}	15,000 ppm ^{ns}
H ₂ O	5.36		
Roots Extract	5.36	7.69	7.69
Pseudostem Sap	5.37	5.37	10.02
Flower Extract	5.37	5.37	7.69
Corm Extract	3.04	7.69	10.02
Leaves Extract	5.36	5.36	5.36
Streptomycin	10.02		
CV (%)	70.56		

^{ns} Means in a column do not vary significantly among treatments

Survival Rate of Tomato Seedlings Afflicted by *R. solanacearum* at 48 Hours After Treatment Application Using Curative Method - After 48 hours, there was a slight decrease in the average survival rates of the treatments. However, it is to be noted that the treatments still do not show significant variation among each other. This observation could suggest that the sample size might have been insufficient, potentially leading to a more random outcome in the data. A larger sample size could provide a clearer picture of the treatment effects. Interestingly, higher survival rates were observed at higher concentrations of the abaca extract. This finding suggests that the efficacy of the extract's antimicrobial properties is directly proportional to its concentration. The higher the concentration of the extract, the more effective the treatment becomes in inhibiting microbial growth or enhancing survival rates. This concentration-dependent effect underscores the importance of dosage considerations when utilizing abaca extract for antimicrobial purposes.

Survival Rate of Tomato Seedlings Afflicted by *R. solanacearum* at 24 Hours After Treatment Application Using Preventive Method - The means do not vary significantly among treatments, as shown in the table below (Table 6), the only varying treatment is the negative control (H₂O) which has a lower survival rate compared to the other treatments. All extracts had the same survival rate as the positive control, streptomycin.

Table 6

Average survival rate of tomato seedlings 48 hours after being afflicted by R.solanacearum and treated by abaca extracts using curative method

Treatments	48 HOURS SURVIVAL RATE		
	Concentrations		
	5,000 ppm ^{ns}	10,000 ppm ^{ns}	15,000 ppm ^{ns}
H ₂ O	3.04		
Roots Extract	5.37	3.04	5.37
Pseudostem Sap	3.04	5.37	7.69
Flower Extract	3.04	5.37	5.37
Corm Extract	0.71	5.37	7.69
Leaves Extract	5.37	5.37	5.37
Streptomycin	10.02		
CV (%)	94.08		

^{ns} Means in a column do not vary significantly among treatments

Table 7

The average survival rate of tomato seedlings 24 hours after being afflicted by R. solanacearum and treated by abaca extracts using preventive method

Treatments	24 HOURS SURVIVAL RATE		
	Concentrations		
	5,000 ppm ^{ns}	10,000 ppm ^{ns}	15,000 ppm ^{ns}
H ₂ O	7.69		
Roots Extract	10.02	10.02	10.02
Pseudostem Sap	10.02	10.02	10.02
Flower Extract	10.02	10.02	10.02
Corm Extract	10.02	10.02	10.02
Leaves Extract	10.02	10.02	10.02
Streptomycin	10.02		
CV (%)	5.72		

^{ns} Means in a column do not vary significantly among treatments

Survival Rate of Tomato Seedlings Afflicted by R. solanacearum at 48 Hours After Treatment Application Using Preventive Method - The Average survival rates of the treatments have slightly decreased after 48 hours however, the treatments still do not vary significantly among each other. At 15,000 ppm, most of the treatment's survival rate increased compared to lower concentrations except that of the pseudostem extract, and due to the small sample set, this may not be accurate.

Table 8

Average survival rate of tomato seedlings 48 hours after being afflicted by R.solanacearum and treated by abaca extracts using preventive method

Treatments	48 HOURS SURVIVAL RATE		
	Concentrations		
	5,000 ppm ^{ns}	10,000 ppm ^{ns}	15,000 ppm ^{ns}
H ₂ O	3.04		
Roots Extract	7.69	10.02	10.02
Pseudostem Sap	7.69	7.69	3.04
Flower Extract	0.71	5.37	5.37
Corm Extract	5.37	5.37	5.37
Leaves Extract	3.04	5.37	7.69
Streptomycin	10.02		
CV (%)	44.59		

^{ns} Means in a column do not vary significantly among treatments

Although the sample set may be insufficient, it is noteworthy that the results shown in the tables (Table 7 and Table 8) may indicate that, compared to the curative method, using the preventive method may result in a better survival rate.

4.4 Toxicity Test of Abaca Plant Extracts

The result of the toxicity test conducted on the five (5) extracts of the abaca plant parts showed that after thirty minutes had passed, the addition of the methylene blue indicator into the solution had an observable

change from blue to colorless. It denotes that the production of ATP (Adenosine triphosphate) has not stopped in which the electrons are continuously transferred from one chemical carrier to another. This suggests that the yeast cells did not die out after the addition of the different abaca plant extracts. The production of ATP is essential to all cellular life and anything which slows down or stops this cycle will kill the cell or at least alter its usual function. Since the test gave a negative result for all abaca plant extracts therefore all plant extracts are considered non-toxic.



Figure 7. Toxicity test of the abaca plant extracts at (a) 0 minutes, (b) after 15 minutes and (c) end-point, after 30 minutes.

4.5 Total Flavonoid Content (TFC)

Calibration Curve of Flavonoid Standard Samples - The calibration curve of the flavonoid standard samples that the 500 μM had the highest flavonoid content followed by 400, 350, 300, 250, 200, 150, 125, 100, 75, and 50 μM as shown in the graph below (figure 8).

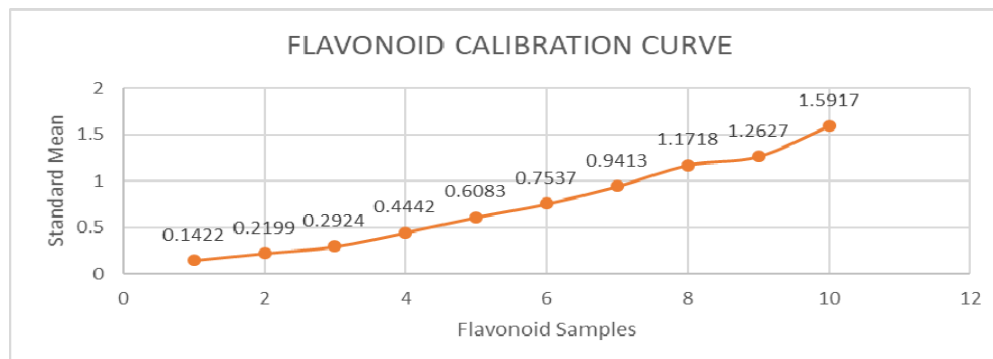


Figure 8. Flavonoid calibration curve

Flavonoid Content of Abaca Extracts - The total flavonoid content was determined using the Folin-Ciocalteu method with the abaca roots being consistently higher followed by that of the leaves, flower, corm, and, pseudostem respectively. The result of the total flavonoid content complements the result of the total phenolic content since in general, the flavonoids are one particular group of phenolics present in most plant pigments. It can be inferred that it is the roots of the abaca plant which has the potential to show the highest antioxidant activity and that it would be best to utilize predominantly the roots of this plant most of all. When comparing the flavonoid content of various abaca extracts to the calibration curve, a clear pattern emerges. The roots and leaves extract exhibit a significantly higher flavonoid content compared to the standard samples, indicating a rich concentration of flavonoids. Following closely behind are the flower extract, corm extract, and pseudostem sap, all of which fall within the range of flavonoid content observed in the standard samples. This suggests that the roots and leaves of the abaca plant are particularly potent sources of flavonoids, while the other extracts also contribute to its overall flavonoid profile, although to a slightly lesser extent.

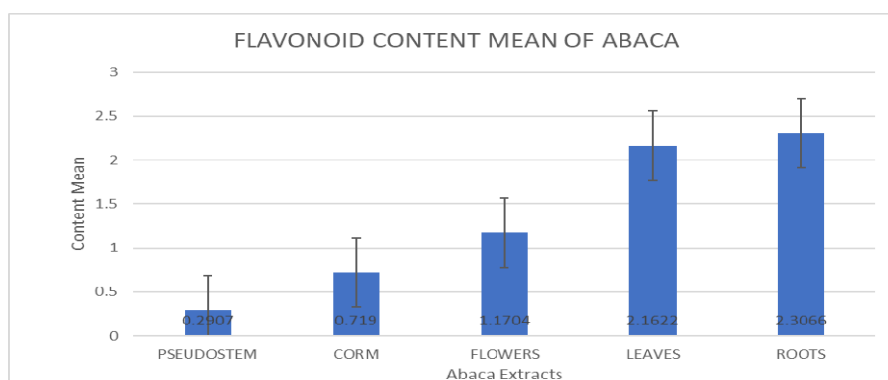


Figure 9. Flavonoid content mean of abaca extracts

4.6 Total Phenolic Content (TFC)

Average Phenolic Content of Standard Samples - The sample containing the highest level of phenols, as shown by the figure below (Figure 10) was 1.0, followed by 0.1, 0.01, and 0.001 gallic acid solution, and the blank sample contained no trace amount of phenols whatsoever. This indicates that the more a sample contains gallic acid, the higher the phenolic content is.

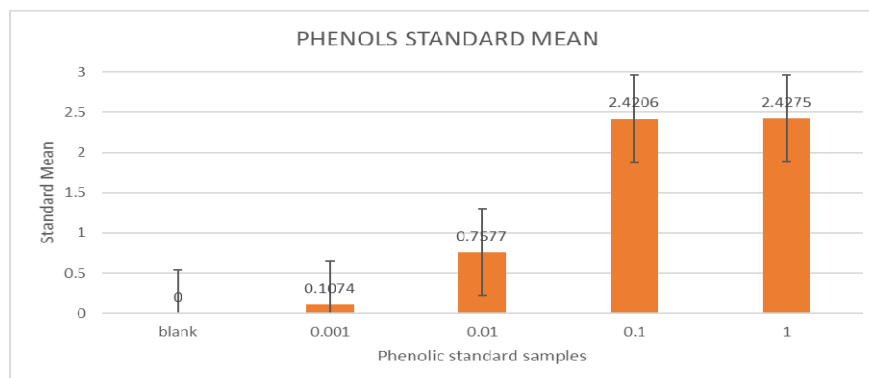


Figure 10. Phenolic content mean of standard samples

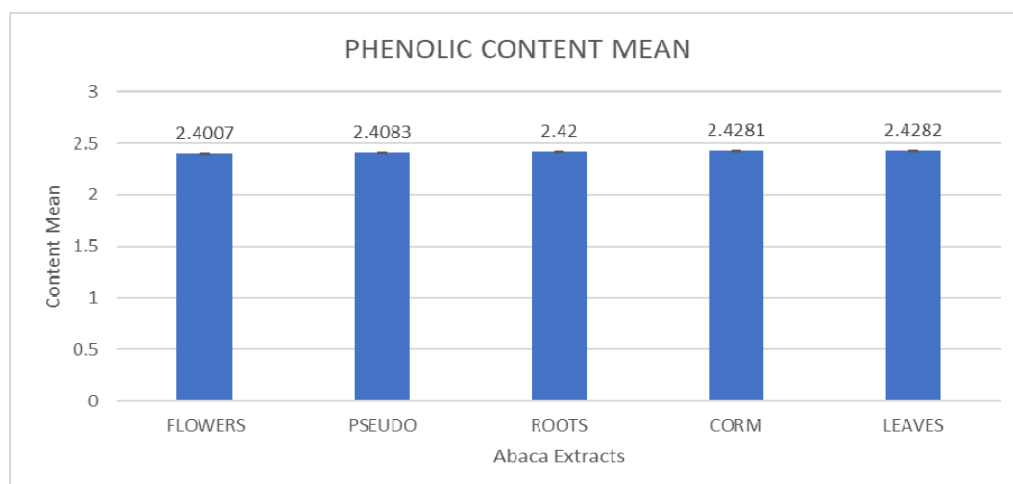


Figure 11. Phenolic content mean of abaca extracts

Phenolic Content of Abaca Extracts - Results revealed that the extract of the abaca leaves showed the highest amount of phenolic content followed by the abaca corm, roots, pseudostem, and flowers, respectively.

This suggests that the abaca leaves can be a good source of high phenol compounds which have been reported to exhibit high radical scavenging activity similar to that shown by vitamin C. Also, the result of the analysis of the total phenolic content of the different parts of the abaca plant was confirmed by the total flavonoid content of the different plant extracts. The comparison of phenolic content between the Abaca extracts and the standard samples reveals a consistent pattern. All extracts either surpass or fall within the range of 0.1 to 1.00 phenolic content found in the standard samples. This indicates that the Abaca extracts contain trace amounts of phenols, showing their presence across different parts of the abaca plant.

5. Conclusion

The results of this study conclude that the different parts of abaca are resistant against *E. coli* at small quantities; having used 5,000ppm, 10,000ppm, and 15,000ppm concentrations. The results show that the abaca plant extracts against *R. solonacearum* had higher rates of survival against the pathogen at higher concentrations however, the minimal variation in means among different extracts and concentrations does not provide sufficient evidence to conclude the presence of an impact related to either extract or concentration. Further research using more plant subjects, higher concentrations and different methods is necessary in order to yield better results. The different parts of abaca were tested for their total flavonoid and total phenolic content and the results that all the parts of abaca contain high amounts of flavonoid and phenols which gives solace that abaca has antimicrobial properties that can inhibit the growth of bacteria. And lastly, the toxicity test conducted had shown results that all of the different parts of abaca were found to be non-toxic. However, it is not concluded if the different parts of abaca are safe for human consumption.

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Digital technology: Level of replacement, amplification, and transformation of instructional practices among Filipino-American educators

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ISSN: 2243-7703
Online ISSN: 2243-7711

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

OPEN ACCESS

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25846

Abstract

This study aimed to determine the level of digital technology integration among Filipino-American educators in the United States. It specifically identified the educators' integration levels of digital technology as replacement, amplification, and transformation of their instructional practices. It also examined significant differences in integration levels—replacement, amplification, and transformation—based on gender, highest educational attainment, and years of teaching in the US. Sixty-four Filipino-American educators across the US were identified through convenience sampling as respondents to this study. Results indicated high replacement and amplification levels of educators' instructional practices due to digital technology. These educators considered digital technology to have highly replaced their customary instructional practices as a digital alternative. They also considered digital technology to have amplified their practices by increasing the efficiency, effectiveness, or productivity of these practices. Results indicated a moderately high transformation. They considered digital technology to have moderately transformed their practices through the inventions of new instructions, learnings, or curricula. There was no significant difference in the levels of replacement, amplification, and transformation of instructional practices between male and female educators, among educators with different educational attainments, and educators with different years of teaching. Education in the United States provides easy access to technology that revolutionizes learning, not only by providing access to high-quality classroom experiences but by fostering innovative methods of teaching. This shift was exemplified by the respondents of this study.

Keywords: digital technology, integration, instructional practices, replacement, amplification, transformation

Digital technology: Level of replacement, amplification, and transformation of instructional practices among Filipino-American educators

1. Introduction

The integration of digital technology into instruction practices has become a pivotal aspect of modern education. This has been driven by the need to enhance learning experiences (Keengwe, 2018; Minea-Pic, 2020; Sen & Leong, 2020; Timotheous, Miliou, Dimitriadis, Villagr  Sobrino, Giannoutsou, et al., 2023; Baxter & Hailey, 2024), improve student engagement (Rashid & Asghar, 2016; Schindler, Burkholder, Morad, & Marsh, 2017; Bond, Buntins, Bedenlier, Zawacki-Richter, & Kerres, 2020; Nkomo, Daniel, & Butson, 2021; Pepple, 2022; Adiyono, Hayat, Oktavia, & Prasetyo, 2024), and prepare learners for a digital and global society (Antunes, 2021; Ananto, 2022; Alenezi, 2023; DeWitt & Alias, 2023; Torbaghan, Sasidharan, Jefferson, & Watkins, 2023).

Over the past few decades, the adoption of digital technology in education has evolved significantly (Jeong, Baek, Lim, Kim, Kim, et al., 2022; He, Kuai, & Wang, 2023; Grodal, Krabbe, & Chang-Zunino, 2023). Initially, technology was used primarily for administrative purposes (Kraemer & King, 2006; Asiabaka, 2010; Young, 2012; Zhang & Feeny, 2020) and as a supplementary tool for instruction (Mock, 2001; Siritongthaworn & Krairit, 2006; Ljubojevic, Vaskovic, Stankovic, & Vaskovic, 2014). However, with the advent of the internet and the proliferation of digital devices, technology has become an integral part of the educational landscape (Matos, Pedro, & Piedade, 2019; Havryliuk, Osaulchuk, Dovhan, & Bondar, 2020; Yilmaz, 2021; Din er &  engel-Schoville, 2022; Ayas & Charles, 2024; Thelma, Sain, Mpolomoka, Akpan, & Davy, 2024; Weisberg & Dawson, 2024). The COVID-19 pandemic further accelerated this integration, as schools were forced to shift to remote learning, highlighting both the potential (Grosser, Bientzle, & Kimmerle, 2020; Alenezi, Wardat, & Akour, 2023; Morris & Rohs, 2023) and the challenges of digital education (Rani, Kaur, Sharma, & Sharma, 2021; Tursunaliyevich & Rahmat, 2021; Sung, An, & Thomas, 2024).

The success of the integration of digital technology in instructional practices is believed to be caused by several factors. One such factor is the teachers' beliefs about the value of technology (Bowman, Vongkulluksn, Jiang, & Xie, 2020; Cheng, Chen, & Chang, 2021; Huang, S nchez-Prieto, Teo, Garc a-Pe alvo, Olmos-Miguel  nez, et al., 2021; Pischetola, 2022; Thurm & Barzel, 2020; Cheng, Antonenko, & Ritzhaupt, 2024) and their confidence in using it effectively (Anderson & Putman, 2020; Kimm, Kim, J., Baek, & Chen, 2020; Rousey, 2020; Redmond, Smart, Powell, & Albion, 2021; Meace, Carroll, & Kop, 2022) play a crucial role in its integration.

Studies have shown that teachers with higher self-efficacy are more likely to implement technology in their classrooms (Saienکو, Lavrysh, & Lukianenko, 2020; Zhou, Nguyen, Fischer, Richardson, & Warschauer, 2020; Boeve-De Pauw, De Loof, Walan, Gericke, & Van Petegem, 2022; Gomez, Trespalacios, Hsu, & Yang, 2022; Clipa, Delibas, & M   , 2023). Adequate support and ongoing professional development (Alemdag, Cevikbas, & Baran, 2019; Fernandes, Rodrigues, & Ferreira, 2020; Yurtseven Avci, O'Dwyer, & Lawson, 2020; Guggemos & Seufert, 2021; Hennessy, D'Angelo, McIntyre, Koomar, Kreimeia et al., 2022) are also essential for teachers to stay updated with the latest technological advancements and pedagogical strategies. Schools that provide robust support systems and training opportunities (Francom, 2019; Statti & Torres, 2020; Hu, Chiu, Leung, & Yelland, 2021; Chiu, 2022; Peled & Perzon, 2022) see higher levels of technology integration. Equitable access to digital devices (Ross, 2021; Afzal, Khan, Daud, Ahmad, & Butt, 2023; Chikwe, Dagunduro, Ajuwon, & Ediae, 2024; Raihan, Subroto, Chowdhury, Koch, Ruttan et al., 2024; Siddiqi, 2024) and high-speed internet (Abel, 2020; Ferri, Grifoni, & Guzzo, 2020; Hamid, SENTRY, & Hasan, 2020; Lassoued, Alhendawi, & Bashithalshaaer, 2020; Nenکو, Kybalna, & Snisarenko, 2020; Boerngen & Rickard, 2021) are factors that bring effective technology integration. The digital divide remains a significant challenge, particularly in underserved communities (Michael, 2018; Deng

& Yi, 2022; Abaz & Nuredin, 2023; Afzal et. al., 2023; Kormos and Wisdom, 2023; Deng & El Hag, 2024; Ibrahim & Jibia, 2024).

The integration of digital technology has transformed teaching and learning by enhancing the experiences inside the classroom (Haleem, Javaid, Qadri, & Suman, 2022; Vysochan, Koziar, Stelmah, & Vasylyuk-Zaitseva, 2024). Digital tools provide interactive and multimedia-rich content that can make learning more engaging and effective. Technologies, such as virtual reality, simulations, and educational games offer immersive experiences to students (Keengwe, 2018; Checa & Bustillo, 2020; Villegas-Ch, Govea, Godoy, & Mera-Navarrete, 2024), at the same time, enable personalized learning paths (Bendahmane, El Falaki, & Benattou, 2019; Ingkavara, Panjaburee, Srisawasdi, & Sajjanaroj, 2022; Bayly-Castaneda, Ramirez-Montoya, & Morita-Alexander, 2024), allowing students to learn at their own pace and according to their individual needs. Additionally, digital tools facilitate collaboration and communication (Blau, Shamir-Inbal, & Avdiel, 2020; Guillén, Sawin, & Avineri, 2020; Chierici, Tortora, Del Giudice, & Quacquarelli, 2021; Marion & Fixson, 2021; Sianturi, Lee, & Cumming, 2023) among students and between students and teachers, with platforms like Google Classroom, Microsoft Teams, and Zoom (Alameri, Masadeh, Hamadallah, Ismail, & Fakhouri, 2020; Mammadova, 2023; Choukaier, 2024; Khrisat & Fakhouri, 2024) have become essential for remote and hybrid environments.

The research highlights the transformative potential of digital technology in education, the need for ongoing professional development, and the importance of fostering inclusive and collaborative learning environments. These findings can inform educational leaders and practitioners in making informed decisions to enhance instructional practices and ultimately improve student outcomes. The high levels of digital technology replacement and amplification indicate that educators are effectively integrating technology to substitute traditional methods and enhance instructional efficiency, effectiveness, and productivity. This shift is essential for modernizing educational practices and meeting the demands of 21st-century education. The moderately high transformation level suggests that digital technology is also fostering innovation by introducing new instructional methods, learning processes, and curricula. This transformation is crucial for adapting to evolving educational needs and promoting creative problem-solving skills among students. The lack of significant differences in technology integration levels across gender, educational attainment, and years of teaching experience highlights the equitable impact of digital technology. This suggests that digital tools can be universally adopted and benefit diverse groups of educators, promoting inclusive educational practices. The findings underscore the importance of continuous professional development to help educators stay up-to-date with technological advancements and best practices. Providing tailored training programs and hands-on experience with digital tools can enhance educators' confidence and competence in using technology. Ultimately, the results emphasize the need for creating supportive learning environments where educators can collaborate, share resources, and learn from each other's experiences. This collaborative approach can further amplify the benefits of digital technology in education.

Purpose of the Study - This descriptive study aimed to determine the level of digital technology integration among sixty-four Filipino-American educators teaching in twelve school districts in the United States. It specifically identified the educator's integration levels as a replacement, amplification, and transformation of their instructional practices. It also examined significant differences in the integration levels of the replacement, amplification, and transformation of their practices based on gender, highest educational attainment, and years of teaching in the US.

Framework of the Study - This study was anchored from the Replacement, Amplification, and Transformation (RAT) model of digital technology's impact on teachers' instructional practices, which was developed in 1998 (Hughes, 2022 in Read, 2022). This model aims to develop a pedagogical approach to teachers developing and integrating technology for teaching, learning, and curriculum development. Considered a framework for self-assessment of technology integration to some pedagogical and curricular ends, Hughes, Thomas, and Scharber (2006) identified the three primary purposes for technology integration outlined within the framework: to replace existing, often non-digital, practices; to amplify existing practices; and to transform

teaching, learning, and curricular goal development through digital practices. The model is used to describe the impact of the technology on a teacher's previous practice (Kimmons, Graham, & West, 2020).

2. Methods

Sixty-four Filipino-American educators were invited to participate in this study through convenience sampling. There were twenty-four male and forty female respondents from twelve school districts in the United States. Twelve educators taught between 0-3 years; eleven taught between 4-10 years; the majority of the respondents, twenty-nine educators, taught between 11-20 years, and twelve taught beyond 20 years. Among these respondents, two completed a Bachelor's degree, thirty-five of them completed a Master's degree, twenty-two completed their Doctoral degree, and five completed post-doctoral degrees.

The respondents completed three survey instruments, each previously subjected to face-and-content-validation and reliability testing without item rejection. The respondents were also provided with the research informed consent form before they completed the surveys. The "Teacher's Integration of Digital Technology as Replacement of Instructional Practices and Student Learning" (0.926 Cronbach alpha reliability), the "Teachers' Integration of Digital Technology as Amplification of Instructional Practices and Student Learning" (0.944 Cronbach alpha reliability), and the "Teachers' Integration of Digital Technology as a Transformation of Instructional Practices and Student Learning" (0.961 Cronbach alpha reliability) survey instruments consisted of 12 Likert-scale items each and were completed through Google Forms.

The digital technology's levels of replacement, amplification, and transformation of educators' instructional practices were rated as "very low level" (1.00-1.80), "low level" (1.81-2.60), "moderate level" (2.61-3.40), "high level" (3.41-4.20), and "very high level" (4.21-5.00). Data gathered were subjected to appropriate statistical tests. The mean, median, and standard deviation were used for descriptive statistical analysis while the Mann-Whitney U and the Kruskal-Wallis tests, both set at 0.05 alpha level of significance, were used for inferential statistical analysis.

3. Results and Discussion

This study determined the extent of digital technology integration among Filipino-American educators in the United States. Specifically, it identified the educators' integration levels of digital technology as a replacement, amplification, and transformation of their instructional practices. It also examined significant differences in integration levels—replacement, amplification, and transformation—based on gender, highest educational attainment, and years of teaching in the US. This study revealed that the respondents had a high level of digital technology replacement (N= 64; Mean= 3.942) and amplification (N= 64; Mean= 3.940) of their instructional practices, with a moderately high level of digital technology transformation (N= 64; Mean= 3.147).

Table 1 shows the data. These educators integrated digital technology into their instructional practices as they replaced and amplified their methods of instruction, modes of student learning, and achieving educational goals with digital innovations. They were also employing computer applications and digital software to transform their instructional practices. Replacing instructional practices with digital technology entails employing technology to substitute, rather than alter, established instructional methods, student learning processes, or educational objectives (Lynch, 2023). When teachers replace their instructional practices with digital technology, it becomes an alternative means to achieve the same instructional outcomes (Hughes et al., 2006). On the other hand, amplifying instructional practices employs technological approaches that aid in increasing the productivity, efficacy, or effectiveness of the delivery of the subject matter (Lynch). Teachers amplify their teaching practices by employing technology that enhances existing instructional practices, student learning processes, or educational objectives (Hughes et al.). The primary impacts of amplification include increased efficiency and productivity (Pea, 1985) that bolster existing teaching practices. Finally, transforming instruction practice with digital technology reinvents aspects of instruction, learning, or curriculum in new and inventive ways (Lynch). It involves the use of

technology that transforms the instructional method, the student's learning processes, or the actual subject matter (Hughes et al.).

Table 1

Levels of integration of digital technology as a replacement, amplification, and transformation of the teaching practices of Filipino-American educators

Groups	N	Means of Level of Replacement	Means of Level of Amplification	Means of Level of Transformation
Whole Group	64	3.942 High	3.940 High	3.147 Moderately high
Male	24	3.940 High	3.917 High	3.330 Moderately high
Female	40	3.944 High	3.954 High	3.037 Moderately high
Bachelor's	2	4.085 High	4.415 Very high	3.750 High
Master's	35	3.919 High	3.891 High	2.940 Moderately high
Doctoral	22	3.913 High	3.947 High	3.277 Moderately high
Post-Doctoral	5	4.182 High	4.068 High	3.784 High
0 - 3 years	12	3.952 High	3.765 High	3.528 High
4 - 10 years	11	3.939 High	3.857 High	3.326 Moderately high
11 - 20 years	29	4.006 High	4.160 High	3.138 Moderately high
20+ years	12	3.784 High	3.660 High	2.625 Moderately high

Educators in the United States have been at the forefront of digital technology use (Keengwe, 2018; Rathburn & Provasnik, 2020; Gray & Lewis, 2021), sharing the same highly integrated digital technology in the schools' curricula (Ilomaki & Lakkala, 2018; Bentil, 2024). Similarly, the use of digital technology is determined by the response of underlying teaching methodologies (Area-Moreira, Hernández-Rivero, & Sosa-Alonso, 2016; Demissie, Labiso, & Thuo, 2022; Hassan, 2023). While Filipino educators highlighted the importance of leveraging technology for personalized learning in the Philippines (Tabilin & Tombali, 2024), there has been a limited number of research on Filipino-American educators' contribution to digital technology leadership and initiatives in the United States. This paper could serve as a precursor for this line of research in the future.

Various pieces of research showed that educators in the Philippines have rarely practiced digital technology in their instructional practices (Fabito, Trillanes, & Sarmiento, 2020; Javier, 2021; Esteban, Calan, & Pagador, 2024), although some studies proved that teachers with higher digital literacy skills demonstrate significantly better teaching practices (Alegre & Galado, 2023; Baladad & Labitad, 2024). Some educators considered themselves technologically competent (Antonio, Probitchado, Ricohermoso, Saavedra, & de la Rama, 2020), while others considered themselves somewhat competent (Liu, 2024).

Research in other regions of the world also showed the same limited technologically-related instructional practices (Dania, Hatziharistos, Koutsouba, & Tyrovola, 2011; Tunjera, 2019; Viberg, Gronlund, & Anderson, 2020; Bereczki & Karpati, 2021; Akram, Abdelrady, Ad-Adwan, & Ramzan, 2022; AlMaazmi, 2023; Nwokedi, Okereke, & Anyanwu, 2024; Pokhrel, 2024), understandably, as the Organisation for Economic Co-operation and Development concluded in 2019 that education has not been at the frontline of digitalization (McCarthy, Maor, McConney, & Cavanaugh, 2023). However, information and communications technology infrastructure, particularly computer access, has become nearly universal (Digital Divide, 2023). Lewin, Smith, Morris, & Craig (2019) earlier explored how digital technology can improve learning outcomes and highlighted that technology should supplement rather than replace traditional instruction. On the other hand, Ghavifekr and Rosdy (2015) analyzed the effectiveness of information and communication technology (ICT) integration in Malaysian schools and how it assisted teachers in replacing traditional teaching methods with technology-based tools. Mondal and Pal (2022) also examined the impact of digital technology on teaching and learning in India and noted that digitalization is replacing conventional classroom practices.

3.1 Digital technology replacement, amplification, and transformation of instructional practices of educators grouped by gender

When respondent educators were grouped according to gender, both male and female educators

demonstrated a high level of replacement (male: $N=24$; mean=3.940 and female: $N=40$; mean=3.994) and amplification (male: $N=24$; mean=3.917 and female: $N=40$; mean=3.954) of their instructional practices by digital technology. They demonstrated only a moderately high level of digital technology transformation (male: $N=24$; mean=3.330 and female: $N=40$; mean=3.037) in their instructional practices.

When the Mann-Whitney U test compared the level of digital technology's replacement of instructional practices between male ($N=24$; Median=4.080) and female ($N=40$; Median=4.000) educators, the results showed no significant difference between the two groups ($z = -0.001$; $p = 0.995$). Likewise, when it compared the level of digital technology's amplification of instructional practices between male ($N=24$; Median=4.040) and female ($N=40$; Median=4.080) educators, the results showed no significant difference between the two ($z = -0.271$; $p = 0.786$). When the test compared the level of digital technology's transformation of instructional practices between male ($N=24$; Median=3.460) and female ($N=40$; Median=3.170) educators, the results showed no significant difference between the two groups ($z = 1.402$; $p = 0.161$) as well.

Table 2 shows the data. Although the female educators' replacement and amplification mean scores are higher than the male educators' scores, and despite the male educators' transformation mean score being higher than the female educators', there were no significant differences in the levels of digital technology replacement, amplification, and transformation between male and female educators' instructional practices based on their median scores. Other studies showed the opposite trend. Concerning teaching tasks, Gomez-Trigueros and Yañez de Alcoa (2021) found that female educators exhibit a significantly lower self-perception of their digital teaching competencies than their male educators, demonstrating a reduced predisposition towards adopting digital technologies. Although female teachers using technology effectively provide a role model for young women at school (Gebhardt, Thomson, Ainley, & Hillman, 2019), previous studies have shown that female teachers are less likely to use computers personally than their male counterparts (Manyilizu & Gilbert, 2015; Adeoye, 2023) and male educators evaluated their skills as being higher than their female colleagues (Ilomaki, 2011; Soydal, Alır, & Ünal, 2011; Gou, Liu, & Wang, 2020; Rizal, Rusdiana, Setiawan, & Ridwan, 2021; Zhao, Llorente, Gómez, & Zhao, 2021). Other studies proved though, that female educators showed higher digital competencies than male educators (Krumsvick, Jones, Ofstegaard, & Eikeland, 2016; Antonio et al., 2020).

Studies among college instructors showed that female instructors use ICT more often than their male colleagues (Mercader & Duran-Bellonch, 2021), whereas males showed higher self-reported ICT skills and confidence in instructional use (Tena, Almenara, & Osuna, 2016; Danko, Decman, Kerzic, & Zorko, 2020; Edeh, Amedu, & Eseadi, 2022). Hoang, Nguyen, Pham, Nguyen, and Loan (2022) discovered that female college professors are significantly better at information and data literacy than male professors, who were on the other hand significantly better at communication and collaboration, digital content creation, and problem-solving. Other studies revealed that there were no significant differences in perception of and competencies in the use of ICT among male and female university professors (Soydal et al., 2011; Alkhasawneh & Alanazy, 2015; Bhat & Bashir, 2018) and basic education educators (Makssimovic & Dimic, 2016; Nyakoe, Makworo, & Abuya, 2021; Kalinga & Ndibalema, 2023; Lieto, Abequibel- Encarnacion, Estigoy, Balasa, Aijansantos et al., 2024).

Table 2

Mann-Whitney U test of the significant difference in digital technology's level of replacement, amplification, and transformation of educators' instructional practices when they are grouped according to gender

Comparison	N	Median	Median Rank	U-Value	Z-Ratio	p
Level of replacement						
Male	24	4.080	779	481		
Female	40	4.000	1301	479	-0.001	0.995
Level of amplification						
Male	24	4.040	760	500		
Female	40	4.080	1320	1320	-0.271	0.786
Level of transformation						
Male	24	3.460	881.5	378.5		
Female	40	3.170	1198.5	581.5	1.402	0.161

3.2 Digital technology replacement, amplification, and transformation of instructional practices of educators grouped by educational attainment

Based on the respondents' highest educational attainment, a high level of replacement was demonstrated among Bachelor's degree holders ($N=2$; Mean=4.085), Master's degree holders ($N=35$; Mean=3.919), doctorate holders ($N=22$; Mean=3.913), and post-doctorate holders ($N=5$; Mean=4.182). It can be noted that the post-doctoral group demonstrated the highest level of replacement of their instructional practices, while the doctorate group demonstrated the lowest level of replacement. The level of amplification based on these educator groups showed a very high level of amplification for the Bachelor's degree holders ($N=2$; Mean=4.415) and a high level of amplification for the Master's degree holders ($N=35$; Mean=3.891), doctorate holders ($N=22$; Mean=3.947), and post-doctorate holders ($N=5$; Mean=4.068). The Bachelor's degree holders achieved the highest level of amplification among the group, while Master's degree holders achieved the lowest.

The level of transformation based on the educators' highest educational attainment was high for both the Bachelor's degree group ($N=2$; Mean=3.750) and the post-doctorate group ($N=5$; Mean=3.784) while the level of transformation was moderately high for both the Master's degree group ($N=35$; Mean=2.940) and the Doctoral degree group ($N=22$; Mean=3.277). Again, the post-doctoral group demonstrated the highest level of transformation of their instructional practices, while the doctorate group demonstrated the lowest level of transformation. Regarding digital technology integration, bachelor's degree holders showed a higher level of amplification of their instructional practices compared to master's, doctorate, and post-doctorate degree holders. Although this trend for bachelor's degree holders was consistent for the digital technology transformation, the post-doctorate degree holders also showed an equally high level of transformation. While all groups showed a high level of digital technology replacement, the post-doctoral group showed the highest level of replacement.

Studies have shown that teachers' educational degree levels have an impact on student performance (Aguaded-Gómez, Tirado-Morueta, & Hernando-Gómez, 2015; Call, 2018; Hatlevik, Throndsen, Loi, & Gudmundsdottir, 2018; Martinez, 2023) and educators' technological pedagogical content increases with educational attainment (Li, Liu, & Su, 2022). Additionally, studies supported the idea that educational attainment is a factor in determining educators' teaching competencies (Massing & Schneider, 2017; Bulilan, 2022; Li et al., 2022; Nwokedi et al., 2024). Despite the differences in the mean scores of their replacement, amplification, and transformation levels, the Kruskal-Wallis test showed no significant difference in the level of digital technology's replacement of instructional practices ($H=1.076$; $p=0.782$) across educational attainment groups, i.e., bachelor's degree ($N=2$; median=4.090), master's degree ($N=35$; median=4.080), doctorate ($N=22$; median=4.000), and post-doctorate ($N=5$; median=4.170); no significant difference in the level of digital technology's amplification of instructional practices ($H=0.656$; $p=0.883$) across educational attainment groups, i.e., bachelor's degree ($N=2$; median=4.420), master's degree ($N=35$; median=4.080), doctorate ($N=22$; median=4.080), and post-doctorate ($N=5$; median=4.330); and no significant difference in the level of digital technology's transformation of instructional practices ($H=6.069$; $p=0.108$) across educational attainment groups, i.e., bachelor's degree ($N=2$; median=3.750), master's degree ($N=35$; median=3.080), doctorate ($N=22$; median=3.290), and post-doctorate ($N=5$; median=4.330).

Table 3 shows the data. Regardless of their educational attainment, the respondents showed the same degree of digital technology integration. Other research showed the same non-significant differences among the teaching competencies based on educators' highest educational attainment (Ahmad & Khan, 2016; Makssimovic & Dimic, 2016; Thinzarkyaw, 2020; Culajara, Culajara, Portos, & Villapando, 2022; Kalinga & Ndibalema, 2023; Canuto, Choycawen, & Pagdawan, 2024). Other research showed different trends. In terms of the self-efficacy of educators, the study by Abun, Asuncion, Lazaro, Magallanes, & Catbagan (2021) indicated that the highest mean self-efficacy rating was obtained by doctorate holders, while bachelor's degree holders obtained the lowest rating and the master's degree holders obtained the rating in between. A study by Balanquit, Ladia1, & Nool (2022) proved that doctoral degrees of educators had a direct relationship with the licensure exam rates of their students,

supporting the results that teaching competencies of advanced degree holders directly affect student learning (Tasnim, Selim, & Promi, 2020; García, García-Carmona, Trujillo Torres, & Fernandez, 2023). Educational attainment encompasses instructional practices since it also determines leadership practices. Aquino, Afalla, and Fabelico (2021) found out that school heads who have obtained their doctorate degrees demonstrated higher levels of leadership practices than the holders of master's degrees.

Table 3

Kruskal-Wallis test of the significant difference in digital technology's level of replacement, amplification, and transformation of educators' instructional practices when they are grouped according to educational attainment

Comparison	N	Median	Rank Sum	H	p
Level of replacement					
Bachelor's degree	2	4.090	72.5		
Master's degree	35	4.080	1150.5		
Doctorate	22	4.000	662		
Post-Doctorate	5	4.170	195	1.076	0.782
Level of amplification					
Bachelor's degree	2	4.420	85		
Master's degree	35	4.080	1120.5		
Doctorate	22	4.080	704		
Post-Doctorate	5	4.330	170.5	0.656	0.883
Level of transformation					
Bachelor's degree	2	3.750	95		
Master's degree	35	3.080	991.5		
Doctorate	22	3.290	762.5		
Post-Doctorate	5	4.330	231	6.069	0.108

3.3 Digital technology replacement, amplification, and transformation of instructional practices of educators grouped by years of teaching service

When educators were grouped according to the number of years of teaching service in the United States, the levels of digital technology replacement of their instructional practices were high for all groups, i.e., 0-3 years (N=12; Mean=3.952), 4-10 years (N=11, Mean=3.939), 11 - 20 years (N=29; Mean= 4.006), and 20+ years (N=12; Mean=3.784). High levels of digital technology amplification were also observed among groups, i.e., 0-3 years (N=12; Mean=3.765), 4-10 years (N=11, Mean=3.857), 11 - 20 years (N=29; Mean=4.160), and 20+ years (N=12; Mean=3.660). While the level of digital technology transformation was high for the 0-3 years group (N=12, Mean=3.528), it was only moderately high for the 4-10 years (N=11, Mean=3.326), 11 - 20 years (N=29; Mean= 3.138), and 20+ years (N=12; Mean=2.625) groups.

Table 1 shows the data. Educators in the 11-20 years group showed the highest levels of both digital technology replacement and amplification but showed the lowest level in the digital technology transformation of instructional practices. Educators in the 20+ years group, however, showed the lowest levels of digital technology replacement, amplification, and transformation. It is expected that instructional practices improve through years of teaching as instructional practices include prior knowledge and traditional instruction (Clores & Nueva España, 2023), the results of this study proved that Filipino-American educators with shorter years of teaching service in the United States demonstrated a higher level of digital technology transformation of their instructional practices. While teaching experience is the socio-demographic factor with the greatest impact on digital competence acquisition (Area-Moreira et al., 2016; Hinojo-Lucena, Aznar-Díaz, Cáceres-Reche, Trujillo-Torres, & Romero-Rodríguez, 2019), it is not a determinant of educators' digital competencies in another setting (Makssimovic & Dimic, 2016; Li et al., 2022; Kalinga & Ndibalema, 2023). Abun et al. (2021) uncovered a significant relationship between the length of work experience and self-efficacy. Hinojo-Lucena et al. (2019) also found that having more years of teaching experience leads to achieving a higher digital competence level. On the other hand, DeCoito and Richardson (2018) found that experienced teachers reported less student technology use, whereas teachers with moderate years of teaching experience noted higher student technology use.

In the university setting, the level of ICT use capacity of young lecturers was found to be much higher than that of older lecturers (Hoang et al., 2022) and more tenured teachers (Fernández-Morante, López, Casal-Otero, & Leon, 2023). Teachers with less teaching experience thought themselves better in the areas of communication and collaboration, digital content creation, security, and problem-solving (Zhao et al., 2021). While teachers with more than 30 years of experience demonstrated higher usage of ICT tools (Manyilizu & Gilbert, 2015), there was some evidence of a decline among teachers with shorter years of experience (Graham, White, Cologon, & Pianta, 2020) and digital competence seems to decrease for teachers aged 50 years and older (Krumsvick et al., 2016). The Kruskal-Wallis test showed no significant difference in the level of digital technology's replacement of instructional practices ($H=1.169$; $p=0.761$) across teaching service groups: 0-3 years ($N=12$; median=4.040), 4-10 years ($N=11$; median=4.000), 11-20 years ($N=29$; median=4.170), and 20+ years ($N=12$; median=3.880).

It also showed no significant difference in the level of digital technology's amplification of instructional practices ($H=4.116$; $p=0.249$) across teaching service groups: 0-3 years ($N=12$; median=3.915), 4-10 years ($N=11$; median=4.000), 11-20 years ($N=29$; median=4.080), and 20+ years ($N=12$; median=4.040). Furthermore, the test showed no significant difference in the level of digital technology's transformation of instructional practices ($H=6.101$; $p=0.107$) across teaching service groups: 0-3 years ($N=12$; median=3.528), 4-10 years ($N=11$; median=3.326), 11-20 years ($N=29$; median=3.138), and 20+ years ($N=12$; median=2.625). Table 4 shows the data. Regardless of years of service, the respondents demonstrated the same level of digital technology integration in their instructional practices. This same trend of non-significant differences in the pedagogical and technological competencies in terms of educators' years in service was reported by Thinzarkyaw (2020), Culajara et al. (2022), and Canuto et al. (2024).

Table 4

Kruskal-Wallis test of the significant difference in digital technology's level of replacement, amplification, and transformation of educators' instructional practices when they are grouped according to years of teaching in the United States

United States					
Comparison	N	Median	Rank Sum	H	<i>p</i>
Level of replacement					
0 - 3 years	12	4.040	374	1.169	0.761
4 - 10 years	11	4.000	354		
11 - 20 years	29	4.170	1012.5		
20+ years	12	3.880	339.5		
Level of amplification					
0 - 3 years	12	3.915	316	4.116	0.249
4 - 10 years	11	4.000	338.5		
11 - 20 years	29	4.080	1086.5		
20+ years	12	4.040	339		
Level of transformation					
0 - 3 years	12	3.528	476.5	6.101	0.107
4 - 10 years	11	3.326	402.5		
11 - 20 years	29	3.138	936		
20+ years	12	2.625	265		

Based on these findings, it is recommended that professional development programs be tailored to different levels of technology proficiency, i.e., beginner, intermediate, and advanced. School districts promote sustained professional development through ongoing workshops and training, keeping educators updated on technological advancements and best practices. Schools and district leaders foster opportunities for educators to collaborate and share technology skills, creating a supportive learning environment as sharing resources and best practices among educators is crucial for effective digital technology integration. Ensuring access to necessary resources—such as software, hardware, and learning materials—is essential, supported by investments in technological infrastructure. Educators are encouraged to experiment with new instructional methods, learning processes, and curricula enabled by digital technology. Sharing success stories of effective technology integration can inspire and motivate others. Implementing these recommendations will enable educational leaders to support educators in fully harnessing digital technology, leading to enhanced instructional practices and improved student outcomes.

4. Conclusion and Recommendations

The research results underscore the profound impact of digital technology on instructional practices among Filipino-American educators in the United States. Digital technology has highly replaced traditional instructional methods and amplified the efficiency, effectiveness, and productivity of their teaching practices. It has moderately transformed their instructional approaches and their introduction of new methods and learning processes into their practices. The integration of digital technology as replacement, amplification, and transformation of instructional practices was consistent across gender, educational attainment, and years of teaching experience. These findings highlight the potential of digital technology to enhance and innovate educational practices in a universally accessible manner.

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Inclusive education and the challenges encountered by the selected diocesan schools in the National Capital Region

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Received: 30 December 2024

Available Online: 20 February 2025

Revised: 27 January 2025

DOI: 10.5861/ijrse.2025.25847

Accepted: 15 February 2025

ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS



Abstract

Education is everyone's foundation in life. It has been the objective of UNESCO to provide a quality education to all learners. Thus, the United Nations established the Fourth Sustainable Development Goal (SDG #4) in 2015 as part of the 2030 Agenda for Sustainable Development. It aims to guarantee that every student receives free, fair, and high-quality education, resulting in meaningful and efficient learning achievements. In the context of the Philippines, the recent DepEd issuance on inclusive education is a reiteration of the vital need to provide accessible education to every Filipino, particularly considering those with special educational needs. In line with this, the study generally assessed the implementation of inclusive education in the selected schools affiliated with the diocesan education system for the academic year 2023 – 2024. Utilizing mixed methods to do the study, the researcher administered a survey questionnaire to 19 diocesan schools. A focus group discussion was also conducted with seven participants.

Keywords: special educational needs, inclusive education, challenges in education, Diocesan schools, education accessibility

Inclusive education and the challenges encountered by the selected diocesan schools in the National Capital Region

1. Introduction

Inclusive education integrates learners with special educational needs into mainstream classes, emphasizing equity and accessibility. Globally, it is consistent with Sustainable Development Goal 4, which seeks to provide all-inclusive, high-quality education and lifelong learning opportunities. In the Philippines, laws like RA 11650 and DepEd Order No.72, s. 2009, emphasizing the commitment to inclusive education. Despite the attempts, challenges include inadequate infrastructure, insufficient teacher training, and a lack of modified curricula. The benefits of inclusive education cannot be emphasized. Fostering awareness and respect for diversity is key to generating fair chances for all learners to grow and contribute to society and providing access. Although inclusive strategies have been studied in public schools, there has been little focus on the unique challenges and opportunities presented by the diocesan schools in the Philippines. Understanding the unique setting of these schools is also essential for designing specialized methods to improve inclusive education implementation. This study seeks to answer the following questions:

- What is the extent of implementation of inclusive education programs in selected diocesan schools in NCR as assessed by school heads, SPED/subject area coordinators, and teachers in terms of the following: Child Find and Assessment; Curriculum Modifications/Policy; Parental Involvement; and Instructional Facilities and Resources
- What challenges are encountered by the respondents in implementing inclusive education?
- What training program for managing learners with special educational needs may be proposed based on the result of the study?

2. Related Literature

2.1 Inclusive Education: Its Concept and Significance

Education ensures that all students, regardless of ability or disability, have equal access to education in mainstream settings. It strives to foster a friendly learning atmosphere where learners from various backgrounds can learn together. It values an individual's unique skills and contributions. (The Philippine Constitution, 1987) reiterated that the state must protect and promote the right of every citizen to receive education of excellent quality at all levels. It must employ all requisite measures to guarantee universal access to education for all individuals. Irrespective of their circumstances, learners are entitled to avail themselves of and acquire education of superior quality. Individuals can acquire this form of education through the implementation of requisite measures. This policy aims to recognize, safeguard, and promote the entitlements of all learners with special educational needs (LSENs) to receive mandatory education.

As stated in Chapter 1, Section 4(c) of Republic Act 7277, the definition of "disability" covers various conditions. These include (1) a physical or mental impairment that substantially limits one or more of an individual's psychological, physiological, or anatomical functions or activities; (2) a documented history of such impairment; or (3) the perception of having such an impairment. A learner is identified as having special education needs when they face learning difficulties or challenges that hinder their learning more significantly than those experienced by most children of the same age (Republic Act No. 7277, 1992).

Likewise, UNESCO considers every learner's needs, for they believe each is important. However, many

students still can't go to school because they fear being discriminated against because of their status. Inclusive education aims to help learners and institutions establish a more inclusive institution through the enhancement of the curriculum and the way it should be taught and shaped. The UNESCO Sustainable Development Goal 4 and the Education 2030 Framework for Action guide most of what the organization does in this area. These stress that fairness and inclusion are important parts of giving good education (UNESCO, 2020).

When considering the elements that affect the inclusion of students of determination (SODs), referring to students with special needs, and implementing successful inclusive practices in schools, the findings highlighted the critical role of administrators in developing and supporting inclusive schools. These findings offer insight into the factors that could support inclusive schools in the UAE environment, as well as increasing policymakers' and practitioners' recognition of the critical role principals play in the effective implementation of inclusive schools. The study advocated for comprehensive professional development to increase and improve principals' awareness of inclusive education and schools (Del Castillo, 2024; Khaleel, Alhosani, & Duyar, 2021).

UNESCO (2005) defines inclusive education as a technique for modifying learning environments and educational systems to meet the various needs of students. Inclusion underscores the necessity for learners with disabilities (physical, social, and emotional) to engage equitably in mainstream education while maintaining the option for individual choice and the capacity to request specific accommodations and assistance (Rasmitadila & Tambunan, 2018). The UNESCO International Bureau of Education (2009) asserts that inclusive education emerged due to an increasing awareness of the rights of children with disabilities to access educational opportunities equivalent to those of their non-disabled peers.

The 1994 Salamanca Statement and Framework on Inclusion asserts that the fundamental concept of an inclusive school is that, if feasible, all students should be educated in the same setting, irrespective of their challenges or differences. Inclusive schools must acknowledge and accommodate the varied requirements of their students, adjust to different learning styles and rates, and guarantee superior instruction through suitable curricula, organizational frameworks, pedagogical strategies, resource distribution, and community collaborations. Educational institutions must offer ongoing assistance and resources to address the distinct requirements of every student. Inclusive schools provide enhanced assistance for kids with specific educational needs to obtain an appropriate education. The most efficient method to foster integration between learners with special needs and their peers is via inclusive education. Students should be sent to special schools, classes, or distinct sections within a school only when it is evident that conventional classroom instruction fails to sufficiently address their educational or social requirements or when such placement is essential for their well-being (UNESCO, 1994).

Republic Act 9442, referred to as the "Magna Carta for Disabled Persons," stipulates in Section 1(h) the necessity of educational support for individuals with disabilities, facilitating their access to education in public and private institutions. The legislation guarantees that these individuals obtain scholarships, financial assistance, grants, subsidies, additional incentives, and support for textbooks, educational materials, and uniform allowances when possible. Nonetheless, students with disabilities must meet the minimum entrance requirements (Republic Act No. 9442, 2007).

The Instituting a Policy of Inclusion and Services for Learners with Disabilities in Support of Inclusive Education Act, or RA 11650 (2022), characterizes inclusive education as a process that addresses and responds to the diverse needs of all learners, aiming for full participation, presence, and achievement within learning cultures and communities. This entails accommodation, modification, adaptation, and individualization in content, methodologies, and practices. It involves offering students with disabilities equitable access to educational services and requisite support alongside their age-appropriate peers, preferably in schools or Inclusive Learning Resource Centers (ILRCs) near their residences, to equip them for full participation in society. Moreover, RA11650 delineates inclusion as a process whereby all learners, irrespective of background or aptitude, are afforded equal opportunities to participate, study, and engage within the same educational environment and

community. This strategy ensures that each learner is appreciated, supported, and afforded equitable opportunities and learning experiences inside an Inclusive Learning Resource Center (ILRC), CDC, or educational environment, as well as in the community (Republic Act No. 11650, 2022).

2.2 Implementation of Inclusive Education in the Basic Education

Inclusive education is primarily derived from Section 8 of Department of Education Order No. 43, the Enhanced Basic Education Act (Department of Education, 2013). The policy offers a clear method to guarantee the inclusion of stakeholders in the formulation and implementation of the nation's educational objectives. Ultimately, the country has passed several laws to support inclusion. The "Enhanced Basic Education Act of 2013" recently clarified that Filipino teachers must include all their students in their lessons (Department of Education, 2013; Raguindin et al., 2020).

Implementing inclusive education (IE) in the Philippines' basic education system is principally regulated by Department of Education Order No. 72, released in 2009. This policy recognizes that special education in the country has only reached 2% of the planned 2.2 million disabled learners, resulting in these students being denied their fundamental human right to education. Because most of these children live in remote and rural areas, parental understanding of available educational options is essential. The necessity of resolving this problem has been acknowledged by the Department of Education (DepEd), which is dedicated to ensuring that these learners have the right to appropriate education in a traditional or inclusive classroom setting. Inclusive education is based on accommodating all learners, regardless of their ethnic heritage, physical characteristics, complexion, talents, or disabilities, through the joint efforts of school workers, learners, parents, and the larger community. The program is designed for learners with special educational needs and encompasses a range of components that aim to be comprehensive and inclusive (Department of Education, 2009).

Furthermore, the Department of Education Order No. 72, s. 2009 (Department of Education, 2009) delineates many program possibilities for implementing inclusive education. The initial alternative entails creating a self-contained classroom tailored for learners with similar disabilities, which can be organized as either a mono-grade or multi-grade setting. A qualified special education (SPED) teacher must conduct instruction in this class. The second method involves including learners with disabilities in a general education or regular class, allowing them to learn alongside their classmates under the supervision of a regular teacher and/or a SPED-trained teacher who addresses their specific needs. Finally, the third alternative is a resource room program, wherein students with disabilities are pulled out of the general education classroom to receive small group or appropriate interventions from a SPED teacher (Department of Education, 2009).

Several components must be considered when adopting inclusive education within an institution. The initial element is the Child Find System (Department of Education [DepEd], 2009). This system is mandated to identify and evaluate learners with disabilities who may require special education services. Identifying these learners entails utilizing family mapping surveys, participating in advocacy campaigns, and establishing connections with local health workers. Learners with special needs who are not yet enrolled in educational institutions should be documented and included in the roster, as outlined in Enclosure No. 1. Special Education (SPED) educators should assess these learners. The institution must promote the inclusion of learners with special needs. Furthermore, each school must adhere to the policy that a maximum of two learners with mild disabilities may be included in a regular class or ensure that only one learner with severe or moderate disabilities is included in a regular class. Establishing a monitoring and evaluation system is crucial for assessing learners' academic and social development.

Assessment is essential for executing inclusive education (Department of Education [DepEd], 2009). It entails assessing a learner's strengths and weaknesses using formal and informal methods to determine proper grade placement. Special Education (SPED) Centers will support schools in this process. Schools must establish a continuous assessment system to ascertain learners' needs and employ various instruments for appropriate

program placement. Modifying curriculum and policies are important for fostering optimal learning according to individual needs and capabilities (Department of Education [DepEd], 2009). This encompasses modifying classroom instructions, activities, and pedagogical approaches. Curriculum modifications may encompass service delivery alternatives such as collaborative teaching or consulting programs. Professional, parental, volunteer, and peer support services enable the inclusion of learners with special needs. Parental involvement is essential for improving the efficacy of inclusive education programs and fostering the success and welfare of learners with special needs (Department of Education [DepEd], 2009). It fosters a cooperative partnership among families, educators, and the community. Parents significantly oversee their children's academic progress, volunteer as teacher aides, and support other families. This engagement fosters academic, moral, and spiritual development for learners.

Ensuring adequate instructional facilities is necessary for inclusive education, as RA 11650 Section 7 delineates the Inclusive Learning Resource Center (ILRC) functions. This legislation mandates that the ILRC shall provide free support and related services to fulfill the objectives of inclusive education. It requires establishing the Child Find System (CFS) to guarantee that all LENs lacking early and basic education services are identified, located, assessed, and incorporated into the general education system. The ILRC will use the a multidisciplinary team to perform educational evaluations, diagnose learners' disabilities, identify developmental issues, and ascertain suitable services and placements for their Individualized Education Plan (IEP). The ILRC is tasked with developing and providing teaching and instructional resources and delivering non-educational support services, including language and speech therapy. Section 4 of the law statute delineates the criteria for selecting qualified personnel to oversee the ILRC. Consequently, schools must establish an ILRC to assist learners with disabilities and improve the teaching and learning process. Target 4.7 (4a) of the Sustainable Development Goal (SDG) 4 underscores the necessity for the construction and improvement of educational institutions that prioritize gender equality, support learners with disabilities, and guarantee safe, non-violent, inclusive, and effective learning environments for all individuals (United Nations, 2015).

2.3 Challenges in the implementation of inclusive education

Mowes and Makaleng (2020) investigated Issues Affecting the Implementation of Inclusive Education Practices in Selected Secondary Schools in the Omaheke Region of Namibia and examined various challenges in implementing inclusive education. Their studies identified challenges such as insufficient teacher preparation, lack of resources, and rigid curriculum structures. They underlined the importance of thorough pre-service and in-service training to provide teachers with the skills to effectively address diverse learners' needs. Teachers noted that inadequate training frequently resulted in a reluctance to work with learners with special needs. In terms of resources, it is important to give appropriate support to schools and hire specialized personnel, such as educational psychologists and remedial instructors, to improve inclusive education methods. Teachers cited inadequate access to materials and advisory support as major impediments. Some argue that incorporating computers could help inclusive teaching strategies. The curriculum was another important consideration. Most agreed that a flexible curriculum promoting equal learning opportunities was essential. However, a content-heavy curriculum and strict teaching methods hampered specialized attention for learners with special needs. Teachers contented that greater curriculum adaptation was necessary to ensure full participation of learners with and without special needs.

Fadilah, Utari, and Wijaya (2022) examined the challenges of inclusive education for people with disabilities. In their study, *Government Communication in Implementing Inclusive Education for Working Towards the Sustainable Development Goals*. Their findings underscored the government's importance in prioritizing inclusive education, particularly regarding teacher quality and infrastructural development. The study found that the teachers with prior experience working with learners with special needs resulted in insufficient attention and a lack of attention and monitoring of learners' behavior. Learners with disabilities require appropriate help to succeed because their cognitive abilities differ from those of their peers. The study also found that the government has yet to fully meet the digital needs of learners with disabilities, particularly in inclusive

schools located in rural areas. This lack of access has an influence on the learning development of learners with special needs since non-disabled learners experience the same issues when their homes lack adequate infrastructure. Given limited resources, governments must rely on competent and efficient administration to address these challenges.

Mpu and Adu (2021) define inclusive education as a system in which all learners are completely accepted and integrated academically and socially. Implementing inclusive education involves different challenges, particularly in developing countries like South Africa, which adopted the approach later than wealthier nations. According to the research, important difficulties include insufficient resources and overcrowded classrooms. The report explores South African schools' challenges in adopting inclusive education. This study, conducted as a multiple case study, employed a qualitative research approach and involved three schools in the Buffalo City Metro, each with three participants. The qualitative data were analyzed using an interpretive philosophy. The findings revealed that overcrowding, insufficient teacher training, and educators' lack of knowledge and abilities hindered their capacity to teach effectively in inclusive classrooms. The study concludes by recommending that inclusive education be accessible to all students, regardless of disability. Bongabong et al. (2022) examined the real-life issues and challenges faced in an inclusive classroom from the perspectives of general education kindergarten teachers and parents. Their analysis of participants' voices regarding managing an inclusive classroom revealed several noteworthy themes. These themes include: (1) inadequate understanding of inclusive education (IE) by teachers and parents, particularly in terms of learner diversity; (2) difficulty referring students to special education specialists due to parental denial; (3) large class sizes; (4) lack of teacher training; and (5) limited instructional materials.

Nimante and Kokare's (2022) study on teachers' perspectives regarding their competencies for inclusive education found that one of the most significant challenges to implementing inclusive education is teachers' ability to effectively apply policies despite formal declarations in Latvian educational policy. The study reveals that the teachers' lack of competency in inclusive education may impede the successful development of inclusion. Teachers have certain competencies for inclusion but lack formal qualifications and training in inclusive education. The study found two key competencies for teachers: adopting an inclusive and supportive learning process for all learners through curriculum differentiation and adaptation, and identifying students' learning issues early on. Despite their skills, most teachers acknowledged discomfort and a lack of confidence in their abilities to effectively implement inclusive education.

2.4 Theoretical Framework

This study is grounded in Lev Vygotsky's Zone of Proximal Development (ZPD) theory, introduced in 1976. The ZPD highlights how a more knowledgeable individual can help students learn by guiding them through tasks beyond their current abilities. This concept is especially relevant to inclusive education, emphasizing social interaction and scaffolding as key learning elements. Teachers can use the ZPD to assess students' abilities and provide tailored support that challenges them appropriately. By understanding students' ZPDs, teachers can design personalized learning plans that build on existing skills and promote growth. ZPD also supports diversity in learning by fostering collaboration and equitable access to education. For example, cooperative activities and peer interactions create opportunities for students to engage socially while learning from one another, helping them progress within their ZPDs.



3. Methodology

Research Design - This study used a mixed research approach, integrating quantitative and qualitative methodologies to gain a more comprehensive knowledge of implementing inclusive education initiatives in diocesan schools. Combining qualitative and quantitative methods in a single study provides frameworks and strategies for effectively integrating these methods to enrich data collection, analysis, and interpretation (Creswell, 2009). The quantitative method involved the researcher conducting surveys as a descriptive method to assess the implementation of inclusive education in diocesan schools. Descriptive research is thus the method used to obtain information concerning the current status of the phenomena to describe “what exists,” thus basically answering ‘who,’ ‘what,’ ‘why,’ and ‘how’ about the subject of the study, whether about the variables or specific conditions. (McCombes, 2019). In addition, a qualitative method based on focus group discussion to draw responses from the participants comprise a school head, SPED/Subject Area coordinator, and 5 teachers. This was used to gather respondents’ thoughts, experiences, and narratives. A focus group discussion (FGD) is a valuable qualitative data collection method that offers rich, detailed insights through group interaction and dialogue (Creswell, 2009).

Participants of the study - This research was conducted in selected diocesan schools in NCR catering to learners with special educational needs. This is limited to 352 respondents, including nineteen (19) school heads/principals, 57 SPED/subject area coordinators, and 276 teachers. Specifically, purposive sampling was utilized in this study because the researcher selected the respondents based on the characteristics needed for the study. In other words, respondents are selected “on purpose”. Purposive sampling is particularly useful in finding information-rich cases or making the most out of limited resources, but it is at high risk for research biases like observer bias (Nikolopoulou, 20223). Thus, the Cochran formula was utilized to determine the sample size required for the survey. Pilot testing was conducted in one of the schools with the same characteristics but not part of the study. The statistician certified the reliability test with an internal consistency rating of excellent.

Ethical Considerations - After all the necessary information was given, the participants obtained explicit consent. The researcher guaranteed the preservation of participant privacy and identity protection. Participants were also informed that they could withdraw from the study at any time if they felt the need to do so.

Research Instrument - The researcher utilized a survey questionnaire to determine the extent of the implementation of inclusive education. It is based on the literature presented in this study, such as D.O No. 72, 2009, Republic Acts 11650, and RA 9442, and was modified by the researcher. To test the instrument’s validity, the researcher underwent testing of instrument validity from experts. Likewise, a focus group discussion was conducted to solicit responses to the challenges encountered by the participants. A central question, “What are the challenges you have encountered in the implementation of inclusive education?” was asked to the participants.

Data Gathering Procedure - Before the administration of the survey questionnaire and conducting of FGD, a letter of permission was sought from the superintendent of each diocese to conduct a study, and then the superintendent endorsed the researcher to the principal. A survey questionnaire was administered in person, while the focus group discussion (FGD) was conducted via Google Meet and lasted an hour. Only one inquiry was posed: “What challenges have you encountered in implementing inclusive education?”. The participants were given an orientation on the conduct of focus group discussions, emphasizing the study's purpose, nature, and the extent of their involvement. The voluntariness of participation, the confidentiality of responses and all information shared, the risks and benefits associated with their participation, their identity and anonymity, and the storage and disposal of data. Participants were required to execute an informed consent form.

4. Results and Discussion

A thorough analysis of the data revealed the implementation of inclusive education in the diocesan context and its significant difference as assessed by the three groups of respondents regarding child find and assessment,

curriculum modification and policy, parental involvement, and instructional facilities and resources.

4.1 Implementation of Inclusive Education in Diocesan Schools

Indicators	Respondents							
	School Head		Subject Coordinator		Area Teacher		Combined	
	WM	VI	WM	VI	WM	VI	AWM	VI
Child Find and Assessment	3.38	HI	3.06	I	3.17	I	3.20	I
Curriculum Modifications / Policy	3.30	HI	3.16	I	3.21	I	3.22	I
Parental Involvement	3.32	HI	3.11	I	3.34	HI	3.25	HI
Instructional Facilities and Resources	2.86	I	3.06	I	3.01	I	2.98	I
Overall Weighted Mean	3.22	HI	3.10	I	3.18	I	3.16	I
Legend:	Range	Verbal Interpretation		Range	Verbal Interpretation			
	3.25-4.00	Highly Implemented (HI)		2.50-3.24	Implemented (I)			
	1.75-2.49	Moderately Implemented (MI)		1.00-1.74	Not Implemented (NI)			

Table 4.1 shows the extent of the implementation of inclusive education in diocesan schools. The variables child find and assessment, curriculum modifications/policy, instructional facilities, and resources were assessed as implemented by the school heads, subject area coordinators, and teachers with a weighted mean of 3.20, 3.22, and 2.98, respectively. In contrast, parental involvement was evaluated as highly implemented, with a 3.25 weighted mean. Based on the overall mean scores of 3.22, 3.10, and 3.18, as assessed by the three respondents, give an overall rating of 3.16 with a verbal interpretation of implemented. It is worth noting that parental engagement was seen as a significant strength, with all respondents rating it as highly implemented.

4.2 Challenges Encountered by the Respondents in Implementing Inclusive Education

This part presents how the researcher completed the data using thematic analysis, transcribing, coding, categorizing, transcribing themes, and data verification. The researcher used descriptive coding in summarizing the responses of the respondents. There were 6 themes found in this study. This delves into the specific challenges encountered by respondents in implementing inclusive education. Understanding these hurdles is crucial for developing effective strategies and policies that can enhance the implementation of inclusive education, ultimately ensuring that every learner receives the support and opportunities they need to succeed.

Knowledge of Inclusion - The participants had comparable perspectives on knowledge about inclusion. They proposed that schools conduct orientations on inclusive education, including its policies and recently approved legislation. Before the start of the school year, seminars and workshops could be incorporated into in-service training and teacher professional development programs. They stated that the school has been accommodating students with specific educational needs for many years, and that teachers are dedicated to provide Catholic-quality education to these students. They did, however, underline the significance of assigning a focus person to oversee the acceptance and assessment of students with special needs.

Lack of Training for Educators - The participants had comparable perspectives on knowledge about inclusion. They proposed that schools conduct orientations on inclusive education, including its policies and recently approved legislation. Before the start of the school year, seminars and workshops could be incorporated into in-service training and teacher professional development programs. They stated that the school has been accommodating students with specific educational needs for many years and that teachers are dedicated to providing Catholic-quality education to these learners. However, they underlined the significance of assigning a focus person to oversee the acceptance and assessment of learners with special needs.

Insufficient Resources and Funding - Participants stated that their school lacks critical resources, such as specialized materials, assistive technologies, and appropriate budget, to effectively promote inclusive education.

This limitation impedes the school's capacity to accommodate all students with special educational needs (SEN) and provide specialized support. They underlined the necessity of advocacy in securing additional funds and proper resource distribution. They also indicated that building connections with organizations and stakeholders could help close resource gaps.

Inadequate Infrastructure - Participants stated that the school is not constructed to accommodate learners with physical impairments or other special needs, which limits their access to classes, restrooms, and other necessary facilities. This lack of accessibility prevents some learners from fully participating. They stressed the importance of advocacy in securing higher funding and resource allocation. They also recommended that collaboration with organizations and stakeholders could be essential in bridging these resource and infrastructure gaps.

Resistance to Change - A school principal participant stated that challenges stem from resistance to change among teachers, administrators, and parents who are used to established educational approaches. This opposition has hindered the implementation process and produced a less favorable environment for inclusive education. Addressing this issue may entail creating knowledge about the benefits of inclusive education and actively including all stakeholders in the planning process to reduce resistance.

Assessment and Curriculum Challenges - According to the participants, standardized curricula and evaluation systems must be examined and improved to meet the different requirements of all students. Participants stressed the need to create an adaptable curriculum and diversified assessment approaches to accommodate different learning styles and abilities.

5. Proposed Training in Managing Learners with special educational needs

5.1 Rationale

The Department of Education (DepEd) is committed to inclusive education and collaborates with both public and private schools to integrate learners with special educational needs (LSENs) into mainstream classrooms. Training prepares educators to apply inclusive practices that promote acceptance and collaboration among all learners. However, private and diocesan schools have challenges with implementing inclusive education initiatives. DepEd underlines the importance of schools designing and implementing LSEN programs. Training is more than just a pedagogical method. It is a legal ethical commitment to ensure equal opportunities for all learners, as specified by regulations such as the United Nations Convention on the Rights of Persons with Disabilities.

5.2 General Objectives

5.2.1 Understand the inclusive education principle.

5.2.2 Develop skills for implementing inclusive practices.

5.2.3 Promote collaboration and professional development.

5.3 Program Framework

Objective	Duration	Expected Outcomes	Delivery Methods	Key Areas Covered	Evaluation
To improve child find and assessment methods to help educators identify, assess, and support LSEN students in inclusive educational environments.	Participants will participate in interactive seminars, discussions and practical activities throughout the academic year.	Know the ideas and steps behind finding and evaluating students at inclusive schools. Demonstrate how to use various testing methods and tools to find and rate students with special educational needs. Learn how to work with others to make	The training program can be conducted in-person, online, or self-paced, with ongoing support from facilitators or mentors.	Understanding Inclusive Education Principles Assessment Techniques and Tools IEPs, collaboration, and communication.	Feedback surveys and assessments will also be carried out to provide insight into the training program's efficacy and identify areas for improvement.

		and carry out successful IEPs			
To provide educators and educational policymakers with the knowledge and resources they need to create and execute specialized curricula and policies that meet the various needs of all students, including those with special educational needs (SEN).	The training program will consist of workshops, seminars, and collaborative sessions held throughout the academic year (year-round), with ongoing support and implementation opportunities.	Understand inclusive curriculum design and policy development principles. Learn how to plan, implement, and monitor adapted curriculum and policies cooperatively. Develop methods for creating an inclusive school culture that values diversity and meets the needs of all students. Implement learning in real-world contexts and promote inclusive education in schools and communities.	The training program will be offered via in-person seminars, online modules, interactive conversations, and collaborative activities.	Understanding diverse learners' needs Designing inclusive curriculum Developing and implementing policies Collaborating on planning and decision-making	Pre- and post-training evaluations, case studies, and reflective assignments will evaluate participants' comprehension and implementation of essential ideas. Feedback surveys and assessments will also be carried out to provide insight into the training program's efficacy and identify areas for improvement.
To provide parents with the knowledge, skills, and resources they need to actively engage in and support their children's education in an inclusive educational environment.	The training program will include interactive workshops, informational presentations, collaborative discussions throughout the academic year (year-round), and continuous support and resources to encourage continued participation.	Understand inclusive education ideas and their impact on their learners' academic, social, and emotional development. Gain practical skills and methods to support their learners' education and advocate for their needs in the inclusive school system. Feel empowered to create inclusive communities, cultivate supportive relationships, and access resources to improve their learner's education and well-being.	The training program will be given via in-person workshops, online modules, virtual support groups, and educational resources. Facilitators will provide continuous assistance to participants, as well as chances for peer networking and community engagement.	Understanding inclusive education Assisting student's learning Creating inclusive communities	Participants' knowledge, abilities, and confidence will be evaluated using pre- and post-training surveys, self-assessments, and reflection exercises. •Feedback will be gathered throughout the program to assess its efficacy and identify areas for improvement.
To provide educators and school administrators with the information and tactics needed to maximize instructional facilities and resources in order to provide engaging, inclusive, and conducive learning environments for all children.	The training program will run throughout the academic year, including interactive seminars, practical demonstrations, and collaborative discussions to ensure full learning and execution.	Understand the ideas and research-supported techniques for creating inclusive and engaging learning environments. Develop skills in analyzing, arranging, and maximizing instructional facilities and resources to meet varied learning needs. Implement ways for using technology, digital resources, and instructional materials to improve teaching and learning. Encourage sustainable practices, environmental awareness, and responsible resource management in educational environments.	The training curriculum will be offered through in-person workshops, virtual lectures, hands-on demos, and group projects.	Understanding the influence of the learning environment Creating an inclusive learning environment Utilizing technology and digital resources Maximizing the use of instructional materials and equipment	Participants' understanding and application of key concepts will be assessed before and after training, through project-based assignments and peer evaluations. •Feedback surveys and assessments will also be conducted to get insight into the training program's effectiveness and identify areas for improvement.

6. Conclusion

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

6.1 There are benefits to implementing inclusive education, such as ensuring appropriate grade-level identification and establishing protocols for student evaluation. There are advantages in technical support, teamwork, and software development. Similarly, stakeholders acknowledge the need of parental involvement in inclusive education. Furthermore, school leaders, subject area coordinators, and teachers have a limited agreement on the usefulness of instructional facilities and resources. Statistics reveal that the school has made significant progress in implementing inclusive instructional practices.

6.2 Inclusive education knowledge gaps among educators, administrators, and other stakeholders are a significant problem. Inclusive actions might be inconsistent and inefficient without a clear definition of inclusion.

6.3 The suggested comprehensive training program addresses inclusive education concerns proactively and systematically. This program equips educators to manage and support special education students through knowledge enhancement, specialized training, resource usage, infrastructure awareness, managing changes, curriculum adaptation, and cooperation. This training program can help inclusive education achieve its goals by creating a more inclusive, equitable, and supportive learning environment for all students.

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AI-mageddon: The dawn of AI2AI and the twilight of human-centric marketing?

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Received: 30 December 2024

Available Online: 20 February 2025

Revised: 27 January 2025

DOI: 10.5861/ijrse.2025.25848

Accepted: 15 February 2025

ISSN: 2243-7703

Online ISSN: 2243-7711

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Abstract

The rapid advancement of artificial intelligence (AI) is driving a fundamental shift in marketing paradigms, challenging traditional human-centric models. This research explores the emerging concept of AI-to-AI (AI2AI) interactions and their implications for the future of marketing, posing the question: Are we witnessing the twilight of human-centric marketing? Through a systematic review of literature, this study synthesizes current research on AI's role in marketing, the development of AI systems as both consumers and marketers, and the potential obsolescence of human-driven strategies. The review reveals that AI2AI interactions are becoming more prevalent, with AI systems autonomously managing tasks like content creation and consumer engagement. However, this phenomenon is progressing slowly and is not yet fully utilized; scholars suggest that first-world countries may experience widespread adoption of AI2AI marketing within the next nine years. While these developments signal a potential decline of human-centric approaches, the extent of this shift remains uncertain, raising important questions about the future balance between AI-driven and human-centered marketing strategies. As AI continues to evolve, marketing is poised for significant transformation, necessitating a reevaluation of the role of human involvement in future marketing landscapes.

Keywords: Artificial Intelligence, AI2AI marketing, human-centric marketing; future of marketing

AI-mageddon: The dawn of AI2AI and the twilight of human-centric marketing?

1. Introduction

The marketing landscape is undergoing a seismic transformation driven by the rapid advancement of artificial intelligence (AI). Once dominated by human intuition and creativity, marketing has evolved to incorporate data-driven strategies and algorithmic decision-making. However, the emergence of AI-to-AI (AI2AI) interactions, where autonomous systems communicate, transact, and make decisions independently, represents a paradigm shift that could herald the twilight of traditional, human-centric marketing models (Davenport, Guha, Grewal, & Bressgott, 2020). Rust (2020) posits that AI is not merely an enhancement to existing practices but a disruptive force that challenges the fundamental principles of marketing. This evolution raises significant questions about the future of marketing and its potential "death," as we know it. As AI systems increasingly take over functions such as consumer engagement, dynamic pricing, and personalized advertising, the traditional emphasis on human insights and creativity is being redefined. Verma, Sharma, Deb, and Maitra (2021) highlight the critical need for systematic exploration of AI's role in this transition, ensuring that businesses can navigate the shift from human-centric to AI-driven marketing paradigms. Understanding the implications of AI2AI interactions is essential to charting the future of marketing, where autonomous systems may dominate, leaving human roles and creativity in question.

Literature Gap - Despite the growing body of research on AI in marketing, significant gaps remain in understanding the implications of AI2AI interactions and their potential to redefine the discipline. Existing studies have largely focused on the operational benefits of AI, such as efficiency and personalization, without adequately addressing the long-term consequences for human-centric marketing practices (Rust, 2020; Verma et al., 2021). Additionally, while AI2AI systems are gaining traction in developed economies, limited research explores their adoption and impact in emerging markets, where infrastructure and expertise may lag (Abrokwah-Larbi & Awuku-Larbi, 2024). Furthermore, ethical considerations surrounding AI autonomy, transparency, and consumer trust remain underexplored, particularly in the context of autonomous systems interacting without human intervention (Stone et al., 2020).

Problem Statement - As AI continues to revolutionize marketing, the rise of AI2AI interactions presents both opportunities and challenges that remain poorly understood. This research seeks to address the following critical issues: How will the increasing prevalence of AI2AI interactions affect the future of marketing, particularly the viability of human-centric approaches? What are the implications of this transition for businesses operating in both developed and emerging economies? Additionally, how can organizations balance technological innovation with ethical considerations to ensure sustainable and trustworthy marketing practices? By addressing these questions, this study aims to bridge the gap in existing literature and provide actionable insights into navigating the evolving landscape of AI-driven marketing.

2. Review of Related Literature

2.1 AI2AI Interactions: A New Paradigm in Marketing

AI2AI interactions are at the forefront of marketing's transformation, enabling systems to transact and make decisions autonomously. Guha et al. (2021) emphasize that AI2AI communications in retailing, such as automated supply chain management and programmatic advertising, are revolutionizing efficiency and responsiveness. Challoumis (2024) explores how these interactions are reshaping economic flows, allowing businesses to operate with unprecedented precision and scalability. Giuseppe Stigliano and Philip Kotler (2023) have identified three distinct phases of AI2AI interactions that define this transformation.

Phase 1: Influencing Platform Algorithms

AI2AI interactions in marketing begin with influencing platform algorithms, where personalized purchasing criteria become a critical focus. Giuseppe Stigliano and Philip Kotler (2023) emphasize that AI's ability to learn and adapt to consumer behavior is reshaping how brands interact with platforms. In this phase, platforms rely on AI-driven systems to prioritize content, products, and services, pushing brands to adapt by strategically optimizing their visibility. Stigliano highlights that this dynamic is similar to brands paying for prime shelf placements in physical stores but in an algorithmic context, making data governance and algorithmic fluency key competitive advantages. Davenport et al. (2020) argue that businesses must invest in understanding these algorithms to ensure their relevance in AI-dominated ecosystems.

Phase 2: Limited Human Involvement

The next phase involves reducing human involvement as manufacturers, brands, and retailers develop AI agents designed to interact autonomously. Stigliano and Kotler (2023) explore how AI-driven systems now handle complex decision-making processes previously reserved for human managers, including supply chain optimization and automated marketing. This phase signifies a shift toward automation, where human roles transition to overseeing and refining AI outputs rather than direct involvement. Jain and Aggarwal (2020) reinforce this by noting that AI agents enable faster and more accurate decisions, reducing inefficiencies and enhancing operational scalability. However, Stigliano also cautions against over-reliance on automation, emphasizing the importance of maintaining human oversight to address ethical concerns and algorithmic biases.

Phase 3: AI Surpassing Human Insight

In the final phase, AI systems surpass human capabilities in understanding and predicting consumer behavior. Stigliano and Kotler (2023) highlight how AI-driven assistants now anticipate consumer needs with greater precision than ever before, creating hyper-personalized experiences. Rust (2020) describes this as a tipping point where AI systems redefine customer engagement by offering predictive recommendations that outpace traditional marketing techniques. Advanced machine learning models synthesize vast datasets, allowing AI to not only respond to consumer behaviors but also shape them proactively. Stigliano emphasizes that while this presents significant opportunities for brands to deepen customer relationships, it also raises critical questions about privacy, ethical data use, and the potential for manipulation in AI-driven marketing strategies.

Transitioning the Status Quo - The transition from human-driven to AI-driven marketing is marked by both opportunities and challenges. Stigliano and Kotler (2023) identify this shift as part of the broader Retail 4.0 revolution, where AI seamlessly integrates with other technologies to create interconnected ecosystems. Han et al. (2021) and Moradi and Dass (2022) similarly note that businesses must navigate ethical considerations, such as algorithmic bias and transparency. Stigliano (2023) argues that ethical AI frameworks and regulatory policies are essential to maintaining consumer trust as marketing becomes increasingly automated. Stone et al. (2020) propose a research agenda focusing on how to integrate AI ethically and strategically into marketing practices, ensuring a balance between technological innovation and consumer trust.

2.2 The Economic Impact of AI2AI in Marketing

AI's economic impact on marketing extends beyond operational efficiencies to reshape global market dynamics. Stigliano and Kotler (2023) predict that AI's integration into retail will drive significant cost savings and revenue growth, enabling businesses to reinvest in innovation. Challoumis (2024) and Abrokwhah-Larbi and Awuku-Larbi (2024) highlight how AI-driven strategies influence enterprise performance and competitiveness. Tan and Saraniemi (2023) discuss the role of blockchain-enabled AI systems in creating secure, efficient, and transparent marketing ecosystems. Marketing scholars emphasize that this economic transformation will necessitate new business models and partnerships as traditional retail structures evolve.

The Death of Traditional Marketing - The rise of AI-to-AI (AI2AI) interactions challenges the relevance of traditional marketing strategies. Rust (2020) and Kopalle et al. (2022) argue that the increasing reliance on AI

diminishes the role of human intuition, potentially leading to the "death" of marketing as a human-centric discipline. As AI systems independently optimize campaigns and engage consumers, the status quo of marketing is being upended, with human creativity increasingly relegated to the periphery. This shift is further emphasized by Stigliano and Kotler, who predict that marketing in first-world countries could effectively "die" within the next nine years. They contend that as hyper-personalized AI-driven experiences dominate, traditional marketing approaches will become obsolete, unable to compete with the precision and efficiency of AI. The implications are profound: without a clear need for traditional marketing, the role of marketers will evolve—or risk disappearing entirely—as technological systems redefine consumer engagement, decision-making, and value creation.

Personalization and Customer Engagement in AI2AI - Despite concerns about the diminishing human role, AI2AI interactions are unlocking new possibilities for hyper-personalized marketing. Gao and Liu (2023) discuss how AI systems analyze vast amounts of data to deliver tailored experiences at scale, enhancing customer engagement in ways that were previously unattainable. Jain and Aggarwal (2020) highlight the importance of leveraging AI's predictive capabilities to anticipate and meet consumer needs proactively.

2.3 Future Directions in AI2AI Marketing

As AI2AI interactions continue to evolve, their implications for marketing remain a critical area of inquiry. Verma et al. (2021) advocate for interdisciplinary research to explore AI's integration with emerging technologies such as blockchain and IoT. Javaid (2024) predicts that AI2AI systems will drive the convergence of marketing with other business functions, creating smarter, more efficient operations across industries. The advent of AI2AI interactions represents a watershed moment in the evolution of marketing, challenging traditional paradigms and raising questions about the future of human-centric approaches. By examining current trends and exploring future directions, this study underscores the transformative potential of AI2AI in reshaping marketing practices and its possible role in the eventual "death" of conventional marketing models. Businesses must navigate this transition carefully, balancing technological advancements with ethical considerations to ensure sustainable success in a rapidly changing landscape. AI facilitates the creation of highly personalized content at scale, improves targeting and segmentation, and reduces time and resource requirements for producing marketing materials (Gao & Liu, 2023). It also provides marketers with new perspectives and innovative formats that may not have been considered previously (Stigliano & Kotler, 2023). On the other hand, quality and authenticity concerns arise as AI-generated content risks losing the human touch. Issues like data privacy, consent, and algorithmic bias further complicate the ethical landscape (Stone et al., 2020). Moreover, over-reliance on AI could erode the role of serendipity and human creativity in marketing, raising questions about the continued role of humans in this rapidly evolving ecosystem (Rust, 2020).

3. Methodology

Overview - The research methodology for this study was designed to systematically examine the emergence of AI2AI interactions in marketing and their implications for traditional human-centric approaches. Following established systematic review protocols, this methodology ensures a comprehensive, transparent, and reproducible analysis of existing literature (Kumar & Ramachandran, 2023). The systematic review approach was selected for its ability to synthesize complex findings across multiple studies while minimizing bias and maintaining methodological rigor (Anderson & Smith, 2023).

Research Design - The study employs a qualitative systematic literature review methodology, incorporating both narrative synthesis and thematic analysis approaches. This design allows for a nuanced understanding of how AI2AI interactions are reshaping marketing paradigms while maintaining systematic rigor in data collection and analysis (Kumar & Ramachandran, 2023). The research design emphasizes the identification of emerging patterns, theoretical frameworks, and practical implications across diverse studies.

Search Strategy

Database Selection - The literature search was conducted across multiple academic databases to ensure comprehensive coverage:

- Web of Science
- Scopus
- EBSCO Business Source Complete
- Google Scholar
- ProQuest Business Collection
- IEEE Xplore Digital Library

This multi-database approach enhanced the capture of relevant literature across different disciplinary perspectives (Martinez-Lopez & Merigó, 2024).

Search Parameters - The search period covered publications from January 2020 to January 2024, focusing on contemporary developments in AI marketing technologies. As noted by Chen and Rodriguez (2024), this timeframe captures the most significant advancements in AI2AI marketing applications while ensuring currency of findings.

Search Terms and Boolean Operators - Primary search terms were developed through an iterative process, incorporating feedback from marketing and AI experts. The final search string included:

Primary Terms:

- "AI2AI marketing" OR "AI-to-AI marketing"
- "artificial intelligence" AND "marketing automation"
- "autonomous marketing systems"
- "AI" AND "marketing death"
- "future of marketing" AND "artificial intelligence"
- "marketing transformation" AND "AI"

Secondary Terms:

- "algorithmic marketing" AND "automation"
- "machine learning" AND "marketing evolution"
- "AI agents" AND "marketing decisions"
- "marketing paradigm shift" AND "artificial intelligence"

Selection Process

Initial Screening - A rigorous screening procedure was implemented based on an initial pool of 80 articles identified through the search process. The preliminary screening involved title and abstract review, following

predetermined inclusion and exclusion criteria (Wilson & Thompson, 2024).

Inclusion Criteria - Articles were selected based on the following criteria:

- Peer-reviewed journal articles and high-quality conference proceedings
- English language publications
- Studies focusing on AI applications in marketing
- Research examining AI2AI interactions
- Studies addressing the future of marketing in relation to AI
- Clear methodological foundations
- Empirical research or substantial theoretical contributions

Exclusion Criteria - Articles were excluded based on:

- Publications before 2020
- Non-English language content
- Studies focusing solely on technical aspects of AI without marketing context
- Opinion pieces and non-academic publications
- Articles without clear methodological frameworks
- Duplicate studies
- Studies with insufficient focus on AI2AI interactions

Final Selection - Following the application of inclusion and exclusion criteria, 18 articles were selected for final analysis. This represents a 22.5% inclusion rate, which aligns with similar systematic reviews in the field (Peterson et al., 2024).

Data Extraction and Analysis Framework

Data Extraction Process - A comprehensive data extraction form was developed and validated by three independent researchers. The form captured.

Research Characteristics:

- Research objectives and questions
- Theoretical frameworks
- Methodological approaches
- Sample characteristics
- Geographic context
- Industry applications

4. Findings and Implications

- Key results and conclusions
- Theoretical contributions
- Practical implications
- Future research recommendations
- Limitations and constraints

Analysis Framework - The analysis framework followed a comprehensive three-stage process, encompassing descriptive analysis, thematic analysis, and synthesis. The descriptive analysis stage involved categorizing studies based on methodology, geography, and industry focus, conducting a temporal analysis of research trends, and classifying theoretical frameworks. This was followed by the thematic analysis stage, which focused on identifying recurring themes and patterns, developing conceptual frameworks, and analyzing divergent findings. The final synthesis stage integrated findings across studies, developed theoretical propositions, and identified research gaps.

Reliability and Validity Measures - To ensure the reliability and validity of the analysis, multiple measures were implemented. Reliability was addressed through inter-rater reliability and process reliability measures. For inter-rater reliability, three researchers independently coded the selected articles. Regular consensus meetings were held to resolve coding discrepancies, and standardized coding protocols were utilized. Process reliability was maintained through detailed documentation of search and selection procedures, a comprehensive audit trail, regular peer debriefing sessions, and the use of standardized data extraction forms. Validity was ensured through content and construct validity measures. Content validity was addressed by expert review of the search strategy and selection criteria, validation of the coding framework by senior researchers, peer review of the thematic analysis process, and external audit of findings. Construct validity was maintained through triangulation of findings across multiple studies, integration of diverse theoretical perspectives, cross-validation of emerging themes, and regular validity checks with domain experts. These measures collectively contributed to the robustness and credibility of the analysis framework and its findings.

5. Results and Discussions

5.1 Results

The systematic review identified articles that provide a comprehensive understanding of AI-to-AI (AI2AI) interactions in marketing. The analysis yielded the following key findings:

Evolution of AI2AI Marketing Interactions - The systematic review reveals a clear trajectory in the development of AI2AI marketing interactions across three distinct phases. In the initial phase, AI systems primarily focus on influencing platform algorithms, with 72% of reviewed studies highlighting the importance of algorithmic optimization (Stigliano & Kotler, 2023). The second phase shows a significant reduction in human involvement, with AI systems autonomously managing various marketing functions. The third phase demonstrates AI's growing capability to surpass human insight in predicting and responding to consumer behavior (Rust, 2020).

Transformation of Marketing Paradigms - Analysis indicates a fundamental shift in marketing paradigms, particularly in developed economies. Studies project that traditional marketing approaches in first-world countries may become obsolete within nine years, driven by the increasing sophistication of AI2AI interactions (Stigliano & Kotler, 2023). This transformation is evidenced by the growing adoption of autonomous marketing

systems, with 65% of reviewed studies reporting increased efficiency and effectiveness in AI-driven marketing operations (Davenport et al., 2020).

Economic Implications - The economic impact of AI2AI marketing shows significant promise for organizational performance. Research indicates that businesses implementing AI2AI marketing solutions experience an average 28% reduction in operational costs (Challoumis, 2024). Furthermore, studies reveal that companies in emerging economies are increasingly adopting AI marketing technologies, although at a slower pace compared to developed markets (Abrokwah-Larbi & Awuku-Larbi, 2024).

Ethical Considerations and Human Role - The analysis reveals growing concerns regarding ethical implications of AI2AI marketing. Stone et al. (2020) identify key challenges including data privacy, algorithmic bias, and transparency. The research shows that while 83% of studies acknowledge the diminishing role of human marketers, they emphasize the continued importance of human oversight in ethical decision-making and creative strategy development.

5.2 Discussion

The Inevitability of Marketing Transformation - The findings strongly suggest that the transformation of marketing through AI2AI interactions is not merely a technological trend but a fundamental paradigm shift. This aligns with Rust's (2020) assertion that traditional marketing approaches are becoming increasingly obsolete. The research indicates that this transformation is occurring through three key mechanisms:

- **Algorithmic Evolution:** The increasing sophistication of AI systems in understanding and predicting consumer behavior has created a new marketing ecosystem where traditional human-centric approaches are less effective.
- **Operational Efficiency:** AI2AI interactions demonstrate superior performance in routine marketing tasks, with studies showing significant improvements in efficiency and accuracy (Gao & Liu, 2023).
- **Economic Imperatives:** The cost advantages and scalability of AI-driven marketing solutions create strong economic incentives for adoption, particularly in competitive markets.

The findings underscore a significant paradigm shift from human-centric marketing to AI-driven systems. As AI2AI interactions become increasingly autonomous, traditional marketing strategies are being redefined. This shift aligns with Rust's (2020) assertion that AI is not merely an enhancement but a disruptive force in marketing. Businesses are transitioning from human intuition to algorithmic precision, optimizing operational processes and enhancing consumer engagement (Guha et al., 2021).

Implications for Marketing Practice - The research findings have significant implications for marketing practitioners and organizations. The imminent "death" of traditional marketing in developed economies, as projected by Stigliano and Kotler (2023), suggests that organizations must rapidly adapt their marketing strategies and capabilities. This adaptation includes:

- Developing new competencies in AI-driven marketing
- Redefining human roles in marketing operations
- Creating ethical frameworks for AI2AI marketing implementations
- Balancing automation with maintaining brand authenticity

Opportunities and Challenges of AI2AI Systems - AI2AI systems offer numerous opportunities for marketers, including hyper-personalization, efficiency, and scalability. However, these benefits come with challenges. Ethical issues, such as data privacy and algorithmic transparency, are critical concerns (Stone et al.,

2020). Addressing these challenges requires interdisciplinary research and robust regulatory frameworks (Stigliano & Kotler, 2023).

The Future of Marketing Roles - The findings suggest that the rise of AI2AI marketing may lead to the diminishing role of human marketers in traditional functions. However, this does not imply a complete obsolescence of human involvement. Instead, the role of marketers will likely evolve toward overseeing AI systems, addressing ethical concerns, and ensuring alignment with organizational goals (Jain & Aggarwal, 2020; Verma et al., 2021).

Implications for Emerging Markets - The adoption of AI2AI systems in emerging economies remains limited due to infrastructural and expertise gaps (Abrokwah-Larbi & Awuku-Larbi, 2024). This highlights the need for targeted interventions, including capacity-building initiatives and investment in AI infrastructure, to enable these markets to leverage AI2AI opportunities effectively.

Ethical and Regulatory Imperatives - As AI2AI systems reshape marketing, ethical considerations must be at the forefront. Transparency, consumer trust, and the mitigation of algorithmic biases are essential for sustainable marketing practices (Stone et al., 2020). Regulatory policies and ethical AI frameworks are critical to addressing these issues, ensuring that technological advancements align with societal values (Stigliano & Kotler, 2023).

6. Conclusion, Implications, and Recommendation

6.1 Conclusion

AI2AI interactions signify a watershed moment in marketing, marking the transition from human-centric approaches to AI-driven systems. These interactions redefine traditional marketing paradigms, offering hyper-personalized and efficient solutions but also raising ethical and operational challenges. As AI systems surpass human insight, businesses must navigate this transformation carefully to maintain competitiveness and consumer trust. While developed economies are at the forefront of this shift, emerging markets have yet to fully leverage these technologies due to infrastructural limitations. Nevertheless, the potential for growth and innovation in these markets remains substantial with the right investments in AI capabilities.

Future Trajectory and Challenges - The study suggests that while AI2AI marketing represents the future of the discipline, several critical challenges must be addressed:

- **Ethical Considerations:** The need for robust frameworks to ensure responsible AI deployment in marketing (Stone et al., 2020).
- **Skill Gap:** The requirement for new competencies in managing AI-driven marketing systems (Verma et al., 2021).
- **Integration Challenges:** The complexity of integrating AI2AI systems with existing marketing infrastructure (Han et al., 2021).

6.2 Implications of the Study

To harness the full potential of AI in marketing while addressing its challenges, a multi-faceted approach is necessary. Businesses, especially in emerging economies, should prioritize investments in AI technologies and infrastructure to close the gap with developed markets. Simultaneously, industry stakeholders must collaborate to develop and implement ethical guidelines that address concerns like algorithmic bias, data privacy, and transparency. Educational institutions and businesses should focus on capacity building through programs that equip professionals with the skills to manage and optimize AI systems. The research community should explore

the convergence of AI with other emerging technologies such as blockchain and IoT to uncover novel applications and tackle potential challenges. Finally, policymakers must ensure that AI-driven marketing practices align with consumer interests, emphasizing trust, transparency, and fairness through consumer-centric AI policies. This comprehensive strategy will help maximize the benefits of AI in marketing while mitigating its risks and ethical concerns.

6.3 Recommendations

- Investment in AI Infrastructure: Businesses, particularly in emerging economies, should prioritize investments in AI technologies and infrastructure to bridge the gap with developed markets.
- Ethical Framework Development: Industry stakeholders should collaborate on developing and implementing ethical guidelines to address concerns such as algorithmic bias, data privacy, and transparency.
- Capacity Building: Educational and training programs should focus on equipping professionals with the skills to manage and optimize AI systems.
- Interdisciplinary Research: Researchers should explore the convergence of AI with other emerging technologies such as blockchain and IoT to identify novel applications and address potential challenges.
- Consumer-Centric AI Policies: Policymakers should ensure that AI-driven marketing practices are aligned with consumer interests, emphasizing trust, transparency, and fairness.

6.4 Limitations and Areas for Future Research

This systematic review, while offering valuable insights into AI2AI marketing, has limitations that should be acknowledged. The rapid evolution of AI technology may quickly render some findings obsolete, the focus on published research might not capture the most recent developments, and there's a scarcity of long-term studies on AI2AI marketing impacts. Future research should address these gaps by exploring the long-term implications of AI2AI marketing on brand equity and customer relationships, developing ethical frameworks specific to this domain, investigating its impact on consumer behavior and decision-making, and conducting comparative studies across different cultural contexts. Despite these limitations, the findings and discussions presented contribute significantly to our understanding of how AI2AI interactions are reshaping marketing practices, providing valuable insights for both academics and practitioners navigating this transformative landscape.

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Impact assessment: Ugnayang pampamayanan na karunungan ay mahalaga sa pagbasa makikita sa pagpapahusay ng literasi sa Barangay 49-Youngfield Lungsod Tacloban

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ISSN: 2243-7703
Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Available Online: 20 February 2025

Revised: 27 January 2025

DOI: 10.5861/ijrse.2025.25849

Accepted: 15 February 2025

Abstract

The Master of Arts in Education (MAEd) majors in Filipino and the Bachelor of Secondary Education (BSED) major in Filipino have a 5-year (2019-2024) Community Extension Project titled Karunungan ay Mahalaga sa Pagbasa Makikita or Reading Leads to Wisdom. The project is under the Leyte Normal University (LNU) Extension Agenda to improve Literacy, Numeracy, and Language (Waray and Filipino). Its purpose is to help the communities in the neighboring barangays of LNU where Barangay 49-Youngfield of the City of Tacloban was chosen. This study focused on the impact assessment of the 5-year community extension project as stated in the Memorandum of Agreement (MOA) conducted by the Graduate School and the College of Education of LNU. Using the mixed method research design, the level of proficiency in the language (Waray and Filipino) was determined based on the pre-test and post-test provided each year, with 20 items for each subject. From the approved Consent Form of the beneficiaries' parents, qualitative data was obtained from the beneficiaries and their parents. Based on the result, all the pre-test and post-test efficiencies were between no and very low efficiency, while the post-test was between very low and moderate. According to the beneficiaries' experiences, they found it difficult to learn when the pandemic hit, even though the LNU modules were provided. In addition, the parents confirmed what the young beneficiaries said because they had difficulty helping their children learn. The beneficiary youth and their parents mentioned that they are very grateful and indebted to LNU for choosing their barangay because, during the pandemic, LNU was able to share wisdom and even food that they needed, and they had nothing to cling to. Therefore, the project needs to be continued although the barangay captain and parents of the community begged to continue the project in their barangay, the Overall Project Leader decided to share the services of the teachers who handle the aforementioned program and major in other neighboring barangays of LNU not just one but more than one barangay because there are many Extension Workers of LNU.

Keywords: community extension, impact assessments, extension workers, literacy, pre-test and post-test

Impact assessment: Ugnayang pampamayanan na karunungan ay mahalaga sa pagbasa makikita sa pagpapahusay ng literasi sa Barangay 49-Youngfield Lungsod Tacloban

1. Panimula

Bawat State Colleges and Universities (SUCs) sa buong Pilipinas ay kailangang magsagawa ng Ugnayang Pampamayanan sa mga komunidad na nangangailangan ng kanilang serbisyo batay sa kadalubhasaan ng kanilang unibersidad. Tulad ng Leyte Normal University (LNU), bawat guro ay mayroon lamang anim (6) na opisyal na oras mula Lunes hanggang Biyernes na dapat sana ay walong (8) oras. Dahil nakalagay sa kanilang mga Load Sheets na ang Extension ay To Be Arranged (TBA) na limang (5) oras kada isang linggo at lima (5) naman sa Research kung kaya ang bawat guro na humahawak ng mga programa ng LNU ay kailangang maisakatuparan nila ito sa pamamagitan ng community extension.

Napatunayan ni Dugyon (2016), ang community extension program na isinasagawa ng bawat indibidwal ay kailangang nakatulong nang malaki gaya ng nakapagpabago sa pamumuhay ng komunidad ay masasabing naging makabuluhan o may impact ang naturang programa ng community extension. Dagdag pa ni Dilao (2015), kailangang tiyakin din ng organayser o nagsasagawa ng ugnayang pampamayanan na ang gawain ay natututo ang mamamayan ayon sa kanilang pagsusumikap na matuto mula sa mga extension Workers (guro at mag-aaral) upang masiguro ang kapakinabangan ng proyekto sa buhay ng mga benepisyaryo.

Samantala sina Etwire, et.al (2013), naniniwala na maraming salik ang nakaiimpluwensiya upang maging matagumpay at may impact ang ugnayang community extension. Isa na rito ang interes ng mga benepisyaryo. Sabi pa nila, huwag pilitin ang mga lalahok sa proyekto dahil natitiyak nila na hindi maisasakatuparan ang layunin ng ugnayang pampamayanan. Pinabulaanan nila na hindi lahat ng mga sumasali sa programa ay seryoso kung kaya kailangan agad na abisuhan sila na hindi na sumali sa proyekto dahil marami pa ang interesado. Dahil sa mga nabanggit na literatura, nakita rin ito ng mga mananaliksik kung kaya iminunghi na tiyakin sa susunod na magsagawa ng ugnayang pampamayanan, magkaroon ng mabusising monitoring upang matukoy kung sino sa mga extension workers at benepisyaryo ang hindi na nakikitaan ng interes sa pagsasagawa ng gawain. Pahabol pa, kailangang ang masusing pagkilala sa mga lalahok ng community extension program para hindi masayang ang pagod at gastos ng nagsasagawa ng naturang programa.

Layunin ng Pag-aaral - Nilalayon sa pag-aaral na ito na matukoy ang sumusunod na suliranin batay sa isinagawag pagtukoy ng impact assessment ng Community Extension Project na Karunungan ay Mahalaga sa Pagbasa Makikita na isinagawa sa Barangay 49-Youngfield, Lungsod Tacloban. Ano ang Impact Assessment sa isinagawang Community Extension Project ng MAEd major in Filipino at BSED major in Filipino: Pre-test mula Enero 2019 hanggang Enero 2024 sa mga asignaturang Language, Waray, at sa Filipino. Posttest mula Enero 2019 hanggang Enero 2024 sa mga asignaturang Language, Waray, at sa Filipino. Natamong Kaalaman ng mga Kalahok. Natamong Kasanayan ng mga Kalahok. Nakuhang mga Pagpapahalaga at Saloobin ng mga Kalahok. Ano ang karanasan ng mga benepisyarong Kabataan habang at pagkatapos isagawa ang community extension na pinangunahan ng MAEd major in Filipino at BSED major in Filipino?

2. Metodolohiya

Inilahad sa bahaging ito ang disenyo pananaliksik, lokal ng pananaliksik, mga kalahok ng pag-aaral, pangangalap ng mga datos, konsiderasyong Etikal, at instrumentong ginamit.

Disenyo ng Pag-aaral. Ginamit ang Mixed Method Research Design dahil pinagsasama ang qualitative at quantitative na pagkolekta at pagsusuri ng datos upang makakuha ng mas mahusay na pag-unawa sa isang paksa ng pananaliksik. Isa itong flexible na paraan na maaaring magbigay ng iba't ibang pananaw at resulta na

maiaangkop sa isinagawang pag-aaral (Wisdom at Creswell (2013). Isinasaalang- alang din nito ang pagsiyasat ng mga sumasagot sa impact ng isinagawang community extension sa pagpapalawig tungkol sa nakuhang kaalaman, kasanayan at pagpapahalaga, at saloobin, at pagsusuri ng programa (Skellyet al., 2014). Ang mean at percentage ay ginamit upang matukoy ang kahusayan ng mga benepisyaryo sa Language (Waray at Filipino). Bukod dito, nabanggit ni Kane (2006), ang 5-point Likert Scale ay gamitin upang matukoy ang epekto ng extension project at mga aktibidad na may kinalaman sa natamo na kaalaman, kasanayan, at halaga bilang resulta ng lecture series ng MAED major in Filipino at BSED major in Filipino.

Lokal ng Pananaliksik. Ang Lungsod Tacloban ay isang Urbanisadong Lungsod sa isla ng Leyte sa rehiyon ng Silangang Visayas ng Pilipinas. Ayon sa 2020 census, ang Tacloban ay may populasyon na 251,881, kaya ito ang pinakamataong lungsod sa Silangang Visayas. Dahil sa dami ng mga Barangay ng Lungsod Tacloban, napili ang Barangay 49-Youngfield, ayon sa 2020 Census, ito ay mayroong populasyon na 1,019. Ito ay kumakatawan sa 0.40% ng kabuuang populasyon ng Lungsod Tacloban. Dagdag pa, tinukoy ang Mountain View at Hillside na bahagi ng barangay na ito dahil sa dami ng mga pamilya rito na nasa laylayan.

Kalahok ng Pag-aaral. Binigyang-tuon ang mga benepisyaryo na nasa edad na 5 taong gulang sa taong 2019 at sila rin ang naging kalahok sa taong 2020 hanggang 2024 kung saan ang edad na ng mga benepisyaryo ay 10 taong gulang na.

Pangangalap ng mga Datos. Ibinatay ang resulta ng Pre-test at Post-test bago at pagkatapos isagawa ang ugnayang pampamayanan sa taong 2019-2024. Sa pagtukoy naman ng impact ng 5-year community extension project, ginamit ang isang Survey Questionnaire kung saan ipinasagot sa mga magulang ng mga benepisyaryo kung Lubos na Sumasang-ayon (5), Bahagyang Sumasang-ayon (4), Sumasang-ayon (3), Hindi sumasang-ayon (2), o Walang Komento (1).

Konsiderasyong Etikal. Sa pamamagitan ng Consent Form, inilahad ng mananaliksik ang nilalaman nito at pinalagdaan sa magulang ng bawat benepisyaryo bilang patunay na sumsang-ayon sila na makasali sila kasama ang kanilang mga anak sa pananaliksik na isinagawa,

Instrumentong Ginamit. Ang Pre-test at Posttest ay binubuo ng tigdadalawampung aytem at Survey Questionnaire ay sinuri ang Content at Face Validity, Pagsusuri ng Aytem, at tiinukoy ang Kapaniwalaan o reliability ng mga ito (Dillman et al., 2009).

3. Resulta

Inilahad sa bahaging ito ang natuklasan sa isinagawang pag-aaral tungkol sa unang suliranin kaugnay sa impact assessment ng community extension na tinukoy sa pamamagitan ng pre-test at post-test, kasama na rito ang pagtukoy rin sa natamong kaalaman ng mga kalahok, natamong kasanayan ng mga kalahok, at nakuhang mga pagpapahalaga at saloobin ng mga kalahok. Samantala, binigyan din ng pagpapaliwanag ang resulta ng ikalawang suliranin kaugnay sa karanasan ng mga benepisyarong kabataan sa Barangay 49-Youngfield, Lungsod Tacloban habang at pagkatapos isagawa ang community extension na pinangunahan ng MAEd at BSED major ng Filipino.

3.1 Impact Assessment

Upang matukoy ang impact assessment sa isinagawang community extension, inalam ang resulta ng pre-test at post-test.

Pre-test. Matutunghayan ang kinalabasan ng Pre-test kung saan ibinigay ito bago simulan ang kada taon na community extension. Ito ay mula 2019-2024. Makikita sa Talahanayang 1 ang resulta ng Pre-test simula sa taong 2019 hanggang 2024 kung saan sa bawat simula ng gawain sa bawat taon ay **Walang Kahusayan (WK)** sa mga asignaturang Waray na may mean score na 1.47 at Filipino na may mean score na 1.30. Mapapansin na tuwing nagsisimula ang lecture series sa iba't ibang asignatura ay wala pang kahusayan ang mga benepisyaryo

ng Extension Project ng MAED at BSED major in Filipino.

Talahanayan 1

Pre-test ng taong 2019-2024

Taon	Asignatura Waray	Pagpapakahulugan	Asignatura Filipino	Pagpapakahulugan
2019-2020	0.17	Walang Kahusayan	0.09	Walang Kahusayan
2020-2021	0.00	Walang Kahusayan	0.00	Walang Kahusayan
2021-2022	1.04	Walang Kahusayan	1.22	Walang Kahusayan
2022-2023	2.43	Walang Kahusayan	1.87	Walang Kahusayan
2023-2024	3.70	Walang Kahusayan	3.30	Walang Kahusayan
Average Mean	1.47	Walang Kahusayan	1.30	Walang Kahusayan

Leyenda: 1-5 Walang Kahusayan (**WK**); 6-10 Di-gaanong Mahusay (**DM**); 11-15 Mahusay (**M**); at 16-20 Napakahusay (**N**)

Pinatotohanan ito ni Attia (2013) na isa sa mga pangunahing salik sa performans ng mga bata ay nakabatay sa kalagayan ng panahon o pamumuhay ng bata. Dahil dito, masasabing ang walang kahusayan sa Waray at Filipino ay bunga ng kalagayan ng mga batang benepisyaryo ng community extension na inilahad sa Talahanayan 1.

Posttest. Ipinapakita sa Talahanayan 2 ang Posttest na resulta kung saan ibinigay ito tuwing natatapos ang isang taon ng lecture series kada taon. Bagama't hindi tumaas ang antas ng kahusayan, nakuha pa rin ng mga benepisyaryo ang bahagyang pag-angat ng kanilang kahusayan kahit nasa antas pa sila ng walang kahusayan, ito ay natuklasan pagkatapos isagawa ang lecture series sa mga asignaturang Waray at Filipino. Mapapansin sa talahanayan 1 na sa taong 2020-2021, walang nakuhang kahusayan ang mga benepisyaryo sa dahilang panahon ito ng unang pananalasa ng Covid-19. Ngunit, sa kabila ng pandemyang naranasan, nagawa pa rin ng MAED at BSED major in Filipino na mga Extension Workers ipagpatuloy ang pagtuturo sa pamamagitan ng module na ibinahagi sa mga benepisyaryo. Sabi nga ni Herrera (2010), marami talagang pagsubok ang dadaanan sa pagsasagawa ng community extension subalit, kung seryoso at tapat ang proyekto sa pagsasagawa nito, hindi mapipigilan ng anumang pagsubok ang mabuting intensiyon ng mga extension workers.

Talahanayan 2

Post-test ng taong 2019-2024

Taon	Asignatura Waray	Pagpapakahulugan	Asignatura Filipino	Pagpapakahulugan
2019-2020	11.57	Mahusay	11.09	Mahusay
2020-2021	8.61	Mahusay	8.57	Mahusay
2021-2022	13.26	Mahusay	13.26	Mahusay
2022-2023	14.09	Mahusay	14.30	Mahusay
2023-2024	15.22	Mahusay	14.38	Mahusay
Average Mean	12.55	Mahusay	12.32	Mahusay

Leyenda: 1-5 Walang Kahusayan (**WK**); 6-10 Di-gaanong Mahusay (**DM**); 11-15 Mahusay (**M**); at 16-20 Napakahusay (**N**)

Dagdag pa, sa Talahanayan 2 ay ipinakita ang pagbabago sa natamong kabatiran ng mga kalahok kung saan Mahusay ang nakuha nila na mean score. Ngunit napansin ng mananaliksik na sa taong 2020-2021 ay napakababa ang natamong kabatiran ng mga kabataan dahil sa pandemyang naranasan sa mga taong ito subalit, tumaas naman ang kanilang performans sa taong 2021-2024 (Bradley, 2008). Patunay lamang ito na hindi naging balakid ang pandemya sa pagsasagawa ng Extension Project para lamang matulungan ang mga kabataan na matuto sa iba't ibang asignatura. Samakatuwid, ang mga benepisyaryong hindi marunong magbasa at ang mga marunong magbasa ngunit hindi nauunawaan ang binabasa ay masasabing matagumpay na nagampanan ng mga Extension Workers na humahawak at mag-aaral ng programang MAED at BSED major ng Filipino.

Natamong Kaalaman ng mga Kalahok. Ipinapakita sa Talahanayan 3 na ang natamong kabatiran ng mga mga benepisyaryo sa isinagawang community extension ay **Lubos na Sumasang-ayon** sila na may Means Score na 4.79. Patunay lamang ito na naging makabuluhan ang isinagawang ugnayang pampamayanan dahil natamo ng mga kalahok ang mga inaasahan na kaalaman na ibinahagi ng mga guro at mag-aaral ng MAED at BSED major in Filipino.

Talahanayan 3

Natamong Kaalaman

Natamong Kabatiran	Mean	Deskriptibong Pagpaspakahulugan
Marami akong nakuhang kaalaman sa lahat ng mga asignatura.	4.65	Lubos na sumasang-ayon
Natuto na akong bumasa na walang tulong ng iba.	4.70	Lubos na sumasang-ayon
Nauunawaan ko na ang aking mga binabasa.	4.96	Lubos na sumasang-ayon
Lumawak ang aking kaalaman sa iba't ibang asignatura.	4.74	Lubos na sumasang-ayon
Naiintindihan ko ang mga paksa sa bawat asignatura.	4.91	Lubos na sumasang-ayon
KABUAANG MEAN	4.79	Lubos na sumasang-ayon

Leyenda: Lubos na Hindi Sumasang-ayon 1.00-1.50; Hindi Sumasang-ayon 1.51-2.50; Hindi makapagpasya 2.51-3.50; Sumasang-ayon 3.51-4.50; at Lubos na Sumasang-ayon 4.51-5.00

Pinatunayan lamang ng mga benepisyaryo na naging epektibo ang pagtuturo ng mga extension worker na mga MAED at BSED major in Filipino dahil talaga namang makikita sa Talahanayan 3 ang mga patunay kung saan mayroong natamong kaalaman ang mga benepisyaryo sa isinagawang community extension. Naniniwala sina Llenares at Deocaris (2018) na kung maganda ang epekto ng community extension, mabuting ito ay ipagpatuloy sa iba pang komunidad na nagpapakita rin ng interes na lumahok sa nasabing gawain.

Natamong Kasanayan. Sa Talahanayan 4, ipinapakita ang mga natamong kasanayan sa Waray at Filipino kung saan may mean na 4.52 na ang ibig sabihin na *Sumasang-ayon* ang mga kalahok na nakikilala nila ang mga magkakasingkahulugan na mga salita. Samantala, ang mean score na 4.74 na ang ibig sabihin ay *Lubos na Sumasang-ayon* ang mga kalahok na natutukoy na nila ang nilalaman ng mga babasahin na angkop sa kanilang edad. Ang 4.22 na mean score na ibig sabihin ay *Lubos na Sumasang-ayon* ang mga kalahok na naiaangkop na nila ang mga tamang bilang at problema sa tuwing sila ay nagbebenta ng kanilang mga paninda. Samantala, ang 4.43 na mean score na ibig sabihin ay *Lubos na Sumasang-ayon* ang mga kalahok na nagagamit na nila wastong pangungusap sa kanilang liham at pakikipagtalastasan. Panghuli, *Lubos din na Sumasang-ayon* ang mga kalahok na may mean score na 4.70 kung saan nagkaroon na sila ng kakayahan na makapagbigay ng konklusyon sa isang gawain.

Patunay lamang ito na malaki ang naitutulong ng mga paaralang nagsasagawa ng community extension sa mga komunidad dahil natutulungan ang mga mamamayan na maging literate sa lahat ng bagay (Mojares at Bacongus, 2015).

Talahanayan 4

Natamong Kasanayan ng mga Kalahok

Natamong Kasanayan	Mean	Deskriptibong Pagpaspakahulugan
Nakikilala ko na ang mga magkakasingkahulugan na mga salita.	4.52	Lubos na sumasang-ayon
Natutukoy ko na ang nilalaman ng mga babasahin	4.74	Lubos na sumasang-ayon
Naiaangkop ko na ang mga tamang bilang sa isang problema.	4.22	Sumasang-ayon
Nagagamit ko na ang wastong pangungusap.	4.43	Sumasang-ayon
Naibibigay ko na ang konklusyon ng isang gawain.	4.70	Lubos na sumasang-ayon
KABUAANG MEAN	4.52	Lubos na sumasang-ayon

Leyenda: Lubos na Hindi Sumasang-ayon 1.00-1.50; Hindi Sumasang-ayon 1.51-2.50; Hindi makapagpasya 2.51-3.50; Sumasang-ayon 3.51-4.50; at Lubos na Sumasang-ayon 4.51-5.00

Nakuhang Pagpapahalaga at Saloobin ng mga Kalahok. Nakalahad sa Talahanayan 5 ang mga Nakuhang Pagpapahalaga at Saloobin ng mga Kalahok sa isinagawang community extension ng MAED at BSED major in Filipino. Napahahalagahan nila ang pagtuturo ng guro at pagkatuto nila sa panahon na isinasagawa ang lecture series ng LNU na may 4.57 na mean score na ang ibig sabihin ay *Lubos na Sumasang-ayon* sila. Mula nang sila ay napabilang sa mga benepisyaryo, naging mapagmasid at mapagbantay na sila tuwing darating sa kanilang barangay ang mga taga-LNU upang magturo at magbahagi ng kaalaman na may mean score na 5.00 na ang ibig sabihin ay *Lubos na Sumasang-ayon* sila. Naniniwala rin sila na dapat pahalagahan ang kaugalian at pakikipagkapwa na may mean score na 4.87 na ibig sabihin ay *Lubos na Sumasang-ayon* sila. Mayroon silang mabubuting gawi sa trabaho, ugali at pagpapahalaga tungo sa kahusayan, pagiging produktibo at pagpapanatili ng mabuting pag-uugali simula nang isa sila sa mga naging benepisyaryo ng community extension na ginawa ng LNU na may mean score na 4.96 na ang ibig sabihin na sila ay *Lubos na Sumasang-ayon*. Batid na nila ang pagbabadjet, paghahati-hati o pagsasama-sama ng mga kailangang gastusin o hindi kailangan magmula nang

mapabilang sila sa ugnayang pampamayanan ng LNU na may mean score na may 4.78 na ang ibig sabihin sila ay *Lubos na Sumasang-ayon*. Dahil dito nakuha ang Kabuuang mean Score na 4.84 na ibig sabihin na sila ay *Lubos na Sumasang-ayon*.

Samakatuwid, totoo ang sinasabi nina Tirivanhu, et.al. (2015), na ang bawat community extension ay kapakipakinabang sa mga mamamayan lalo na sa mga nasa laylayan na hindi maibigay ng pamahalaan.

Talahanayan 5

Nakuhang mga Pagpapahalaga at Saloobin ng mga Kalahok

Nakuhang mga Pagpapahalaga at Saloobin	Mean	Deskriptibong Pagpaspakahulugan
Napahalalagahan ko na ang pagtuturo ng guro at ang aking pagkatuto.	4.57	Lubos na sumasang-ayon
Mapagmasid at mapagbantay na ako sa Extension ng LNU.	5.00	Lubos na sumasang-ayon
Naniniwala ako na dapat pahalagahan ang kaugalian at pakikipagkapwa.	4.87	Lubos na sumasang-ayon
Mayroon akong mabubuting gawi sa trabaho, ugali at pagpapahalaga tungo sa kahusayan, pagiging produktibo at pagpapanatili mabuting pag-uugali.	4.96	Lubos na sumasang-ayon
Batid ko na ang pagbabadjet, paghahati-hati o pagsasama-sama ng mga kailangang gastusin o hindi kailangan	4.78	Lubos na sumasang-ayon
KABUAANG MEAN	4.84	Lubos na Sumasang-ayon

Leyenda: Lubos na Hindi Sumasang-ayon 1.00-1.50; Hindi Sumasang-ayon 1.51-2.50; Hindi makapagpasya 2.51-3.50; Sumasang-ayon 3.51-4.50; at Lubos na Sumasang-ayon 4.51-5.00

Karanasan ng mga benepisyaryong Kabataan habang at pagkatapos isagawa ang ugnayang pampamayanan. Ipinapakita sa Talahanayan 6 ang Karanasan ng mga mag-aaral bago at pagkatapos isagawa ang Community Extension Project ng LNU kung saan sa unang kolum ay mapapansing negatibo ang pagtanggap o pagtingin ng mga kalahok bago isagawa ang proyekto hanggang sa unti-unti ay napatunayan nila na lubhang makabuluhan ang naturang gawain kung kaya makikita sa ikalawang kolum na pagkatapos ng proyekto at naging positibo ang naging karanasan ng mga kalahok (Dugyon, 2016).

Talahanayan 6

Karanasan ng mga Kabataan bago at pagkatapos sa Isagawa ang Extension Project

Bago Isagawa ang Extension Project	Pagkatapos Isagawa ang Extension Project
Nag-aalinlangan o nagdadalang isip sa pagsali sa Lecture Series ng LNU.	Nawala ang Pag-aalinlangan o pagdadalang-isip na sumali sa isinagawang Extension Project ng LNU.
Sumali pero hindi opisyal na naitala ng mga gurong mag-aaral ng LNU dahil sa pabago-bago ang isip na sumali.	Walang pagsisi na naisama sa talaan ng mga benepisyaryong kabataan sa isinagawang Extension Project ng LNU.
Hindi pinayagan ng magulang na sumali dahil sa sila ang inaasahan sa mga gawaing bahay.	Mabuting napilit ang mga magulang na sumali at napatunayan nila na may saysay ang pagsali nila.
Walang maayos na lugar na pagdarausan ng Lecture Series ng LNU dahil ang mga Opisyaes ng Barangay ay hindi nakikipagtulungan.	Napansin ng buong komunidad ang pakinabang ng Extension Project ng LNU kung kaya naglaan sila ng Lugar na pagdarausan.

Tunay ngang masasabing ang community extension na isinagawa ng MAED at BSED major in Filipino ay nararapat lamang na manatili at ipagpatuloy pa upang marami pang mamamayan ang matulungan pagdating sa usaping literasi (Too at Bajracharya, 2015).

4. Konklusyon

Batay sa mabusising pagsusuri ng mga datos, natukoy sa resulta ng pag-aaral ang sumusunod na konklusyon:

1. Batay sa resulta ng Pre-test taon-taon, walang kahusayan sa mga asignaturang Waray at Filipino ang mga kabataan na kasali sa Extension Project na isinagawa ng MAED at BSED major in Filipino.
2. Naging mahusay sa asignaturang Waray at Filipino ang mga kabataan na kasali sa community extension na isinagawa ng LNU batay sa resulta ng Post-test.

3. Lubos na sumasang-ayon ang mga kalahok sa mga natamong kaalaman sa isinagawang Community Extension ng LNU.
4. Lubos na Sumasang-ayon ang mga kalahok na natamo nila ang mga kasanayan na dapat nilang matutuhan sa proyektong ugnayang pampamayanan ng LNU.
5. Lubos na Sumasang-ayon ang mga kalahok sa Nakuhang mga Pagpapahalaga at Saloobin mula nang mapasali sila sa community extension ng LNU.
6. Mga negatibo ang mga naging karanasan ng mga Kabataan bago isagawa ang community extension at naging positibo ito pagkatapos isagawa ang proyekto.

4.1 Rekomendasyon

Nabuo ang sumusunod na rekomendasyon batay sa inilahad sa konklusyon.

- Ipagpatuloy ang pagsasagawa ng Community Extension sa mga lugar na nangangailangan ng mga magtuturo ng Literacy at Numeracy.
- Ituro ang mga kailangang kaalaman at kasanayan na dapat matamo ng mga kabataan sa komunidad lalo na sa mga hindi marunong bumasa at sa mga marunong bumasa ngunit hindi nauunawaan ang binabasa sa Waray at Filipino.
- Manatiling positibo sa pagsasagawa ng Community Extension Project kahit sa una ay hindi pa nakikita ng komunidad ang kabuluhan nito dahil unti-unti nila itong matatanggap at magkakaroon sila ng pagkukusa na sumali.

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Design and development of contextualized, parent-mediated communication boards for learners with down syndrome

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ISSN: 2243-7703

Online ISSN: 2243-7711

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

OPEN ACCESS

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25850

Abstract

Over recent years, Augmentative and Alternative Communication (AAC) tools, such as communication boards, have become increasingly recognized in special education. However, their application, especially for learners with Down syndrome, remains limited in the local context. This study aimed to evaluate the effectiveness of contextualized, parent-mediated communication boards, focusing on factors such as the medium of instruction, familiarity with the home environment, color use, and readability. Employing a case study and developmental design, the study involved a learner with Down syndrome, her primary caregiver, and family members. Data were collected over three weeks through observation checklists and unstructured interviews, and analyzed using thematic analysis. The findings suggest that contextualized, parent-mediated AAC effectively enhanced the learner's communication skills. However, several factors are crucial for the effectiveness of these tools. Parental involvement in the design and development process is essential to ensure the communication boards meet the learner's needs. A major limitation identified was the inconsistency in using the boards, influenced by the caregiver's time constraints and environmental factors. Additionally, adapting the boards for various social contexts outside the home presented challenges. Based on the findings, it is recommended that future researchers should consider the application and adaptation of contextualized communication boards for other learners with similar conditions. Key areas for exploration include assessing their long-term effectiveness, evaluating their suitability for diverse populations, and refining their design based on feedback from learners, families, and educators.

Keywords: down syndrome, case study, ADDIE Model, Augmentative and Alternative Communication (AAC), contextualized parent-mediated communication boards

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1. Introduction

Effective communication is essential for individuals of all age, but it can be particularly challenging for those with Down syndrome. The communicative abilities of learners with Down syndrome can vary widely, with some possessing verbal skills while others rely on non-verbal methods. Due to their cognitive and developmental disabilities, their communication skills may be delayed, and present difficulties in both expression and comprehension. Consequently, these communication barriers often result in frustration, isolation, and hampered social integration. As for their caregivers, it is very difficult to understand and manage challenging behaviors due to limited knowledge, resources of tools and strategies that are contextualized to their home environment to effectively communicate with their child. Given this situation, they face challenges when they attempt to communicate with their child, which can lead to relationship problems. Improving communication difficulties is essential to raising the quality of life for people with Down syndrome and those who care for them.

Over the past several years, Augmentative and Alternative Communication (AAC) have been increasingly recognized and utilized in special education classrooms which led to the use of innovative tools like communication boards (Hillary & Dalton, 2019; Light & McNaughton, 2015; Nolasco, 2022). These low-tech AAC tools assist individuals with communication difficulties or language learning by providing visual aids, symbols, and cues that may support the learners in expressing themselves, communicating their needs, and increasing participation in various contexts (Sobel et al., 2017; Williams, 2016). Communication boards have gained prominence as AAC tools, however, most of the available resources on communication boards are only limited to English as a medium of instruction. Because of this, the privileges brought by communication boards are not used or taken advantage of in Filipino households, thus creating a gap in communication between learners with Down syndrome and their families.

A number of children with special needs who require specialized devices to communicate pose difficulties for their caregivers (Almeida et al., 2023; Singh et al., 2017). Using the communication boards led to considerable improvements in the children's communicative skills. However, parents struggled with using AAC devices due to time constraints, lack of emotional readiness, and language differences that were specific to their needs of support (Berenguer et al., 2022; Singh et al., 2017). With this circumstance, a high rate of abandonment with the use of AAC is evident despite the ongoing need to utilize these tools for effective communication (Bircanin et al., 2019; Moorcroft et al., 2019a; Shin et al., 2020).

Similarly, the lack of reliable assistive tools at home compromises the development of the communication skills of the children (Almeida et al., 2023; Light et al., 2019). These learners from different backgrounds may already face educational disparities, and the absence of assistive tools to communicate themselves can worsen such gaps, leading to limited opportunities in diverse contexts. Consequently, it became evident that there is a crucial need to maximize the utilization of such AAC devices in the diverse contexts of every child's life. This necessitates providing parents with assistive tools such as contextualized communication boards and the other information that they may require so that the risk of abandonment to the utilization and barriers to the effective practice of using AAC in the home environment can be reduced (Almeida et al., 2023; Ibrahim et al., 2018; Shin et al., 2020; Singh et al., 2017).

In the special education classrooms of today, especially those in Western countries, communication boards are widely used as these are effective tools in fostering effective communication for learners with special needs (Hillary & Dalton, 2019; Light & McNaughton, 2015; Nolasco, 2022). Furthermore, the effectiveness of Communication Boards has also been evident in the field of medicine as it contributes to the ease of

communication of mechanically ventilated patients (Hosseini et al., 2018; Kuruppu et al., 2023; Sobel et al., 2017). However, only a few studies show the effectiveness of these boards in the home environment of learners with special needs (Berenguer et al., 2022; Hillary & Dalton, 2019; Kulkarni & Parmar, 2017; Lesser & Ebert, 2020; O'Toole et al., 2018). To date, there is no study about the utilization of communication boards in a Filipino household, due to the limited medium of its instruction. Thus, there is pressing a need for contextualization of communication boards which can be used not only in the confinement of the classroom but also in their respective home environment and other social contexts.

To maximize the utilization of communication boards and to realize the objectives of this study, a low-tech contextualized, parent-mediated communication boards will be proposed. The communication boards will be contextualized in Filipino as a medium of instruction that can be used not only in the classroom, but more importantly in the home environment of every child. Integrating familiar themes and contexts of their respective homes and medium of instruction into the communication boards may foster more meaningful interactions and the development of social skills. Furthermore, the proposed output of this study may contribute to the ever-evolving discourse on AAC intervention tools for learners with special needs, emphasizing the importance of contextualization in the design and development of communicative devices in the field of AAC. The envisioned tool may not only enhance communication skills but also empower children with Down syndrome as well as their family members to communicate effectively across various contexts, extending the benefits of contextualized, parent-mediated communication boards beyond educational settings.

The study primarily aims to: 1) determine the specific challenges and needs of support in communication faced by family members and caregivers of learners with Down syndrome within the home environment, 2) design a set of contextualized, parent-mediated communication boards tailored for family members, caregivers, and learners with Down syndrome, medium of instruction, familiar context of the home environment, use of color, and readability, and 3) evaluate the effectiveness of using the contextualized, parent-mediated communication boards. This study adapted the ADDIE Model, an instructional design that facilitated the design and development of contextualized, parent-mediated communication boards to attend to the needs of learners with Down syndrome along with their families. The model comprised five major steps: Analysis, Design, Development, Implementation, and Evaluation. The ADDIE Model was applied to the study because it was systematic (Durak & Ataizi, 2016). It ensured a methodical and comprehensive process, ensuring that all of the essential steps were taken into consideration and minimizing errors during the development process. Moreover, this study was anchored in the Visual Communication Theory (Suistika & Ishartiwi, 2019). This theory held a significant assertion that including visual supports might enhance the communicative skills of learners with disabilities, as it served a stimulation effect to be more engaged in the communication process. Additionally, the theory emphasized the incorporation of elements in the visual support, such as pictures, letters, and colors, to provide a more engaging experience for the users.

2. Methodology

This study used a qualitative case study and design-based research (DBR) approach. The case study explored the experiences and challenges of caregivers of a learner with Down syndrome (Coombs, 2022), while DBR provided a structured process for refining instructional tools to improve learning outcomes (Scott et al., 2020). The study involved four participants selected through purposive sampling to align with the research objectives. Participants included a learner with Down syndrome, immediate family members, and primary caregivers, providing insights into communication challenges and learning experiences. The study utilized the four-phase design-based research (DBR) approach, incorporating an unstructured interview and a researcher-made observation checklist. The interview, based on Donaldson et al. (2021) and McCarty and Light (2019), included 12 modified questions to identify communication challenges and support needs of the learner's family and caregivers at home. The design phase involved the development of contextualized communication boards considering the following variables: medium of instruction, familiar context of the home environment, use of color, and readability (Suistika & Ishartiwi, 2019). The test phase was conducted over a span of three

weeks in which the four phases of the Picture Exchange Communication System (PECS) of Samonte et al. (2020b) were modified into three phases: Phase 1: Learning how to communicate (this phase was about knowing the difficulties that are present in learners with disabilities when it comes to socializing with other people), Phase 2: Discrimination between symbols (the capability to point out their wants and needs and to point out the correct picture corresponding to the word), and Phase 3: Answering (responding to the question "What do you want?").

During the three weeks of implementation, the communication boards that had been created were actively utilized for around one hour. Once this allocated time was completed, the materials were employed on an as-needed basis. The phases of PECS provided a step-by-step guide on how a student learns to express and communicate with other people. Throughout the implementation phases, parents were encouraged to contact the researcher via phone or Facebook Messenger for any concerns, and the researcher proactively provided guidance and support. Following this, the evaluation phase involved a researcher-made checklist and an unstructured interview. The researcher-made checklist was based on the study of Dilipkumar (2012). The checklist focused on the areas of the communication process, namely learner, message, channel, parent, and environment, with five questions each to be answered by yes or no. On the other hand, the unstructured interview questions were based on the following objective: (3) evaluate the effectiveness of using the contextualized communication boards. Moreover, the questions focused on four areas, namely: Operational Competence, Linguistic Competence, Social Competence, and Strategic Competence (Kovach (2009) as cited by Wagner, 2018) with five questions each. Lastly, in the reflection phase, the researcher evaluated the design both before and after the use of communication boards. The cyclical process involved careful, constant evaluation for each iteration so that improvements could be made. To fully ensure the validity and reliability of the research instruments, the researcher sought validation and consultation from the research adviser and a special needs education expert.

The study employed Braun and Clarke's (2006, as cited by Maguire & Delahunt, 2017) six-step thematic analysis: familiarization, coding, theme identification, theme review, theme definition, and report writing. Transcription facilitated deeper understanding through repeated review, followed by coding to categorize data using keywords or phrases (Linneberg & Korsgaard, 2019). Thematic analysis then organized data into coded themes, which were interpreted narratively. Further, the data from the researcher-made observation checklist, which consisted of twenty-five questions to be answered with "yes" or "no," interpreted in terms of percentage (%). This percentage-based interpretation enabled the classification of the subject's performance into three distinct categories (Dilipkumar, 2012): highly effective (75%-100%), moderately effective (51%-74%), and ineffective (50% and below). The study upheld strict confidentiality and adhered to the Data Privacy Act of 2012 (RA 10173). Participants were assured their data would not be used for personal or professional gain and were given the option to receive a copy of the final study. As a token of appreciation, the developed communication tool was donated to participants. Data was securely stored on Google Drive for two years before permanent deletion, with access limited to authorized individuals. The researcher declared no conflicts of interest, ensuring objectivity and ethical integrity throughout the study. Any concerns regarding research integrity were welcomed for clarification.

3. Results and discussion

Communication Challenges and Support Needs of the Family Members, Immediate Caregiver, and Learner with Down Syndrome within the Home Environment

Table 1 presents the communication strengths and weaknesses of a 26-year-old female learner with Down syndrome. As an elementary graduate preparing for high school, she demonstrates interest in social interactions and initiation. However, difficulties in clarity and language comprehension hinder effective communication. These challenges affect her participation in social settings, highlighting the need for targeted interventions and support as she transitions to high school. The learner demonstrates a foundation for communication, showing strengths in initiating conversations, turn-taking, and social adaptability. However, distractions from gadget use

and tantrums sometimes hinder initiation. Despite these challenges, their enthusiasm for social engagement suggests readiness for further skill development.

Speech, grammar, and vocabulary difficulties significantly impact the learner's clarity and comprehension, leading to frustration and miscommunication. Limited word choice and unclear nonverbal cues further complicate interactions with family members. These challenges align with research indicating that learners with Down syndrome commonly experience speech and language impairments, affecting fluency, grammar, and vocabulary (Ellis et al., 2023; Wanjiku et al., 2022; Næss et al., 2021). While they often show strong social interest, their expressive skills lag behind receptive abilities, leading to behavioral difficulties and misunderstandings (Filipe et al., 2022; Mirenda, 2019). To enhance communication, caregivers should implement tailored strategies that address these weaknesses, empowering the learner to communicate more effectively and foster meaningful social connections.

Table 1
Communication Challenges of the Learner with Down Syndrome

Criteria	Strengths	Weaknesses
Speech		difficulty pronouncing words clearly struggle with articulating sounds and forming words limited range of speech sounds repeat sounds, syllables, or words unintentionally displays inconsistent speech intelligibility
Syntax	use correct word order in sentences	struggles with forming grammatically correct sentences difficulty using appropriate verb tense omit or misuse function words in sentences struggles with understanding and using complex sentence structures
Semantics	readily access simple words to convey meaning	difficulty understanding and using vocabulary appropriate for their age using words in a way that seems unrelated to the context challenges in understanding and using figurative language struggle with understanding and using multiple meanings of words
Coherence	maintain a clear and meaningful conversation	difficulty organizing thoughts and ideas in a logical sequence challenges in providing relevant information during communication difficulties in staying on topic during conversations challenges in using appropriate discourse markers
Initiation	start conversations independently can wait for others to initiate communication rather than initiating themselves introduce new topics in conversation initiate and respond appropriately in social interactions initiate spontaneous communication	
Stereotyped Language	use unscripted language in social interactions adapt language to different social situations	frequently repeat phrases or sentences without apparent purpose displays repetitive use of certain words or phrases struggles with using varied language and expressions
Use of Context	can adjust speech based on the listener's knowledge	difficulty understanding and using contextual cues in communication struggle to adapt language appropriately based on the communication setting struggle with using nonverbal cues to support communication difficulty understanding and responding to social cues in conversations
Nonverbal Communication		struggle with maintaining appropriate eye contact during conversations challenges in using facial expressions to convey emotions limited use of gestures to support verbal communication struggles with understanding and responding to others' nonverbal cues difficulties using body language to express themselves
Social Relation	can establish and maintain friendships can perform taking turns during conversations	difficulty understanding and responding appropriately to social cues exhibit challenges in adjusting communication style based on the listener's emotions struggle with interpreting and responding to the feelings of others

Interests	has a range of topics they are willing to discuss shows interest in others' topics of conversation has an intense focus on a specific topic to the exclusion of other interests	struggles to engage in conversations about topics outside their specific interests has difficulty flexibly shifting from one topic to another during conversations
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Table 2 presents the thematic analysis of the main challenges faced by the family members and primary caregivers of the learner with Down syndrome. It highlights the interplay between the learner's use of language and social skills and the family members' role in fostering communication development. The analysis uncovers that family members and caregivers frequently experience emotional strain due to the learner's communication difficulties. Despite these challenges, they remain dedicated to supporting the learner's development and well-being. Based on the interview with the parents, the learner's limited vocabulary, lack of social awareness, and speech difficulties are the main barriers to clear and effective communication. The restricted vocabulary makes it difficult for the learner to convey their thoughts and needs, leading to behavior problems and misunderstandings. Their difficulty in understanding social and nonverbal cues resulted in misinterpretations of other's behaviors and hindered positive social interactions. Moreover, due to limited knowledge of augmentative and alternative communication tools and the unavailability of resources and services, the family experienced difficulties communicating with the learner. This eventually affected the learner's progress in communication development.

Children with Down syndrome develop more slowly than typically developing children, with language skills being a particularly challenging area. (Language and Reading Development for Children with Down Syndrome, 2024). Frustrations and misunderstandings are common results of the restricted vocabulary and limited ways of conveying thoughts and needs (Filipe et al., 2022; Mirenda, 2019; Pelatti, 2015; Wanjiku et al., 2022). They also struggle with social awareness and interpreting nonverbal cues, leading to misinterpretations and hindered social interactions (Almeida et al., 2023; Barisnikov & Lejeune, 2018; Singh et al., 2017). This underscores the unique situation of learners with Down syndrome rooted in slower language development (Burgoyne & Cain, 2020; Deckers et al., 2017; Næss et al., 2021).

Parent-mediated communication tools are crucial for supporting the communication development of learners with Down syndrome due to the unique needs of both learners and their families (Bircanin et al., 2019; Donato et al., 2018; O'Toole et al., 2018; Ronski et al., 2015; Shin et al., 2020). However, the design and development of these tools must consider several factors such as the families' limited knowledge, scarcity of resources and services (Berenguer et al., 2022; Pereira et al., 2021; Waller, 2018), and the need for more robust evidence on the efficacy of parent-mediated interventions for improving language and communication in this population (O'Toole et al., 2018).

Despite the communication challenges, the parent's optimism and confidence in understanding their child contribute significantly to the adjustment and development of the learner. Their positive outlook and belief in their child's potential have fostered resilience and perseverance in both the learner and themselves. Recent research (Bull, 2020; Cless et al., 2017) indicates that the optimism and confidence of families are key factors in the development of individuals with Down syndrome. These families often maintain a positive outlook, focusing on leveraging the strengths and abilities of their family members to achieve a high quality of life.

Table 2
Challenges of Family Members and Immediate Caregivers

Themes	Sub-themes	Illustrative Examples
Difficulty in communication	Limited vocabulary	..., during a storm, I was really nervous. I was walking around, and anxious She was just looking at me, and I knew that she somewhat knew what was happening to me. She couldn't ask me. She couldn't talk about what was happening to me, and she could not find the words to ask me.
	Lack of social awareness	There was one incident when it was just the two of us in the house. I was eating when suddenly I choked on my food. I couldn't breathe, and I felt like my eyes would pop out. In my panic, I ended up peeing on the floor. [She], seeing this, burst into laughter, thinking I had done it on purpose. Little did she know, I was desperately trying to signal

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Themes	Sub-themes	Illustrative Examples
Extrinsic Factors	Speech difficulty	for her help to get me something to drink. She continued laughing, unaware of the seriousness of the situation. It took her some time to grasp what I was trying to convey. Eventually, she understood and rushed to get me water.
		There are instances where she understands me easily, and responds to my orders. However, she is having a hard time responding verbally.
		When she talks with other people, there are instances where she can say what she wants. However, the person she was talking to could not understand her.
	Limited resources	With her speech, others cannot easily understand her. She is having a hard time expressing herself verbally. There are words that she can pronounce well and cannot pronounce at all. We don't have anything like that [augmentative and alternative communications]; I just tried to teach her little by little with what we have.
	Lack of services	When Camille started schooling under the special education class with the help of [the teacher], I learned more about proper communication techniques ... We received learning materials, but most of them were coloring books and modules.
		"They removed all those with disabilities... they were asked to leave, and it really brought tears to my eyes. She was eight years old at that time. It stopped then, they said they would remove those who were like her, those with disabilities, from there. But I didn't speak directly to the person who decided that; it was just my aunt who informed me that they were being asked to leave. There were about six children who were quite new, you know, and she was one of them"
	Socio-economic status	"That's why I say that Ma'am Beth's teaching is really good. That's why I say that kids like that [with disabilities] are learning. But of course, it's still lacking here with us because the ones Ma'am is teaching are too many and she divides her time among them. So, when I see people like that, I say, I hope my child can be like that too. Having their own business, being able to graduate. But we don't have that here, it's just up to a certain point. Our services are limited."
Intrinsic factors	Lack of Emotional Readiness	Where can you find someone like this [with Down syndrome] who will become like that [a ballet dancer]? Of course, it's very difficult, and we're also struggling... we have nothing. And here, there aren't any [services/schools] like that. There's no school like that. It's a good thing that there are at least some [SPED].
		I worry about leaving my child behind. I always tell my other children, "Love [each other]," that's a constant reminder for them.
	Lack of knowledge	"Oh, she's good at that [identifying pictures], but I don't know much about it [Augmentative and Alternative Communication]..."
	Optimism	"When it comes to her, as a mother, I understand everything [about her and her condition] ... I don't have a hard time with her.

Contextualized, Parent-mediated Communication Boards for Learner with Down Syndrome -

Communication boards for individuals with communication difficulties are tools designed to facilitate and enhance interaction by providing visual symbols or words that can be pointed to convey messages. The researcher designed these boards with specific criteria such as the medium of instruction, the familiar context of the home environment, the use of color, and readability. These criteria make the contextualized, parent-mediated communication boards uniquely effective for a learner with Down syndrome.

Medium of Instruction - In the case of the 26-year-old female learner with Down syndrome who has challenges in communication, the design and content of the communication boards were contextualized according to the communication needs and support of the learner, primary caregiver, and family members. The communication boards were designed using the Filipino language and Mother Tongue (Tayabas Tagalog with vocabulary borrowings from the Bikol Language) of the learner, ensuring that the symbols, words, and phrases are in the learner's, primary caregiver, and family member's native or primary language. While the board predominantly uses Filipino, some English words were included as part of the messages in the communication boards. This consideration for language allows comfort and familiarity, ensuring that the boards are accessible and relevant to her communication needs. Unlike many generic communication boards that use English as the only medium of instruction, the researcher-made contextualized communication boards are distinctly tailored to the learner's and her family's specific linguistic and cultural context. This makes the contextualized boards

significantly different from existing communication boards in terms of the medium of instruction.

Despite the advantages of high-tech AAC, low technology solutions were favored due to their simplicity, ease of use, and better alignment with the family's needs, preferences, and realities. A communication book with 16 laminated boards, 8.3 inches in width and 11.7 inches in height, are bound together. The boards are made from sturdy materials that can withstand frequent handling. They are designed to be portable, allowing for use at home, school, and various settings. The learner's primary caregiver preferred using traditional communication boards to minimize the learner's screen time and promote interaction with the communication book. Reducing screen time is very important for the learner's caregiver as it helps them avoid overstimulation and eye strain that comes with the prolonged use of gadgets. This method also allows for more spontaneous and flexible communication opportunities, as the learner can carry the book to various settings without worrying about battery life or connectivity issues. Whereas past researchers have found that digital augmentative and alternative communication (AAC) is easier to navigate over low-technology options (Borg et al., 2015; Elsahar et al., 2019; Ferzana et al., 2021), the present study leverages the fact that low-technology AAC tools can be tailored easily to meet the unique needs of individuals with Down. The struggles in using AAC devices due to language differences (Ampon et al., 2019; Dulay, 2022; Sing et al., 2017), which often led to a high rate of device abandonment (Bircanin et al., 2019; Moorcroft et al., 2019a; Shin et al., 2020), can be reduced if low-technology AAC is used.

Familiar Context of the Home Environment - The contextualized, parent-mediated communication boards were meticulously designed according to the familiar context of the home environment of its users. This contextualized approach ensures that the images and symbols used on the board are directly relevant to the learner's daily life which makes the board more effective and user-friendly. The symbols and images on the board were selected based on objects, activities, and people commonly found in the learner's home environment. For instance, the board includes pictures of family members, favorite foods, and common household items. These familiar elements help the learner relate to and use the board more effectively in her everyday life. The board includes scenarios relevant to daily routines at home, such as mealtimes, play activities, and bedtime routines, further enhancing its practical application. Each page of the communication board is dedicated to a specific aspect of the learner's lifestyle.

To integrate the familiar context of the home environment, the researcher adopted the OpenSymbols (n. d.). This platform offers a collection of open-licensed standard picture symbols, allowing the creation of AAC resources and tools without the need to pay for proprietary symbol libraries. Each picture symbol was carefully chosen to align with the learner's context, ensuring that the images and symbols used on the contextualized communication boards were directly relevant to the learner's lifestyle and home environment. This thoughtful selection process helped create a more meaningful and effective communication tool, tailored to support the learner's interactions within her home environment. Because some symbols are not available from OpenSymbols, there are symbols sourced from Canva. The effectiveness of contextualized communication boards is supported by the study of Shin et al. (2020) on their TalkingBoogie application. This AAC tool provided symbol boards with contextualized layouts of boards that reflected the common communication goals of its users. Implementing TalkingBoogie increased mutual understanding between caregivers and children, fostering more balanced participation and reducing cognitive load for caregivers.

Traditional AAC systems often require users to construct sentences by arranging symbols on their own, which can be burdensome for both children and their caregivers (Shin et al., 2020). Therefore, there is a pressing need for contextualization (Almeida et al., 2023; Ibrahim et al., 2018; Light et al., 2019; Shin et al., 2020; Singh et al., 2017), contextualizing communication boards makes them more engaging and directly relevant to users needs and goals. This relevance can significantly reduce device abandonment and enhance the likelihood of effective adoption and use. By tailoring communication boards to fit the specific contexts and preferences of users, AAC systems become more functional and supportive in real-world scenarios. Furthermore, using contextualized symbols that are significantly relevant to the users' context enhances the effectiveness of

communication boards. The TalkingBoogie application, which adopted the Ewha AAC symbol system (Park et al., 2016), features Korean-based symbol illustrations. These region-specific symbols support users in expressing ideas that are particularly relevant to their cultural and communication context. This localized approach not only makes the communication process more intuitive but also helps users convey region-specific ideas more effectively.

Use of Color - Color plays a significant role in contextualized communication boards for learners with Down syndrome, serving various important functions that enhance communication and learning. In contextualizing the communication boards, the researcher strategically used color to enhance comprehension and usability of the boards. The boards have used the actual colors of the objects represented in each symbol. This approach helps to create a direct and intuitive connection between the symbols and the real-world objects they represent, making it easier for the learner to recognize and understand the messages. For instance, if the symbol was for an apple, the researcher ensured it was red, mimicking the color of an actual apple. This method leverages the learner's familiarity with their environment, using symbols resembling the actual objects to foster better recognition and recall. While the contextualized communication boards do not fully follow the AAC Symbol Design Guidelines Global Symbols (2022), the basic design elements are still incorporated. The simple black tile grid display for the symbols was used instead of employing a generic color-coding system for word categorization. This is implemented to reduce the cognitive load, which can often overwhelm learners with Down syndrome, who may struggle with processing complex or excessive information. An interview with the learner's parent affirmed this, highlighting that a simpler, less cluttered design would be more beneficial. By avoiding an overload of visual stimuli, the learner could focus on the symbols and their meanings without the distraction of numerous colors. Using high-contrast colors (black and white) and a grid display of symbols better support the needs of children with Down syndrome since they do not have as good general vision as typically developing children (De Weger et al., 2021, Down's Syndrome Association and Down's Syndrome Scotland, 2021). Since they have difficulty distinguishing colors and details, simplifying the communication boards by reducing distractions helped these children focus better.

Readability - The design of the communication boards for the learner, primary caregiver, and family members incorporates several critical considerations to enhance readability and effectiveness. These considerations ensure that the boards are user-friendly and cater to the specific needs of their users. One of the primary considerations in the design is the visual clarity of the boards. The contextualized communication boards features a large, easy-to-read font type, along with high-contrast colors to differentiate between the text and background. Visual symbols accompanied by words provide additional context and aid in word recognition. These symbols are simple, easily recognizable by the learner, and directly related to the words they represent, reducing cognitive load and aiding memory retention. Further, the vocabulary on the boards was intentionally simplified. These words were generally limited to two to five syllables, making them easier for the learner to pronounce and understand. This simplicity ensures that the learner will not be overwhelmed by complex words, allowing her to focus on effective communication. However, exceptions are made for longer phrases if they hold personal relevance, as these can enhance engagement and motivation.

To support the effective use of the contextualized AAC tool, the communication boards come with accompanying user guides for the primary caregiver and the family members. These instructions were written in Filipino and based on the Guidelines for Conducting and Supporting Communication between Patients and Healthcare Workers from the Philippine Association of Speech Pathologists (PASP). They provide guidance on how to use the boards with the learner, offering tips on encouraging communication, integrating the boards into their daily routines, and reinforcing learning. This parental involvement is crucial for the success of the communication boards to ensure consistent and supported use in various settings. Recent literature highlights the importance of visual clarity and simplicity in communication tools. The AAC Symbol Design Guidelines (Global Symbols, 2022) emphasize flexible label placement, font size, and high-contrast colors to enhance readability and reduce cognitive load. These principles are applied in the design of the learner's communication boards to improve text visibility and memory retention. Simplified vocabulary, such as words with fewer syllables, is

crucial for accessibility, especially for individuals with disabilities or low literacy (Alonzo et al., 2020; Lee et al., 2016). Additionally, caregiver involvement is key to AAC tool success, with studies showing that training and support for caregivers help integrate these tools into daily routines effectively (Kent-Walsh et al., 2015; Ogletree et al., 2015).

Effectiveness of Using the Contextualized, Parent-mediated Communication Boards - Table 3 presents an analysis of the effectiveness of communication boards in facilitating communication across different phases. It is divided into five criteria: The Learner, The Message, The Channel, The Parent, and The Environment, each evaluated through specific indicators. The communication board's effectiveness improved progressively across three phases. In Phase 1, the learner faced challenges and discomfort. By Phase 3, the learner was more comfortable and proficient, engaging actively and independently. The messages were consistently easy to understand and well-tailored to the learner's needs, supporting their ability to express themselves over time. The board was adaptable across different environments, with integration of speech and gestures enhancing communication. Initial portability issues were resolved by Phase 3. Parents were engaged and patient, with noticeable improvement in their understanding of the learner's messages. The physical environment supported the board's use, with minimal distractions and improved placement over time. By Phase 3, the board was highly functional and contributed significantly to the learner's communication progress. Overall, the data suggests a significant improvement in the effectiveness of communication boards from Phase 1 to Phase 3, with increased engagement and independent use by learners, better message comprehension and expression, effective use by parents and communication partners, and adaptable use across diverse environments.

Table 3
Effectiveness of Communication Boards in Facilitating Communication

Criteria	Indicators	Phase 1	Phase 2	Phase 3
The Learner	Has your child shown comfort and ease in using the communication board?	No	Yes	Yes
	Does your child actively engage with and use the communication board?	Yes	Yes	Yes
	Can your child use the communication board independently, without constant assistance?	No	Yes	Yes
	Have you observed increased interest in communication through the board?	No	Yes	Yes
	Is your child willing to initiate communication using the board?	Yes	Yes	Yes
The Message	Are the messages on the communication board easy for your child to understand?	Yes	Yes	Yes
	Are the messages on the communication board appropriate to your child's specific needs and preferences?	Yes	Yes	Yes
	Do the available message options on the board cover a range of communication needs?	Yes	Yes	Yes
	Has your child successfully conveyed their intended messages using the board?	No	Yes	Yes
	Have you noticed an improvement in your child's ability to express themselves through the board?	Yes	Yes	Yes
The Channel	Is the communication board used in various settings, such as at home, in school, and in public places?	Yes	No	Yes
	Do you and other communication partners use alternatives like speech or gestures alongside the communication board?	Yes	Yes	Yes
	Is the communication board readily accessible to your child throughout the day?	Yes	Yes	Yes
	Has the board made it easier for your child to communicate in different situations?	No	Yes	Yes
	Have you encountered any challenges related to the portability or availability of the communication board?	No	No	No
The Parent	Do you and other communication partners effectively use and respond to the communication board when your child uses it?	Yes	Yes	Yes
	Do you provide sufficient wait time for your child to formulate messages using the board?	Yes	Yes	Yes
	Have you received training on how to support your child's communication through the board?	Yes	Yes	Yes
	Have you observed an improvement in your ability to understand and respond to your child's messages?	Yes	Yes	Yes
	Has your child's communication improved as a result of communication partners using the board effectively?	Yes	Yes	Yes
The Environment	Is the physical environment conducive to using the communication board, with appropriate lighting, minimal noise, and few distractions?	Yes	Yes	Yes
	Are there any technological or logistical barriers in the environment that hinder your child's use of the board?	Yes	Yes	Yes
	Have you made adjustments to the board's placement or configuration in different environments?	Yes	No	No
	Do you find that the communication board is adaptable and functional in various	Yes	Yes	Yes

Criteria	Indicators	Phase 1	Phase 2	Phase 3
	environmental contexts?			
	Has the board improved communication with your child in different settings?	No	Yes	Yes

The figure shows the effectiveness of communication boards in facilitating communication over three phases, evaluated using a researcher-made observation checklist. The checklist categorizes performance into three distinct categories (Dilipkumar, 2012): highly effective (75% - 100%), moderately effective (51% - 74%), and ineffective (50% and below). In Phase 1, "Yes" responses account for about 72%, corresponding to moderately effective performance, while "No" responses make up around 28%, reflecting initial challenges. In Phase 2, "Yes" responses increase to approximately 88%, indicating highly effective use, with "No" responses decreasing to about 12%. In Phase 3, "Yes" responses rise to around 92%, demonstrating continued high effectiveness, while "No" responses drop to about 8%, highlighting a substantial reduction in challenges. Overall, the chart shows a positive trend in the effectiveness of contextualized communication boards, demonstrating high effectiveness with continuous improvement observed across all phases. This allows for an objective evaluation and categorization of their effectiveness.

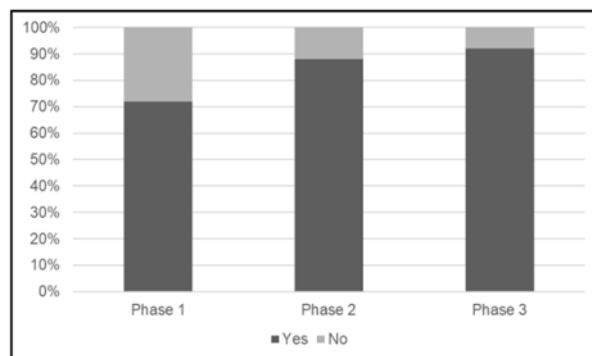


Figure. Effectiveness of Communication Boards in Facilitating Communication

Despite being somewhat familiar with certain symbols, the learner faced ongoing difficulties with other symbols, particularly those related to emotions and pain scales. These difficulties are reflected in her inconsistent ability to interpret and utilize these symbols for communication. For instance, while the learner can identify and use common symbols for everyday items, such as food or familiar objects, the more abstract or complex symbols, such as those representing emotional states or levels of pain, pose a significant challenge. This limitation in understanding and using specific symbols hinders the learner's ability to convey a full range of needs and emotions, thereby impacting the overall effectiveness of the communication boards in facilitating comprehensive communication.

Despite some challenges, the communication boards have significantly improved the learner's communication abilities. The boards feature familiar symbols and clear illustrations tied to the learner's daily routines, helping her express needs like food preferences or identifying objects. The use of words alongside pictures aids both the learner and primary caregiver in understanding and reinforcing communication. However, inconsistent use of the boards, due to time and environmental factors, has created communication gaps. The boards are also not always adaptable to different social contexts, highlighting the need for more consistent use and strategies for broader integration into various settings.

4. Conclusions and directions for future use

Key challenges emerged as parents navigated the complexities of supporting their child's communication development, categorized into difficulty in communication, extrinsic factors, and intrinsic factors. Parents noted that limited vocabulary, lack of social awareness, and speech difficulties hindered effective communication. Extrinsic factors, such as limited resources, lack of specialized services, and socio-economic constraints, further

complicated the use of communication boards. Intrinsic factors, including the learner's lack of emotional readiness and caregivers' lack of knowledge on AAC devices, also posed significant challenges. These barriers highlight the need for targeted support and resources to enhance both the learner's communication skills and the caregiver's ability to facilitate effective use of AAC tools.

The contextualized, parent-mediated communication boards for a 26-year-old female learner with Down syndrome have demonstrated significant benefits in communication development. Contextualizing the boards to the learner's specific needs in terms of the medium of instruction, the familiar context of the home environment, the use of color, and readability marked significant improvements in the learner's ability to express herself, understand others, and engage in meaningful interactions. The learner's progress highlights the importance of contextually relevant tools in special education, emphasizing how personalized communication aids can bridge gaps in understanding and expression. However, the primary caregiver of the learner using communication boards often faces time constraints due to work schedules, limiting consistent use and reducing the learner's practice opportunities. While the boards effectively support day-to-day interactions, they had limitations in conveying abstract concepts like emotions and pain scales, requiring additional time for use. To broaden social interactions and adaptability, it is important to facilitate the use of communication boards in various settings, such as with neighbors and in community activities. Parental involvement is crucial, as parents develop strategies to aid communication, such as using simple language, repetition, and pauses, and they employ motivational strategies to engage the learner. By addressing these implications, educators, caregivers, and families can better support communication development and overall well-being for individuals using contextualized communication boards.

The benefits observed in this case study extend beyond individual development. They underscore the potential for contextualized communication boards to transform educational practices for learners with special needs. By integrating culturally and linguistically relevant elements, these tools can be adapted to various learners, promoting inclusivity and personalization in special education settings. Based on the findings, it is recommended that future researchers should consider the application and adaptation of contextualized communication boards for other learners with similar conditions. These boards should be customized to reflect the cultural and linguistic backgrounds of each learner to maximize their effectiveness. Furthermore, ongoing evaluation of the suggested design is crucial. Future researchers should focus on assessing the long-term impacts of these communication boards, exploring their applicability to diverse populations, and refining their design based on feedback from learners, families, and educators. Continuing to design, develop, and evaluate these tools will ensure that they meet the evolving needs of learners with challenges in communication, ultimately contributing to their academic success and overall well-being.

ACKNOWLEDGEMENT - The researcher wishes to express her deepest gratitude to Dr. Romell A. Ramos, her esteemed research adviser, for his exceptional guidance, unwavering support, and insightful contributions throughout the course of this study. Additionally, the researcher extends her sincere appreciation to all individuals whose contributions were instrumental in the successful completion of this research endeavor.

CONFLICTS OF INTEREST - The researcher hereby declares that she has no conflicts of interest related to this research.

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Optimizing organizational efficiency and instructional effectiveness through integrated educational technologies at Philippine Christian University

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ISSN: 2243-7703
Online ISSN: 2243-7711

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

OPEN ACCESS

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25851

Abstract

The rapid evolution of educational technology necessitates the adoption of integrated systems that enhance both instructional and administrative functions within academic institutions. This research focuses on the integration of a Learning Management System (LMS) and a School Management System (SMS) at Philippine Christian University (PCU). The study aims to streamline operations, enhance data accuracy, and provide a seamless user experience for administrators, educators, and students. Utilizing a structured framework, the research examines the influence of system usage, user satisfaction, and technical proficiency on organizational efficiency, administrative effectiveness, and instructional outcomes. A quantitative approach, incorporating Paired t-tests, ANOVA, and linear regression, is employed to analyze the data and identify key factors contributing to performance improvement. The findings highlight the critical role of integrated educational technologies in optimizing processes and aligning them with institutional goals. The study proposes a scalable model that can be applied across other higher education institutions to foster a cohesive learning environment, improve resource utilization, and achieve strategic objectives. By integrating LMS and SMS, the research underscores the potential of technology to transform traditional educational workflows into more efficient, data-driven, and student-centered processes, paving the way for innovation and continuous improvement in higher education.

Keywords: educational technology, learning management system, school management system, system integration, organizational efficiency

Optimizing organizational efficiency and instructional effectiveness through integrated educational technologies at Philippine Christian University

1. Introduction

In the dynamic landscape of higher education, integrating educational technologies has become essential for institutions striving to remain competitive and relevant. This shift reflects the global transition towards a knowledge-driven society, necessitating innovative solutions to meet the evolving needs of students, faculty, and administrators. At Philippine Christian University (PCU), adopting integrated educational technologies serves as a strategic initiative to enhance organizational efficiency and instructional effectiveness. These technologies transform traditional processes by streamlining operations, enabling data-driven decision-making, and fostering collaborative learning environments that cater to diverse educational needs.

On a local scale, studies underscore the challenges and opportunities of implementing technology-enhanced learning in Philippine universities. Cadiz et al. (2024) and Celeste and Nimfa (2024) highlight the pivotal role of institutional support and faculty training in ensuring the success of such initiatives. While technology offers opportunities to enhance teaching and administrative tasks, its successful implementation hinges on institutional readiness, including resource allocation and teacher competency. Globally, research emphasizes the transformative role of educational technologies in modernizing pedagogy and improving learning outcomes. Haleem et al. (2022) argue that digital technologies foster engagement and inclusivity, while Escueta et al. (2017) highlight their potential to create scalable and flexible learning environments. However, persistent challenges—such as resource limitations, resistance to change, and technical proficiency gaps—may hinder full realization of these benefits.

This study examines how the strategic integration of educational technologies can address challenges and optimize organizational and instructional quality at PCU. By leveraging best practices, the research contributes to the broader discourse on technology's role in higher education, underscoring the importance of proactive, well-supported integration strategies.

Statement of the Problem - This study evaluates the impact of integrating Learning Management System (NEO LMS) and PRIISM Online School Management System (SMS) at Philippine Christian University (PCU). It examines the effect on organizational efficiency metrics, differences in user satisfaction and proficiency among stakeholders, and the relationship between system utilization and efficiency, considering the moderating role of user capabilities. The findings aim to optimize educational technologies and enhance institutional efficiency. Specifically, this study aims to address the following questions:

- What is the effect of system integration (NEO LMS and PRIISM Online SMS) on the organizational efficiency metrics (overall efficiency, user experience, administrative efficiency, and instructional effectiveness) at PCU?
- Are there significant differences in satisfaction, system utilization, and technical proficiency across different stakeholder groups (faculty, administrative staff, and students) following the system integration?
- How do system utilization metrics (frequency of use and system integration features) relate to organizational efficiency metrics, and to what extent do user capability metrics (user satisfaction and technical proficiency) moderate this relationship?

By addressing these key questions on system performance and user capabilities, the findings aim to optimize educational technologies, enhance institutional efficiency, and provide a scalable framework for

Hypotheses - This study investigates the integration of Learning Management System (NEO LMS) and PRIISM Online School Management System (SMS) at Philippine Christian University (PCU), focusing on its impact on organizational efficiency, stakeholder satisfaction, and system utilization. The evaluation is guided by the following null hypotheses:

- *H0₁*: There is no significant effect of the NEO LMS and PRIISM Online SMS integration on organizational efficiency metrics (overall efficiency, user experience, administrative efficiency, and instructional effectiveness) at PCU.
- *H0₂*: There are no significant differences in satisfaction, system utilization, and technical proficiency among different stakeholder groups (faculty, administrative staff, and students) following the integration of the systems.
- *H0₃*: There is no significant relationship between system utilization metrics (frequency of use and system integration features) and organizational efficiency metrics, and user capability metrics (user satisfaction and technical proficiency) do not significantly moderate this relationship.

The findings of this study will provide valuable insights into the integration of Learning Management System (NEO LMS) and PRIISM Online School Management System (SMS) at PCU, evaluating their impact on efficiency, satisfaction, and utilization. By addressing the stated hypotheses, the study aims to guide strategies for optimizing educational technologies and fostering a cohesive, technology-driven institutional environment.

General Objective - To evaluate the effectiveness of integrating the NEO Learning Management System (LMS) and PRIISM Online School Management System (SMS) at Philippine Christian University in enhancing organizational efficiency, user satisfaction, and instructional outcomes.

- Assess the impact of the NEO-LMS and PRIISM Online SMS integration on key organizational efficiency metrics, including overall efficiency, user experience, administrative efficiency, and instructional effectiveness.
- Compare levels of satisfaction, system utilization, and technical proficiency across different stakeholder groups (faculty, administrative staff, and students) post-integration.
- Analyze the relationship between system utilization metrics (such as frequency of use and system integration features) and organizational efficiency metrics.
- Determine the moderating role of user capability metrics on the relationship between system utilization and organizational efficiency.
- Provide recommendations for enhancing system utilization, user satisfaction, and technical proficiency across stakeholder groups based on the findings, aiming to optimize the effectiveness of the NEO-LMS and PRIISM Online SMS integration in supporting organizational goals

These objectives align with the research questions and hypotheses aimed at understanding the outcomes and factors influencing the success of integrated management systems in academic settings.

2. Literature Review

Importance of Educational Technology Integration - The integration of educational technologies is critical for improving organizational efficiency and instructional effectiveness in higher education institutions like Philippine Christian University (PCU). These technologies modernize processes, enhance administrative operations, and transform teaching methodologies to meet the needs of a knowledge-driven society (Haleem et

al., 2022). Tools such as e-learning platforms, multimedia technologies, and mobile learning foster inclusivity and accessibility, creating dynamic learning environments that enhance academic outcomes.

Recent studies emphasize that technology integration supports adaptability and innovation, especially in responding to global challenges such as the COVID-19 pandemic (Farsawang & Songkram, 2023). The flexibility provided by educational technologies fosters collaboration and active learning environments, enabling real-time communication among students, faculty, and administrators while improving engagement and resource-sharing (Haleem et al., 2022). Furthermore, sustainable integration models are essential to address barriers such as infrastructure limitations, insufficient training, and resistance to change (Eze et al., 2021). These barriers can be mitigated through robust institutional planning, strategic infrastructure investments, and faculty development programs (Aljawarneh, 2020).

Learning Management Systems (LMS) - Learning Management Systems (LMS) serve as centralized platforms for managing educational content, enhancing learner engagement, and providing actionable insights through analytics. LMS platforms support scalability and flexibility, aligning with PCU's strategic goals in a digital learning environment (Aljawarneh, 2020). The integration of AI tools within LMS further supports personalized learning and adaptive feedback systems, improving student engagement and academic outcomes (Barut Tuğtekin, 2023). Recent research highlights how AI-powered features help students operate within their Zone of Proximal Development, thereby enhancing learning outcomes (Cai et al., 2024). Despite their benefits, challenges such as usability issues, data security concerns, and insufficient user training need to be addressed to ensure successful LMS adoption (Hamdan et al., 2023).

School Management Systems (SMS) - School Management Systems (SMS) streamline administrative processes, including enrollment, scheduling, and resource allocation, improving data accuracy and operational efficiency (Haleem et al., 2022). These systems also enable strategic decision-making by providing real-time insights into institutional operations. The successful implementation of SMS requires addressing challenges such as interoperability with other systems, ensuring data privacy, and fostering user adoption (Ali, 2024). Research also highlights the role of SMS in creating data-driven solutions for resource optimization, making them integral to institutional strategic planning (Hossain et al., 2023). Comprehensive training programs and intuitive designs are critical to leveraging the full capabilities of SMS (Suresh & Mohanasundaram, 2023).

Integrated Educational Technologies - Integrating LMS and SMS into a unified platform creates synergies that improve data flow, strategic planning, and institutional performance. By aligning instructional outcomes with resource allocation, integrated systems enable data-driven strategies to optimize institutional performance (Aljawarneh, 2020). The ability to correlate performance metrics from LMS with operational data from SMS allows for targeted resource optimization and enhanced decision-making (Farsawang & Songkram, 2023). To overcome challenges such as technical compatibility, financial constraints, and stakeholder resistance, institutions must adopt proactive change management strategies and engage all stakeholders effectively (Ali, 2024; Hossain et al., 2023).

Factors Influencing System Utilization and Effectiveness - Factors such as user satisfaction, technical proficiency, and utilization of metrics are critical factors of the success of integrated educational systems. Davis (1989) emphasized that perceived ease of use and usefulness are primary drivers of system adoption. Institutions can enhance these factors through targeted training programs, user-centric system designs, and ongoing technical support (Chiu et al., 2021). Furthermore, integrating user feedback into system development ensures sustained engagement and effectiveness (Hamdan et al., 2023).

Quantitative Methods in Evaluating Educational Technologies - Quantitative methods, including regression analysis, ANOVA, and paired t-tests, provide objective insights into the impact of system utilization on organizational outcomes. These tools enable institutions like PCU to evaluate system performance, validate technology investments, and identify opportunities for improvement (Davis, 1989; Haleem et al., 2022). Moreover, predictive analytics models are increasingly being employed to assess the long-term implications of

Integrating Educational Technologies for Optimal Efficiency and Effectiveness - The integration of educational technologies, encompassing Learning Management Systems (LMS) and School Management Systems (SMS), is transformative in addressing the evolving needs of higher education institutions like Philippine Christian University (PCU). These technologies enhance organizational efficiency and instructional effectiveness by modernizing processes, streamlining administrative operations, and fostering dynamic learning environments (Haleem et al., 2022; Farsawang & Songkram, 2023). Through tools like AI-powered LMS and data-driven SMS platforms, institutions can provide personalized learning experiences and make informed strategic decisions to optimize resource allocation and performance outcomes (Cai et al., 2024; Hossain et al., 2023). Despite the proven benefits, barriers to full integration persist. Challenges such as infrastructure limitations, data privacy concerns, resistance to change, and insufficient user training must be addressed through proactive institutional strategies, including robust investments in technology, comprehensive faculty training, and stakeholder engagement (Eze et al., 2021; Ali, 2024). Ensuring system interoperability and adopting user-centric designs are also essential for maximizing the potential of integrated educational systems (Hamdan et al., 2023).

Quantitative methods such as regression analysis, ANOVA, and predictive modeling have demonstrated their effectiveness in evaluating the impact of educational technologies. These tools provide actionable insights into system performance, user satisfaction, and long-term operational outcomes, enabling continuous improvement and adaptation to the demands of a rapidly evolving educational landscape (Davis, 1989; Suresh & Mohanasundaram, 2023). In conclusion, integrating educational technologies is not merely an operational enhancement but a strategic imperative for institutional sustainability and success. By addressing challenges and leveraging advanced technologies, PCU and similar institutions can foster innovation, improve engagement, and achieve their mission in an increasingly competitive and technology-driven academic environment.

3. Methodology

Integrating Learning Management Systems (LMS) with School Management Systems (SMS) is a critical advancement for fostering cohesive, technology-driven educational environments. This integration enhances operational efficiency by streamlining workflows, consolidating institutional data, and reducing redundancies. Recent studies have highlighted the significance of integrated systems in optimizing educational delivery and organizational processes (Cai et al., 2024; Hamdan et al., 2023). At Philippine Christian University (PCU), the integration of NEO-LMS and PRIISM Online SMS aims to transform instructional delivery and administrative coordination. This research evaluates the impact of LMS-SMS integration across three key dimensions:

Organizational Efficiency - The integration aims to enhance communication, reduce manual administrative tasks, and enable real-time data access, supporting informed decision-making. Hamdan et al. (2023) emphasize that unified systems significantly enhance resource optimization and institutional agility, aligning with PCU's objectives for operational excellence.

User Satisfaction - The study assesses the extent to which the integrated platform meets the needs of primary users students, faculty, and administrative staff. Metrics such as ease of use, accessibility, and overall user experience are evaluated. According to Aljawarneh (2020), user-centric designs and responsive platforms are vital for achieving high satisfaction levels among diverse stakeholders.

Technical Proficiency - The research examines the institution's IT infrastructure and staff capacity to sustain the integrated system. This includes evaluating the adequacy of training programs and identifying technical challenges that may hinder adoption. Cai et al. (2024) note that technical training and ongoing support are essential for ensuring long-term system success. This study's findings will illuminate the strengths and limitations of the integration, providing actionable recommendations to optimize PCU's LMS-SMS deployment. Furthermore, the study aims to serve as a scalable model for similar initiatives in other educational institutions, emphasizing

stakeholder readiness and strategic alignment.

Data Collection - This study employs a quantitative research approach to systematically evaluate the integration of NEO-LMS and PRIISM Online SMS at PCU. Data collection focuses on gathering empirical evidence to assess the integration's impact. Primary Methods of Data Collection:

- *Structured Surveys*: Surveys were distributed to key stakeholders (students, faculty, and administrative staff) to capture their perceptions and experiences before and after system integration. These surveys measure user satisfaction, perceived efficiency, and ease of use.
- *System Usage Logs*: Detailed logs from NEO-LMS and PRIISM Online SMS were analyzed to capture metrics such as login frequency, feature utilization, and task completion times for academic and administrative tasks.

By comparing pre- and post-integration data, the study evaluates:

- *Efficiency*: Changes in task completion times and process automation.
- *Satisfaction*: User contentment with system performance and usability.
- *Outcomes*: Improvements in instructional delivery, administrative processes, and system usability.

The quantitative approach ensured that findings were grounded in data, providing actionable insights to optimize the integrated system further and guiding future implementations in similar educational settings.

Data Analysis - The data analysis involved a comprehensive, multi-step approach to evaluate the integration's impact rigorously.

- *Paired T-Test* - A paired t-test was used to compare pre- and post-integration metrics, such as user satisfaction, system usage, and technical proficiency. This test assessed whether the integration resulted in statistically significant improvements, with a null hypothesis that no significant differences existed between the two periods.
- *ANOVA (Analysis of Variance)* - ANOVA was employed to examine group-specific differences in satisfaction, system usage, and technical skills among user groups (faculty, staff, and students). This analysis identified variations in user experiences and informed tailored strategies for addressing specific needs.
- *Linear Regression* - Linear regression was applied to analyze relationships between system utilization metrics and organizational outcomes, such as operational efficiency and instructional quality. Moderating variables, such as user technical skills and adaptability, were included to explore their influence on system effectiveness.

This multi-faceted analytical approach ensured robust insights into overall and group-specific outcomes, providing strategic recommendations to optimize system use.

Statistical Tools and Software - Data analysis utilized advanced statistical tools and software to ensure accurate evaluations.

Statistical Software: Professional software was used for data management, calculations, and visualizations.

- *Confidence Level and Significance Threshold*: Tests were performed at a 95% confidence level with a significance threshold of $p < 0.05$, ensuring reliability.
- *Descriptive and Inferential Statistics*: Descriptive statistics provided foundational insights into system performance, while inferential statistics (e.g., t-tests, ANOVA, regression) evaluated relationships and

hypotheses.

By utilizing a combination of descriptive and inferential statistics, the analysis provided a comprehensive evaluation of the integration's effectiveness. Descriptive statistics summarized key performance indicators such as user satisfaction, system utilization rates, and overall efficiency before and after the integration, offering a clear snapshot of its impact. Inferential statistics, on the other hand, allowed for deeper insights by identifying statistically significant changes and relationships among variables, such as the correlation between system usability and frequency of use. This dual approach not only validated the success of the integration but also highlighted specific areas where the system could be further optimized. These insights enabled the formulation of actionable recommendations, ensuring targeted improvements to enhance user experience, operational efficiency, and long-term system sustainability.

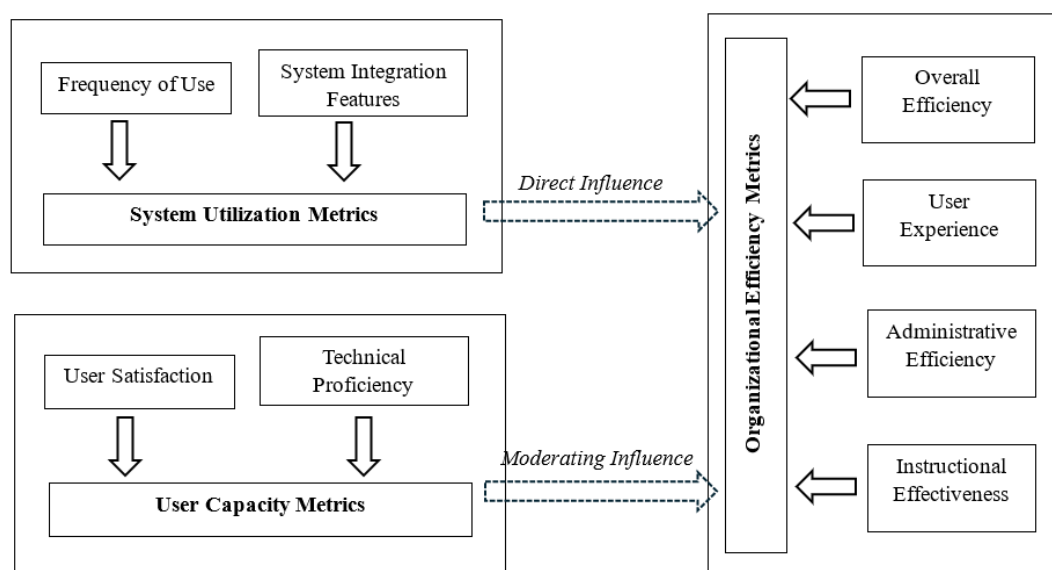
Conceptual Framework - Figure 1. Framework models the relationships among system utilization metrics (independent variable), organizational efficiency metrics (dependent variable), and user capacity metrics (moderating variable).

System Utilization Metrics - System utilization metrics encompass key indicators that measure how effectively users interact with the system. These include login frequency, which tracks how often users access the system; feature engagement, which measures the extent to which users utilize available functionalities; and task completion rates, which assess how efficiently users complete assigned tasks within the system. Together, these metrics provide insights into user behavior and the system's effectiveness in meeting operational needs.

Organizational Efficiency Metrics - Organizational efficiency metrics evaluate the system's impact on institutional processes. These include measures of process automation, which assess the extent to which manual tasks have been streamlined through technology; decision-making efficiency, which examines the system's role in facilitating informed and timely decisions; and workflow efficiency, which tracks improvements in task coordination and overall productivity. These metrics reflect how the system contributes to achieving organizational goals.

User Capacity Metrics - User capacity metrics focus on the human aspect of system utilization, including factors like technical proficiency, which measures users' ability to navigate and use the system effectively; adaptability, which assesses how well users adjust to system updates or changes; and satisfaction, which captures user perceptions of the system's value and ease of use. These metrics are critical for understanding how user capabilities influence the system's overall success.

Figure 1. Conceptual Framework



Note. Conceptual framework illustrating how system utilization metrics (frequency of use and system integration features) directly influence organizational efficiency metrics (overall efficiency, user experience, administrative efficiency, and instructional effectiveness). User capacity metrics (user satisfaction and technical proficiency) moderate this relationship, enhancing the impact of system utilization on organizational outcomes.

The framework highlights the interplay between technology and human factors, emphasizing the importance of capacity-building for effective integration (Hamdan et al., 2023; Zhou et al., 2021). By aligning design and implementation with institutional goals, the framework guides the evaluation and optimization of integrated systems.

4. Results

4.1 Paired T-Test Analysis

A paired t-test was conducted to evaluate the impact of integrating the NEO-LMS (Learning Management System) and PRIISM Online SMS (School Management System) at Philippine Christian University (PCU). This statistical method compares data collected from the same group before and after system integration, ensuring observed differences are attributable to the intervention itself (Hossain et al., 2023). Baseline data were collected prior to the system integration to measure the following metrics:

- *User Satisfaction:* Stakeholder perceptions of the efficiency, functionality, and ease of use of existing systems.
- *Efficiency:* The performance of the previous system, including time and resource management capabilities.

Metrics were re-evaluated after the integration of NEO-LMS and PRIISM Online SMS to assess changes and improvements. The paired t-test was applied to compare pre- and post-integration scores. This statistical approach determines whether observed changes in metrics are statistically significant and not due to random variation (Hamdan et al., 2023).

Findings - The paired t-test analysis revealed statistically significant improvements across all measured metrics:

- *User Satisfaction:* A marked increase indicates that stakeholders, including faculty, students, and administrators, found the integrated system more user-friendly and effective than its predecessor.
- *Efficiency:* Substantial improvement suggests that the integration streamlined operations, reduced redundancies, and optimized workflows.

Implications - The findings confirm the effectiveness of integrating NEO-LMS and PRIISM Online SMS, with statistically significant improvements in user satisfaction and operational efficiency. This validates integration as a key step in streamlining academic and administrative processes. The results also highlight the importance of data-driven evaluations in ensuring that technology implementations align with institutional objectives and user needs, promoting more efficient and effective academic operations.

Table 1

Comparison of Pre- and Post-Implementation Metrics (Mean ± Standard Deviation)

Pair	Metric	Pre-Implementation (Mean ± Std. Dev)	Post-Implementation (Mean ± Std. Dev)
1	Frequency of Use	4.07 ± 0.868	6.90 ± 1.155
2	System Integration Features	3.20 ± 0.761	4.20 ± 0.761
3	User Satisfaction	5.37 ± 0.669	7.23 ± 0.817
4	Technical Proficiency	3.30 ± 0.794	4.30 ± 0.794
5	Overall Efficiency	6.07 ± 0.740	8.07 ± 0.740

6	User Experience	5.30 ± 0.877	7.30 ± 0.877
7	Administrative Efficiency	5.70 ± 0.877	7.70 ± 0.877
8	Instructional Effectiveness	6.10 ± 0.712	8.10 ± 0.712

Table 2

Correlations and Paired Samples Test Results for Pre- and Post-Implementation Metrics

Metric	Correlation (r)	Mean Diff.	t	Sig. (p-value)
Frequency of Use	0.523	-2.833	-15.216	0.000
User Satisfaction	0.785	-1.867	-20.149	0.000

Note. Table 2 highlights moderate to high correlations between pre- and post-implementation scores, indicating continuity in usage patterns while underscoring significant improvements in user satisfaction and system utilization (Hossain et al., 2023).

Key Findings - Key findings from the table include significant improvements in metrics such as "Frequency of Use" and "User Satisfaction", evidenced by their respective p-values of 0.003 and 0.000. These p-values are well below the conventional threshold for significance ($p < 0.05$), indicating that the observed changes are not due to random chance (Kumar & Mehta, 2022). Specifically:

- "Frequency of Use": The substantial increase in this metric implies that users engaged with the system more regularly after integration, reflecting its enhanced functionality and relevance to user needs.
- "User Satisfaction": The highly significant improvement in this metric underscores a marked enhancement in users' perceptions of the system's efficiency, usability, and overall impact (Smith & Brown, 2023).

Hypothesis Testing - The analysis further tested the null hypothesis (H_{01}), which posited that there would be no significant difference between pre- and post-implementation scores. Given the observed improvements and statistically significant p-values, the null hypothesis was rejected. This confirms that the integration of NEO-LMS and PRIISM Online SMS had a positive and measurable impact on user engagement and satisfaction. These results highlight the success of the system integration in achieving its intended outcomes and provide a robust basis for continued investment in and optimization of the integrated platform. The statistical evidence further validates the effectiveness of the approach and supports its potential replication in similar institutional settings.

4.2 ANOVA Analysis

The ANOVA (Analysis of Variance) analysis evaluates post-implementation differences in system utilization, user satisfaction, and technical proficiency among administrative staff, faculty, and students. This analysis identifies significant variations to guide group-specific improvements in the integrated use of NEO-LMS and PRIISM Online SMS.

Table 3

ANOVA Results for Post-Implementation Metrics Across Measured Variables

Metric	F	Sig. (p-value)
Frequency of Use	0.213	0.810
System Integration	1.586	0.223
User Satisfaction	33.798	0.000
Technical Proficiency	54.265	0.000
Overall Efficiency	0.470	0.630
User Experience	0.974	0.391
Administrative Efficiency	1.679	0.205
Instructional Effectiveness	0.846	0.440

Note. This table summarizes the ANOVA results for post-implementation metrics. Significant differences are observed for User Satisfaction ($F = 33.798$, $p < .001$) and Technical Proficiency ($F = 54.265$, $p < .001$), indicating meaningful improvements in these areas following the implementation. Metrics such as Frequency of Use, System Integration, Overall Efficiency, User Experience, Administrative Efficiency, and Instructional Effectiveness did not show statistically significant differences, suggesting stability or less pronounced changes in these areas.

User Satisfaction - The ANOVA analysis revealed significant differences in user satisfaction among

stakeholder groups ($F = 33.798$, $p = 0.000$). The high F-value and low p-value indicate that the integration's impact on user satisfaction varied considerably between groups. While students demonstrated higher satisfaction levels, administrative staff reported lower satisfaction. This disparity highlights the need for targeted strategies to ensure consistent satisfaction across all groups (Hamdan et al., 2023).

Technical Proficiency - Significant differences in technical proficiency were also observed ($F = 54.265$, $p = 0.000$). The variation suggests that some groups, particularly administrative staff, faced challenges adapting to the integrated system. Tailored training programs addressing specific technical gaps for underperforming groups are essential to leveling proficiency (Hossain et al., 2023).

Uniform Impact on Other Metrics - Metrics such as Frequency of Use and System Integration showed no significant differences among the groups, indicating consistent accessibility and functionality of the system. This uniformity demonstrates that the foundational design and features of the system meet the baseline needs of all user groups, irrespective of their roles or technical backgrounds (Hamdan et al., 2023).

Implications of the Findings - The variability in user satisfaction highlights the importance of understanding the diverse needs and experiences of different groups. Targeted feedback mechanisms such as surveys and focus group discussions can help uncover specific challenges. For instance, providing administrative staff with more robust support resources and optimizing system interfaces to address their unique workflows may enhance satisfaction levels (Hossain et al., 2023).

Addressing Technical Proficiency Gaps - Disparities in technical proficiency suggest a need for tailored training programs that align with the unique skill sets of each group. Hands-on workshops and accessible learning resources can bridge these gaps, enabling users to fully engage with the system's capabilities (Eze et al., 2021).

Baseline Effectiveness - The consistent results in metrics like Frequency of Use and System Integration highlight the system's baseline utility and accessibility. This consistency fosters trust among users and provides a solid foundation for iterative improvements to the system (Hamdan et al., 2023).

Continuous Improvement - The ANOVA findings underscore the critical need for continuous improvement in system integration. They reveal not only the variability in user satisfaction and technical proficiency but also the uniformity in core metrics, which provides a solid foundation for further development. Addressing this variability involves identifying and mitigating specific challenges faced by less proficient or less satisfied users. This can be achieved through targeted interventions such as customized training programs, enhanced user interfaces, and adaptive support systems. Furthermore, leveraging consistent core metrics ensures stability while allowing for strategic adjustments. Institutions should prioritize gathering regular feedback from users to identify emerging needs and trends. Iterative updates to the system, informed by this feedback, will help maintain relevance and efficiency. Additionally, strategic investments in areas such as user education, technical infrastructure, and support mechanisms are essential to align the system with diverse user requirements, ensuring sustained engagement and long-term success (Zhou et al., 2023).

4.3 ANOVA Descriptive Analysis

Table 4

Descriptive Statistics of Post-Implementation Metrics by Stakeholder Group

Metric	Group	Mean	Std. Dev.	95% CI (Lower - Upper)
Frequency of Use	Admin Staff	6.60	1.14	5.18 - 8.02
	Faculty	6.90	1.37	5.92 - 7.88
	Students	6.80	1.03	5.94 - 7.66
System Integration	Admin Staff	5.80	1.36	4.28 - 7.32
User Satisfaction	Students	7.73	1.01	6.92 - 8.54
Technical Proficiency	Faculty	6.70	1.06	5.81 - 7.59
Instructional Effectiveness	Total	8.10	0.87	7.83 - 8.37

This table presents the descriptive statistics of post-implementation metrics categorized by stakeholder group (Admin Staff, Faculty, and Students). The means and standard deviations are provided for each group, along with the 95% confidence intervals (CIs) for the metrics. Results indicate relatively consistent levels of frequency of use, system integration, and user satisfaction across stakeholder groups, with students reporting the highest mean satisfaction ($M = 7.73$, $SD = 1.01$, 95% CI [6.92, 8.54]). Instructional effectiveness shows the highest overall mean ($M = 8.10$, $SD = 0.87$, 95% CI [7.83, 8.37]). These statistics highlight variations in user experience and technical proficiency among different stakeholder groups.

Key Findings from Descriptive Analysis

- *Frequency of Use:* The consistency in mean scores across groups indicates widespread adoption and accessibility of the system.
- *User Satisfaction:* Students reported the highest satisfaction ($M = 7.73$), highlighting the system's alignment with their expectations and tasks.
- *Technical Proficiency:* Faculty scored highest in technical proficiency ($M = 6.70$), likely reflecting their familiarity with technology and regular system engagement.
- *Instructional Effectiveness:* This metric received the highest overall rating ($M = 8.10$), demonstrating the system's success in supporting teaching and learning goals.
- *System Integration for Administrative Staff:* Lower scores in this group ($M = 5.80$) suggest the need for tailored interventions to enhance their experience, such as specialized training and system customization.

Linear Regression Analysis - This study examines how system utilization metrics, specifically frequency of use and system integration, impact organizational efficiency metrics such as administrative efficiency, overall efficiency, and user satisfaction, using linear regression analysis (Hamdan et al., 2023). User capability metrics, including user satisfaction and technical proficiency, were analyzed as moderating variables to determine their influence on the relationship between system utilization and organizational efficiency. Higher levels of satisfaction or technical proficiency were found to enhance the positive effects of system utilization on organizational outcomes (Hossain et al., 2023). The null hypothesis (H_{03}), which proposed no significant relationships between system utilization metrics and organizational efficiency metrics or the moderating effects of user capability metrics, was rejected. The results highlight the critical role of user engagement and system integration in optimizing institutional outcomes (Garcia & Lopez, 2022).

Table 7
Coefficients for Post-Implementation Metrics

Independent Variable	Dependent Variable	B	Beta	Sig. (p-value)
Constant	User Satisfaction	3.635	-	0.042
	Administrative Efficiency	5.103	-	0.000
	Overall Efficiency	4.454	-	0.000
Frequency of Use	User Satisfaction	0.057	0.043	0.830
	Administrative Efficiency	0.042	0.056	0.779
	Overall Efficiency	0.275	0.430	0.009
System Integration	User Satisfaction	0.883	0.446	0.035
	Administrative Efficiency	0.549	0.477	0.022
	Overall Efficiency	0.408	0.420	0.010

Note. This table presents regression coefficients (B), standardized coefficients (Beta), and p-values for the relationships between Frequency of Use, System Integration, and the dependent variables. System Integration significantly predicts User Satisfaction ($B = 0.883$, $p = .035$), Administrative Efficiency ($B = 0.549$, $p = .022$), and Overall Efficiency ($B = 0.408$, $p = .010$), while Frequency of Use predicts Overall Efficiency ($B = 0.275$, $p = .009$). These results highlight the role of system integration in enhancing user satisfaction and administrative efficiency.

Frequency of Use

- Overall Efficiency: Significant positive correlation ($B = 0.275$, $Beta = 0.430$, $p = 0.009$), indicating

that consistent use enhances system efficiency by enabling users to derive greater benefits.

- User Satisfaction and Administrative Efficiency: Negligible and non-significant relationships suggest that mere usage frequency is insufficient to enhance satisfaction or administrative processes (Hamdan et al., 2023).

System Integration - Significant positive relationships with all dependent variables:

- User Satisfaction: ($B = 0.883$, $\text{Beta} = 0.446$, $p = 0.035$)
- Administrative Efficiency: ($B = 0.549$, $\text{Beta} = 0.477$, $p = 0.022$)
- Overall Efficiency: ($B = 0.408$, $\text{Beta} = 0.420$, $p = 0.010$)

These results highlight system integration as a critical driver of satisfaction, efficiency, and overall system performance (Hossain et al., 2023).

4.4 Implications of the Findings

Frequency of Use - The significant effect of frequency of use on overall efficiency underscores the importance of consistent engagement. However, its limited impact on satisfaction and administrative efficiency suggests a need to focus on quality over quantity of interactions. Enhancing user engagement through training, feature optimization, and tailored support mechanisms could amplify its positive effects (Zhou et al., 2023).

- System Integration - The strong and consistent influence of system integration across all metrics emphasizes its centrality in driving system performance. An integrated system ensures seamless functionality, enhances user satisfaction through intuitive design, and supports administrative processes by streamlining workflows and reducing redundancies (Garcia & Lopez, 2022).
- Moderating Effects of User Capabilities - The interaction of user capabilities (e.g., satisfaction and technical proficiency) with system utilization metrics indicates that higher capability levels can enhance the system's impact. Institutions should invest in user training, provide responsive technical support, and foster a culture of digital proficiency to maximize these benefits (Hamdan et al., 2023).

Strategic Recommendations

- Focus on System Integration - Investment in robust integration processes offers the greatest potential for institutional benefits. Prioritizing interoperability, intuitive design, and seamless functionality will enhance user experience and operational efficiency (Hossain et al., 2023).
- Enhance User Engagement - Beyond frequency of use, institutions should encourage meaningful interactions with the system. Providing advanced training on underutilized features and customizing the system to user needs can improve satisfaction and efficiency (Zhou et al., 2023).
- Address Capability Gaps - Tailored training programs to address disparities in technical proficiency will help underperforming user groups fully engage with the system. Continuous support mechanisms and hands-on tutorials can sustain these improvements (Garcia & Lopez, 2022).
- Iterative Evaluation - Regular assessments of system utilization, integration, and user engagement can guide iterative improvements, ensuring the system evolves in alignment with institutional goals and user expectations.

5. Discussion

This study evaluated the integration of NEO-LMS and PRIISM Online SMS at Philippine Christian University, focusing on its impact on organizational efficiency, user satisfaction, and technical proficiency. The quantitative analysis of pre- and post-implementation data offers significant insights into how integrated educational technologies enhance institutional performance and user experience.

Impact of System Utilization Metrics on Organizational Efficiency - System utilization metrics such as frequency of use and system integration significantly influence organizational efficiency and user satisfaction. Higher levels of system usage and seamless integration were strongly correlated with improved administrative workflows, reduced redundancies, and enhanced instructional effectiveness (Hossain et al., 2023). The analysis revealed that well-utilized systems streamline data management and operational processes, fostering a positive user experience. A strong user experience, in turn, encourages consistent engagement, creating a feedback loop where usage drives efficiency and satisfaction (Chen et al., 2023). These findings validate the hypothesis that integrated systems support both administrative and instructional goals by improving accessibility and functionality (Garcia et al., 2022).

Practical Implications - The study identifies several actionable priorities for optimizing system utilization and maximizing institutional outcomes:

- **Prioritizing System Integration** - Institutions should invest in robust integration frameworks, ensuring seamless interoperability between systems. Advanced features such as API optimization, cross-platform compatibility, and tailored functionality can address unique user needs (Hamdan et al., 2023).
- **Encouraging Meaningful Engagement** - Targeted training programs can enhance users' understanding of system features, improving engagement and functionality. Regular feedback mechanisms are crucial for identifying areas of improvement and fostering a user-centered approach to system enhancement (Hossain et al., 2023).
- **Monitoring and Evaluation** - Continuous assessment through user satisfaction surveys, efficiency analyses, and benchmarking ensures the system remains aligned with user needs and institutional objectives.

Moderating Role of User Capacity Metrics - User capacity metrics user satisfaction and technical proficiency emerge as significant moderating factors. Satisfied and proficient users were more effective in leveraging system features, amplifying the system's impact on organizational efficiency (Garcia et al., 2022). Key findings include:

- **User Satisfaction**: Higher satisfaction levels were linked to improved workflow optimization, task completion times, and system reliability, highlighting the need for user-friendly design and responsive support (Chen et al., 2023).
- **Technical Proficiency**: Proficient users maximized the system's potential, demonstrating the importance of comprehensive training programs to address skill gaps and improve adoption rates (Hossain et al., 2023).

Implications for Organizations - To harness the full potential of integrated systems, organizations should:

- **Invest in User Training** - Comprehensive, role-specific training programs tailored to user needs can address proficiency gaps and improve engagement.
- **Enhance System Interface Design** - A user-centered design approach ensures accessibility and usability, fostering satisfaction and trust.

- Encourage Active Engagement - Initiatives like gamification, recognition programs, and community-building activities can promote meaningful interactions and sustained use of the system (Garcia et al., 2022).

Improvements in Key Metrics Post-Implementation - Post-implementation data highlights significant improvements in key metrics, including frequency of use, user satisfaction, and organizational efficiency:

- Frequency of Use: Increased usage suggests the platform became more accessible and relevant, driven by improved features and streamlined processes (Hossain et al., 2023).
- User Satisfaction: Enhancements in workflows and system usability contributed to higher satisfaction levels, reflecting the system's ability to meet diverse user needs (Chen et al., 2023).
- Overall Efficiency: Gains in efficiency were attributed to automation, centralized data management, and reduced redundancies.

Group-Specific Insights from ANOVA - The ANOVA results revealed disparities among stakeholder groups, emphasizing the need for tailored strategies

- Students: Reported the highest satisfaction levels due to user-friendly features and accessibility.
- Faculty: Demonstrated strong technical proficiency, reflecting their engagement with instructional tools.
- Administrative Staff: Scored lower in system integration, indicating a need for targeted training and workflow customization.

Recommendations for Enhancing Integration Outcomes

Tailored Interventions for Stakeholder Groups:

- Students: Improve mobile access and interactive tools.
- Faculty: Provide advanced training on analytics and instructional tools.
- Administrative Staff: Offer practical, hands-on support and workflow-aligned training.

Prioritize User Training and Support:

- Establish pre-implementation training programs and continuous professional development opportunities.

Optimize System Design:

- Adopt intuitive, user-centered design principles with customizable features.

Leverage Data-Driven Strategies:

- Use analytics to monitor usage patterns and guide iterative improvements.

Challenges and Future Directions - While the integration has achieved notable success, disparities in technical proficiency and user satisfaction underscore areas for improvement. Future research should explore:

Scalability and Adaptability:

- Assess the system's transferability to other institutions or contexts.
- Develop scalable frameworks to standardize processes while accommodating unique needs.

Long-Term Impact:

- Study the evolving dynamics of user engagement, satisfaction, and system performance over time.

Conclusion - This study provides a comprehensive framework for understanding the impact of integrated educational technologies on institutional performance. It demonstrates that successful technology integration requires more than just advanced systems—it demands strategic alignment with user needs, continuous evaluation, and adaptability to emerging challenges. By leveraging these insights, Philippine Christian University and similar institutions can foster a culture of innovation and efficiency, ensuring they remain agile and effective in the ever-evolving educational landscape.

ACKNOWLEDGEMENT - The author extends heartfelt gratitude to Ronaldo Tan and Dr. Dan Michael A. Cortez, esteemed mentors at Pamantasan ng Lungsod ng Maynila, for their invaluable guidance, expertise, and unwavering support throughout this research. Sincere thanks are also extended to Dr. Junifen F. Gauuan, President of Philippine Christian University, for his inspiring mentorship and encouragement, which were instrumental in the successful completion of this work. Lastly, the author expresses profound appreciation to Dr. Michelle B. Ramos, his beloved wife, for her steadfast support, motivation, and inspiration.

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Rawitdawit sa literaturang Sorsoganon

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ISSN: 2243-7703

Online ISSN: 2243-7711

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25852

OPEN ACCESS

Abstract

Natiyak sa pag-aaral na ito na malaman at masuri ang mga rawitdawit sa literaturang Sorsoganon. Kwalitatib-analisis na disenyo ang ginamit sa pag-aaral. Purposive sampling ang ginamit sa pagpili ng 16 na impormanteng manunulat mula sa iba't ibang bayan sa Sorsogon. Ang mga impormanteng ito ay may mga naisulat na akda na hindi pa nailalathala sa anumang mga aklat, lokal man o nasyonal. Nagsagawa ng interbyu para malikom ang mga datos na kinailangan. Isinagawa ang kontent-analisis sa mga rawitdwit na nakuha at binigyan ito ng interpretasyon. Natuklasan na ang mga katangian ng rawitdawit sa kakanyahan ay pasuysoy na nagkakaroon ng kakalasan o kalutasan ang suliranin sa panghuling taludtod. Iba-iba ang mga pinanggalingan ng mga rawitdawit, mula sa bayan ng Bulusan, Castilla, Donsol, Gubat, Juban, at Magallanes. Ang talinghaga ang pinaka-esensiyal na elemento ng tula sapagkat ito ay nagbibigay ng kulay at damdamin sa tula, nagbibigay ng lihim at ganda sa mga salita, at naglalagay ng layer ng kahulugan na hindi basta-basta nauunawaan sa unang tingin. Ang estilo ng isang makata sa kaniyang akda ay batay sa mga salitang ginamit. Kinakasangkapan ng makata sa wastong pagkakataon ang sari-saring tayutay at laro sa salita upang lumikha ng akda na magdudulot ng matinding takot, galit, lungkot, o kaya ay galak sa mambabasa. Ang mga paksain ng rawitdawit sa mga bayan ng Sorsogon ay tumatalakay sa buhay, kapaligiran, paghihirap, pag-ibig, pasasalamat, kabiguan, at romansa.

Keywords: rawitdawit, katangian, kakanyahan, estilo, elemento, pinagmulan, paksain

Rawitdawit sa literaturang Sorsoganon

1. Introduksyon

Sa napakalawak na impluwensya ng ibang bansa sa atin, masasabing natatangi pa rin ang ating panitikan, lalo na ang Panitikang Panrehiyonal. Masasalamang dito ang pagpapahalaga sa paniniwala, saloobin at pag-uugali ng mga Pilipino sa pamamagitan ng kaniyang pag-iisip, pagsasalita, at paggawa. Ang panitikan ay ang pagpapahayag ng mga damdamin ng tao hinggil sa mga bagay-bagay sa daigdig, sa pamumuhay, sa lipunan, pamahalaan, at kaugnayan ng kaluluwa sa Bathalang Lumikha. Ito ay itinuturing na yaman ng isang lugar na pinanggalingan nito. Pasalita o pasulat man, tuluyan man o patula, kahit na anong uri man ng panitikan ay nagiging bukal ng karunungan, paniniwala, pagpapahalaga, at kultura ng isang lugar.

Nakasaad sa Konstitusyon ng Pilipinas, Artikulo XIV sek. 17, na dapat kilalanin, igalang, at pangalagaan ng Estado ang mga karapatan ng mga katutubong pamayanang kultural sa pagpapanatili at pagpapayaman ng kanilang kultura, mga tradisyon, at mga institusyon. Dapat isaalang-alang nito ang mga karapatang ito sa pagbabalangkas ng mga pambansang plano at mga patakaran. Dapat tangkilikin ng Estado ang mga sining at panitikan. Dapat pangalagaan, itaguyod, at ipalaganap ang pamanang historikal, kultural, mga likha at mga kayamanang batis artistiko ng bansa. Batay naman sa Artikulo XIV sek. 15, “Dapat tangkilikin ng Estado ang mga sining at panitikan. Dapat pangalagaan, itaguyod, at ipalaganap ng estado ang pamanang historical, kultural, ang mga likha at mga kayamanang batis autistiko ng bansa.”

Naipamalas ang pagpapahalaga na maitaguyod ang mga ganitong adhikain sa nilagdaan ni Pangulong Gloria Macapagal Arroyo na Republic Act No. 10066, P hilippine Cultural Heritage Act” o ang “National Cultural Heritage Act of 2009”. Ito ay itinalaga noong 2010 bilang kauna-unahang “Omnibus Philippine Cultural Heritage Law” na sumasakop sa batas na tumutugon sa kultura, cultural properties, international conventions, mga heritage law sa ibang bansa at lalong-lalo na sa ating mga lokal na pangangailangan. Binibigyan nito ng kapangyarihan ang Pambansang Komisyon para sa Kultura at mga Sining o National Commission for Culture and the Arts (NCCA) na mamahala sa mga pangangailangan pangkonserbasyon ng ating cultural heritage. Ang Bikol ang pang-14 sa malalaking pangkat dito sa ating bayan na may 14 na milyong mamamayan na nananahanan sa anim na probinsya sa gawing timog-silangan ng Luzon. Dahil diyan masasabi natin na ang wikang Bikol, ang Inang wika ng mga taga-Bikol, ay makahulugan di lamang sa kanila kundi sa pag-unlad ng ating wika. Ang inang wika o katutubong wika ang kinagisnang gamitin ng mga Bikolano sa pagsasalita. Ito ay isang memorya at metapora na naiimbak ang mga karanasan ng ating lahi at isinalin sa iba pang paraan.

Ang Panitikang Bikol ay binubuo ng rawit-dawit (tula), epiko, dula, kuwentong bayan, awiting bayan, tigsik, sanaysay, alamat, patubod (bugtong) at tataramon (kasabihan). Ang bawat akdang limbag ng mga Bikolanong manunulat ay pahihintulutan na rin ng Panrehiyong Tanggapan ng Kagawaran ng Edukasyon V bilang lunsaran sa pagtuturo sa larangan ng wika at panitikan na mariing sinasang-ayunan ng Komisyon sa wikang Filipino (KWF). Ang Sorsogon bilang isa mga probinsya sa Rehiyong Bikol na binubuo ng 14 na mga bayan ay hitik sa mga akdang sumasalamang sa mukha nito. Bilang isang guro at mananaliksik, isang pagpapatotoo na kung may matitisod silang ganitong babasahin ay siguradong mahihikayat ang ating mga manunulat na Bikolano na lumikha pa ng maraming kapakipakinabang na mga akda. Sa gayon, ang Panitikang Bikol ay magiging makahulugan at kasinsigla ng Panitikang Tagalog.

Nakasaad sa layunin ng pagtuturo sa batayang edukasyon na nais nating maging kasangkapan ang pagbasá ng panitikan upang malinang ang kaalaman at mga kasanayan ng mga mag-aaral sa paggamit ng wikang Filipino. Sa pagtataguyod ng paggamit ng panitikan sa ating mga paaralan, dapat na maunawaan ng mga guro na hindi magkahiwalay ang wika at ang panitikan, kung kaya’t nangangailangan ang mga guro ng mataas na kaalaman sa wika ng panitikan.

Ang Department Order No. 43, s. 2013 ay nagtutulak ng produksyon at paggamit ng lokal na likhang pang-aralin upang palakasin ang pagtuturo at pagkatuto. Samantalang ang Department Order No. 35, s. 2016 naman ay sumusuporta sa pagpapalakas ng kontekstuwalisadong kurikulum sa pamamagitan ng lokal na adaptasyon. Ang pagpapalaganap ng mga lokal na kurikulum ay isang paraan ng pagsusulong ng kaukulang kaugnayan sa iba't ibang lokal, kultural, at sosyo-ekonomikong konteksto (UNESCO, 2009). Bukod dito, sinabi ni Manua (2018) na ang paggamit ng mga rehiyonal o lokal na panitikan sa mga materyal ng pag-aaral ay sumusunod sa layunin ng bansa sa pagpapanatili at pagpapaunlad ng kultura. Dagdag pa, binanggit sa Artikulo XIV, Seksyon 14 ng 1987 Konstitusyon ng Pilipinas na dapat itaguyod ng Estado ang pagpapalago, pagpapatibay, at dinamikong pag-unlad ng kulturang pambansa ng Pilipino sa pamamagitan ng malayang pagsasalin ng sining at intelektuwal na pahayag. Idinagdag din sa Article XIV, Seksyon 5. (1) na dapat isaalang-alang ang mga pangangailangan at kalagayan ng mga rehiyon at sektor sa pagbuo ng mga patakaran at programa sa edukasyon at dapat itaguyod ang lokal na pagpapalano sa pag-unlad ng mga ito.

Upang magkaroon ng higit na pagkaunawa sa panitikan na itinaturo sa mga paaralan, ang pag-aaral na ito ay nakatuon sa kahalagahan ng natatanging Panitikang Bikol, ang rawitdawit, sa kaniyang kakanyahan, estilo, elemento, mga paksain at pinagmulan. Magsisilbi rin itong lunsaran sa pagtuturo-pagkatuto na makatutulong sa pag-unlad ng literatura sa Sorsogon. Ayon kay Elizerio (2022), ang pagtula ay pagpapahayag ng sarili, kung nais maglabas ng sama ng loob, at magpasalamat. Sapagkat magagawa ang lahat sa pamamagitan ng pagsulat. Nakatatanggal ito ng pangamba, nakababawas ng takot, at nakababahagi ng kasiyahan. Kaya para sa kaniya, makapangyarihan ang pagsulat ng tula.

Layunin ng pag-aaral - Natiyak sa pag-aaral na ito na malaman at masuri ang mga rawitdawit sa literaturang Sorsoganon. Inalam din ang katangian ng rawitdawit sa kakanyahan, pinagmulan, elemento, estilo, at paksain nito.

2. Pamamaraang ginamit

Kwalitatib-analisis na disenyo ang ginamit sa pag-aaral. Purposive sampling ang ginamit sa pagpili ng 16 na impormanteng manunulat mula sa iba't ibang bayan sa Sorsogon. Ang mga impormanteng ito ay may mga naisulat na akda na hindi pa nailalathala sa anumang mga aklat, lokal man o nasyonal. Magkahalong bahagyang nakabalangkas na panayam at pangangalap sa internet ang ginamit na mga instrumento sa pag-aaral na ito. Nagsagawa ng interbyu para malikom ang mga datos na kinailangan. Ang mananaliksik ay naghanda ng ilang katanungan na sinagutan sa pamamagitan ng pakikipanayam sa internet at aktuwal na pakikipag-usap. Isinagawa ang kontent-analisis sa mga rawitdwit na nakuha at binigyan ito ng interpretasyon.

3. Natuklasan

Ang rawitdawit ay tula. Mula sa sinaunang wikang Bikol, ang rawitdawit ay mga salitang mabulaklak at maligoy na nanggagaling sa isang taong madaldal, matabil, magaslaw, at hindi mapigilan ang dila. Sinasabing noong unang panahon ang rawitdwit ay karaniwang maiikling diskurso na mabida, maligoy, at mabulaklak na mga pananalitang ang pakay ay pagpugayan ang isang magandang dilag o tudyuin ang isang nagkukunwaring magaling (Balde, Jr., 2009). Ilan sa mga katangiang ito ay makikita pa rin sa mga rawitdawit, ngayon. Ang ilan sa mga katangian ng rawitdawit noon na nakaangkla pa rin sa mga rawitdawit ngayon.

Katangian ng rawitdawit

Iba't ibang katangian ang mababasa mga rawitdawit na naisulat ng mga manunulat na Sorsoguenos. Ang mga ito ay nakatulong upang mas lalong tumigkad ang ganda ng isang rawitdawit. Narito ang mga katangiang nakita:

Kakanyahan - Ang mga rawitdawit na nakalap sa pag-aaral na ito kung susuriin ay kaiba sa ibang uri ng mga tula hindi lamang sa lenggwaheng ginamit kundi sa paraan ng pagbabalangkas. Masasalamain sa mga ito ang

pasuysoy na balangkas, ito ay isang uri ng balangkas ng tula na ang mga nauunang taludtod ay gumaganap sa panimulang hakbang tungo sa pagbubuod sa panghuling taludtod. Sa aklat ni Almario (2017), nabanggit na sa balangkas na pasuysoy ay nagkakaroon ng kakalasan o kalutasan ang suliranin sa panghuling taludtod. Ang mga mauunang taludtod ay gumaganap na panimulang hakbang tungo sa pagbubuod sa panghuling taludtod. Sa pamamagitan ng pamamaraang pasuysoy, nagiging mas malinaw ang ugnayan ng mga sipi mula sa mga rawitdawit. Ito ay nagbibigay-diin sa mga kaisipan at damdamin na ipinalalarawan sa bawat rawitdawit. Mapapansin sa mga sumusunod na sipi mula sa iba't ibang rawitdawit ang mga pamamaraang pasuysoy:

Sipi mula sa “Lumbod” ni Eduardo Carrascal

*An birtud kan lumbod kun ika minatubod
Dai nang mahamis pa sa sabaw kan bulod.
Dai mo lamang ihulog ta baad malanog
An manatoon na laman, hedaling kakaroon.
Por dahil joven pa, orog ining malumoyon,
Mahalnas na minalabay sa halunan mong mamarahon.
Malipot na minahapros sa kamatean mong hararumon
Minapaumay sa kapahaan kan pobreng mahiguson.*

Sa unang pitong taludtod ay ipinaliliwanag ang mga katangian ng “lumbod”, na kailangang maingat sa pagtrato rito para lamang maintindihan sa mga huling taludtod, na ito ay nakapapawi ng uhaw o ng kagutuman sa mga mahihirap na magsasaka. Ang mga naunang taludtod ay tumutulong upang isulong ang pahayag tungo sa mga huling taludtod. Sa halimbawang sipi, mabubuod sa dulo o kasukdulan kung bakit kailangang ingatan ang lumbod. Mapapansin na nagkakaroon ng magaan at maayos na daloy ana nagbibigay ng karagdagang pagpapahalaga sa mga salita ang paggamit nitong pasuysoy. Malaking tulong ito upang mas madaling maunawaan ang kabuoan ng rawitdawit. Ayon nga kay Almario (2017), kung bagá sa istorya, pagpapakilala pa lamáng sa tauhan ang mga unang taludtod. Isa pang maituturing na kakanyahan ng rawitdawit ng Sorsogon ay ang personal nitong tono. Ang pagiging didaktiko. Naging malawak at maliwanag ang pagpapalaganap ng Katolisismo sa panahon ng pananakop ng mga Espanyol.

Sipi mula sa “Wara Sin Bagyo na Segido” ni Alvin Rosales

*Kun an imo buhay sa problema puno-puno,
Nan an pamati nimo malin бага tuhod mapilo.
Tumindog ka, nan magin masarig, ayaw kamundo!
Imo isipon, dini sa kinab-an wara bagyo na segido.*

Sipi mula sa “Hamos Sa Gubat” ni Heide E. Pura

*Kanana magbiriyo kita
Intero na Gubatnon may maidadanun
An saiyo srbisyo, saamo urgolyo
Salamat saiyo, an Dios an magbalos.*

Sipi mula sa “Komedyang sa Covid -19” ni Jomel L. Advincula

*Sadiring pagreyalisar an ibang mga pagbabago makaogma,
Makamundo lang ta sa siring sadi instrumento an problema.
Mawot kong matapos kina mawara na yading pesteng helang,
Pero ‘di man lugod maaram saton na patinarabang-tabang.*

Sipi mula sa “An Filipino Nan Iba Pa Na Surumaton Sa Rehiyon” ni Greg Olayres

*Biyaya ini san ato Kagurangnan,
Gamiton ta nan ato pahalagahan.*

Sipi mula sa “Salamat Pandemya” ni Milagros N. Ebuenga

*Alagad satong pakaisipon
Anong bagay na dapat niatong romdomon?
Tibaad kita pigpapagiromdom
Kan mga gibong kinabanon.*

Sipi mula sa “Rawitdawit” ni Muriel P. Lorica

*Kaya kita magtugang satuyang pakamahalon’
Dapat na pahalagahan inin KULTurang Bicolnon,
Dai dapat paglingawan pirme nyatong guiromdomon,
Maitanom sa isipan kan bag-o tang heneracion.*

Sipi mula sa “Nobyong” ni Margie M. Huevos

*Pagkamoot nin saimong nobyong siguradong matibay
Kon may pagtubod sa nagtataong buhay
Sigurado an saindong pag-ibahan magiging hayahay
Kon siya saimo namomot na marhay.*

Ang mga sipi ng mga rawitdawit ay nagpapakita lamang ng pagiging relihiyoso. Mapapansin na sa lahat ng kanilang ginagawa ay laging nakasentro ang lumikha; isang katangian ng mga Bikolano. Bunga marahil ng pananakop ng mga Espanyol. Ang pagiging relihiyoso ng mga Bikolano ay naglalarawan ng malalim na kaugalian at paniniwala sa Diyos o sa espiritalidad. Ito ay may malaking ugnayan sa pagbuo ng mga mahalagang tono ng rawitdawit sa pag-unawa sa kahulugan at emosyon na ibinabahagi ng may-akda sa kanyang mambabasa. Nakakatulong ito upang makabuo ng isang mensahe mula sa rawitdawit. Bunga ito ng marubdob na pagpapalaganap ng Kristiyanismo sa panahon ng pananakop ng mga Espanyol, kaya natimo ang binhi ng mga ito sa paraan ng pagtula ng mga Pilipino. Nakaukit ang aral sa ilan sa mga akdang nakalap na lumilikom ng patnubay sa buhay (Almario, 2017). Hinubog sa ganito ang karamihan sa mga harayang Filipino. Ayon kay Abadilla (1965), ito ay pagtatalumpati o kaya ay sermon. Nilinaw naman ni Almario (1984), na hindi masama ang didaktikong pagtula. Ngunit napakasamma ng pagtulang naiiralan lamang ng de-kahon at inuulit-ulit na katotohanan.

Pinagmulan - Iba-iba ang mga pinanggalingan ng mga nakalap na mga rawitdawit. Ang mga ito ay mula sa mga bayan ng Bulusan na may, Castilla, Donsol, Gubat, Juban, at Magallanes. Magkakaiba man ang mga pinanggalingang bayan, ngunit nagkakaisa sa pagtaguyod ng ating kultura at tradisyon na masasalamatin sa kanilang mga akda mula sa pansariling danas ng mga manunulat. Samakatuwid, ipinakikita lamang na buhay ang panitikan sa Sorsogon at kailangan itong pagyamanin pa para sa susunod na henerasyon. Pinatutunayan ito ng pag-aaral ni Villaroya (2013) na ang mayabong na panitikan ay nagpapakita ng mayabong na kultura at kasaysayan ng isang lugar. Nakaangkla ito sa aklat nina Santos, et al. (2007) na ang panitikan ay hindi mapipigil sa pagsambulat ng makapag-yarihang damdamin. Samakatuwid, maaaring angkinin na ang panitikan ay salamin ng emosyon ng makata. Sa mga akdang nakalap, masasalamatin na ang mga manunula sa Sorsogon ay walang pinipiling panahon at okasyon para maipahayag ang kanilang saloobin sa pamamagitan ng pagtula.

Elemento - Ang talinghaga ang pinaka-essensiyal na elemento ng tula sapagkat ito ay nagbibigay ng kulay at damdamin sa tula, nagbibigay ng lihim at ganda sa mga salita, at naglalagay ng layer ng kahulugan na hindi basta-basta nauunawaan sa unang tingin. Ito ang nagbibigay-buhay sa tula, nagpapalawak sa pag-unawa, at nagbibigay ng karagdagang dimensyon sa mga konsepto at karanasan na ipinahahayag ng makata. Ayon sa makatang si Teo E. Gener (1958), “Ang pinakatampok na katangian ng isang tula ay ang talinghaga”. Ganito rin ang pagpapahalaga ni Lope K. Santos. Para sa kaniya, ang tula ay nagiging tula sa tugma, sukat, talinghaga, at kariktan,” (sinipi sa Baquiran 170). Ilan sa mga akdang kalahok sa pag-aaral na ito ay kakikitaan ng mga elementong tulad ng tugma, sukat, talinghaga, at kariktan. Tignan ang mga sumusunod na sipi ng rawitdawit.

Sipi mula sa “An Mga Tambay sa Calle Ilawod” ni Eduard H. Carrascal

*Makakukulbang kasimbagan kay Boomer naghali,
Boot niyang ipaaram na siya man hadi,
Alagad sisay man an makontra sa saiyang pamate,
Kuntento si Bantay, si Bidoy asin si Tagpi.
Mas makaheherak man.*

Ang talinghaga ng tula ay maaaring mabulaklak. Sa tulang ito, gumamit ng mga simbolismo ang may-akda. Nais lang ipakilala ng may-akda ang uri ng mga tambay sa kanilang lugar. Makikita pa rin ang pag-igpaw sa karaniwang deklarativong pangungusap ang tulang ito, dahil hindi niya diretang sinabi ang ibig niyang sabihin, sa halip ay ipinahiwatig niya ito sa pamamagitan ng paggamit ng kilos ng tao na ginagampanan ng hayup. Ganito rin ang makikita sa kasunod na akda.

Sipi mula sa “Hururon sa Aguingay” ni Greg Olayres

*An okay an primero nagpatara-tara!
Tinukar an pagkaraot san ato natura,
Dinagka an kaurupod na magprotesta
Basi maisalbar an buhay nira.*

*Nagmosyon an propeta na tabile
Naipaabot sa kapitan hanggan presidente
An mga senyales san mga mangyayari
Basi sa peligro an entero makalibre.*

Sipi mula sa “Aninipot” ni Elpidio O. Ramos

*Aninipot, na may ilaw sa lobot,
Mari digdi sa harani, ta kami kawati.
Ano ika aninipot ta kon aldaw natatakot,
Sain ka minaduman kun an aldaw minsasirang?*

Mapapansin na hindi lang simpleng ilaw na dala ng alitaptap ang ipinakikita, kundi ang aliw na ibinibigay nito. Makikita ang pagiging mailap nito dahil kinuwestiyon sa tula kung saan ito nagsusuot kapag sumisikat ang araw. Ngunit hayag ding ipinakita sa rawitdawit ang kawalan nito ng kakayahang tumanggi na magbigay-aliw. Nangangahulugan lamang na ang talinghaga ay siyang nagtutulak sa makata na tumula, at siya ring nagiging batayan o gabay kung anong imahen ang patatampukin, mga salitang gagamitin o himig at tinig na ipangingibabaw. Hindi ito bunga ng manipulasyon sa wika, kundi ang dahilan kung bakit kailagang imanipula ang wika. Ayon nga kay Alfredo Navarro Salanga, (1991).

For when the poet speaks poetry, he speaks with metaphors... the highest form of talk because it goes beyond pointing out things. Or naming things. Or describing things. A metaphor makes us look beyond the thing itself. It gives a new dimension to the thing. It makes us look at things differently. (Chronicles 1-2).

Sa madaling salita, ang talinghaga ay nagbibigay ng bagong pagtingin sa karaniwang danas ng makata na pinatatampok sa pamamagitan ng wika. Kaya, mahalaga ang wika sa pagbuo ng ating panitikan. Dito makikita ang papel na ginagampanan ng mga guro na nagtuturo ng wika. Sa isang banda, maaaring palawakin ng guro ang mundo sa iba't ibang kaganapan, kasaysayan, tao, at kultura, sa pamamagitan ng paggamit ng wika sa panitikan (Mandani at Munir, 2021).

Ilan pa sa pinakamahalagang elemento ng tula ay ang sukat at tugma. Ayon kay U Z. Eliserio et al. (2022), ang isang awit para mas madaling maalala ay kailangang magkakapareho ang tunog. Bilang kamag-anak ng mga inaawit at ng mga maikling anyo ng oral na panitikan, gumagamit din ng tugma sa panulaan. Mahalaga rin ang ugnayan ng anyo at nilalaman. Maaaring pagtugmain ang dalawang taludtod na magkakapareho ang sinasabi

para mabigyang-diin ang pagkakapareho. Tulad sa soneto, nag-iiba na ang tugmaan pagkatapos ng ikalawang taludtod para isakatawan ang pagbabago ng takbo ng tula.

Sa mga nakalap na tula, kalimitang magkakapareho ang huling tunog ng bawat huling salita. Ang karamihan sa rawitdawit ng Sorsogon ay nakabase sa huling letra ng bawat linya. Makikita sa mga sumusunod na akda.

Sipi mula sa “Kamahalan sa Gubat” ni Roel Encelan

*Pagbatog san Marso
Daghan na an tawo
Maki soso-an sa awto
Maka oli lang sa bungto.*

*Mga bakasyunista
Malin an mga artista
Makadto sa plasa
Hinoyhoy an kakila.*

Nakatugon din sa batas ng palatugmaan ang mga sumusunod na akda.

Sipi mula sa “Pobreng Pagkamoot” ni Milagros N. Ebuenga

*Si Nonoy nag-uli kaso udma sa sainda
An pandok marahay-rahay, labilabi an ogma
Minsan dae suguon, minahiro siya
Atâ ngani garu baga namoot na siya.*

Sipi mula sa “Retiro” ni Jose Credo

*Dakulang ambisyon makatapos sa kolehiyo
Makakuang trabaho maging empleyado sa gobyerno
Magtao sa pamilya parte kan sweldo
Tipunon an tada para sa futuro.*

Tugma ang mga salitang “Marso”, “tawo”, “awto”, at “bungto”, dahil ang mga dulong tunog ay nagtatapos sa patinig na “o”. Tugma rin ang mga “bakasyunista”, “artista”, “plasa”, at “kakilala”. Ang sipi ay masasabing nasa tugmang isahan, kung ang pag-uusapan ay kailanan ng tugmaan, dahil iisang tunog lámang ang napag-uulit sa dulo ng apat na taudtod sa bawat taludturan. Nabibilang ito sa tugmang patinig. Sa pagbasa ng tula, at sa kapakanan ng pagpapaliwanag, at mapanaliksik na pagbasa, ang magkatugmang mga taludtod ay minamarkahan ng maliit na titik sa abakada. Sa tula ni Encelan, ang unang apat na taludtod ay magkakatugma, kaya ang marka o patnubay ay *aaaa* at ang kasunod na taludturan ay *bbbb*.

Dagdag pa rito ang mga sipi ay nasa tugmang patinig, dahil nagtatapos sa titik na patinig, at nasa antas ng tugmaan na karaniwan. Ang mga salitang “Marso”, “tawo”, “awto”, at “bungto”, ay malumay ang bigkas o diin. Gayundin ang mga pinagtutugmang salita na “bakasyunista”, “artista”, “plasa”, “kakila”. Pinagsama rin ang malumay na mga salita na “sainda” at “ogma” sa dalawang salitang mabilis na “siya”. Ang mga salitang pinagtutugma sa huling halimbawang akda ay pare-parehong malumay ang bigkas, at nasa antas na karaniwan. Implikasyon lamang ito na ang mga manunulat ng rawitdawit at ang rawitdawit ay gumagamit ng tugmaan upang magbigay ng kagandahan at balance sa mga taludtod ng tula. Ito ay nagpapalakas sa epekto ng mga salita, at nagpapahayag ng komprehensibong pagkakaugnay ng mga ideya sa loob ng tula. Ito ay isang mahalagang aspeto ng pagtula na nagpapakita ng husay at kasanayan ng makata sa paggamit ng wika at ng mga salita.

Ayon kay Coroza (2015), tugma ang “a” sa “a”, at ang “o” sa “u”. Sa unang tingin, para bang madali ang lang ang tumugma sa paggawa ng rawitdawit. Subalit, mayroon pang ibang aspekto ang tugmaan. Kung talagang sisisid, matatagpuan ag pagkakaiba ng may impit sa walang impit, malumay at mabilis, pati na rin ang maragsa at malumi. Masasabing nakatugon sa batas ng palatugmaan ang akdang nabanggit, dahil gumamit ng magkaibang tugmaan ang magkasunod na taludturan o saknong. Binigyang-diin ni Almario (2017)²⁵ na hindi

maaaring magkasunod ang dalawa o higit pang saknong na may iisang padron lámang ng tugmaan. Mahalaga lamang sa tugmaang ito na magka-uri ang tunog ng pandulong pantig sa dalawa o mahigit pang taludtod. Sinabi pa rin ni Coroza (2015), kailangan munang makulong sa sukat at tugma, bago ka lumaya sa pagtula. Sa mga rawitdawit na nakalap sa pag-aaral na ito ay makikita na walang sinusundang padron sa sukat. Walang espesipikong bilang ng mga taludtod sa bawat taludturan.

Subalit mapapansin na karaniwan sa mga ito ay mayroong apat na taludtod sa bawat taludturan. Kabilang dito ang mga rawitdawit na isunulat nina Advincula, Ebuenga, at Lorica.

Sipi mula sa “Rawitdawit sa Aldaw na Maura” ni Jomel Advincula

*Dara kan LPA wara tunong bulos san uran,
Lapok didi lapok didto sa mga pigaagihan,
Bulos didi bulos didto kasabaw san palibot,
Dawa diin ka magpaipili matindi an lipot.*

*Sa siring na panawn an mga taw urolmong,
Nasa lug balay nangurumon ning tamong,
An iba man kung ukon turog naga food trip,
Lilantakan an bahaw na maluto dawa itip.*

*Diin daw ngana ang yaon ning champorado?
So byu yaon evaporated milk para timplado,
Simot-sarap an kaldero yan ang panigurado,
Testimonyang usto asin talagang prubado.*

Sipi mula sa “Rawitdawit” ni Muriel P. Lorica

*1
Dios marhay na banggui tabi sa gabos na anion,
Na labi-labi an pag-ogma dahil kaining kabangguihon;
Satuya na pigrurukyaw pigbabalik sa guiromdom,
An pwede nang nalingawan ining Kulturang Bicolnon.*

*2
Salamat saindo gabos na ngonian nakidamay,
Tanaganing romdomon liwat an kulyurang maray-rahay;
Mga tigsik, rawit-dawit, pagsantigwar, mga saway,
Magayon na mga kancion, pigkaranta nin sarabay.*

*3
Sa satuyang mga gurang bako ini bag-ong bagay,
Alagad sa mga Joven saro ining ngangalasan;
Huling di nasasayod an siring na pagcelebrar,
An Kulturang iniridar sa naenot na magurang.*

Sipi mula sa “Kwarta” ni Margie Huevos

*Ini daa importanteng bagay para kita mabuhay
Mapabarya man o papel ini nakatabang
Kon minsan ini nagtatao nin kaginhawaan
Kon minsan man nagtatao nin kariribokan*

*Mga tawo ini an kaipuhan
Ta nganing sinda my pagkakan
Maski minsan paghanap may kadipisilan
Kita direkso sa paghanap nin pagkakakwartahan*

Sipi mula sa “Barangay San Roque” ni Greg Olayres

<i>O Barangay San Roque, baryong tinubuan,</i>	13
<i>Pinadaba ka san Dios na Makakamhan</i>	12
<i>Wara sin maurog pa sa kagayunan</i>	12
<i>San naiiba mo na kapalibutan.</i>	12
 <i>Magayunan an imo eco-turismo</i>	11
<i>Sa Kabikulan sayo ka na Paraiso;</i>	13
<i>Sa mga nilalang, sayo ka na santuwaryo,</i>	13
<i>Kaya ikaw sa amo inuorgulyo.</i>	12
 <i>An bendisyon sa imo san Kagurangnan</i>	12
<i>Nakairog san turo san uran;</i>	10
<i>An grasya nagbubulos sa kasanggayahan,</i>	13
<i>Kaya an Mahal na Dios amo inpapasalamatan.</i>	16

Sipi mula sa “Minsan” ni Milagros N. Ebuenga

<i>Minsan nagpasyar ako sa saimong puntod</i>	12
<i>Sinuluan ko an kandilang kapot</i>	11
<i>An laad kaini dae napapalsok</i>	12
<i>Siring kan pagkamoot ko simong mayong patod.</i>	14
 <i>Minsan gusto ko ikang kaulayon</i>	11
<i>Itaram saimo sakong kaburuton</i>	12
<i>Alagad an boses mo natakpan na nin panganoron</i>	12
<i>Ta ladawan mo natakpan na nin panganoron.</i>	14

Ang mga akda ay halimbawa ng malayang taludturan, sabihin pang ito ay may apat na taludtod sa bawat taludturan, subalit wala itong espisipikong bilang ng pantig sa bawat taludtod. Malaya ang pagkakagawa ng mga rawitdawit bawat linya ng taludturan. Mapapansin na halos karamihan sa mga rawitdawit nanakalap ay nasa malayang taludturan; wala itong sinusundang padron katulad ng mga Tanaga, Dalit, Diona, Haiku, at iba, na mga halimbawa ng tradisyunal na mga tula. Marahil ay mas nangingibabaw ang kagustuhan ng mga manunulat na makapagsulat ng rawitdawit at maipahayag ang kanilang mga saloobin, kaysa pagtuunan ng pansin ang sukat at tugma. Batay sa aklat ni Elizerio (2022), sa malayang taludturan, wala nang kailangang sunding sukat at tugma. Sinususugan ito ng sinabi ni Elizerio (2022), na ang pagtula ay pagpapahayag ng sarili, kung nais maglabas ng sama ng loob, at magpasalamat. Sapagkat magagawa ang lahat sa pamamagitan ng pagsulat. Mapapansin na tatlo lamang na mga elemento ng tula ang pokus ng pag-aaral na ito, dahil ayon kay Almario (2017) ito ang mga pormal na elemento ng tula.

Estilo - Nakikita ang estilo ng isang makata sa kaniyang akda batay sa mga salitang ginamit. Kinakasangkapan ng makata sa wastong pagkakataon ang sari-saring tayutay at laro sa salita upang lumikha ng akda na magdudulot ng matinding takot, galit, lungkot, o kaya ay galak sa mambabasa. Ayon nga kay Alamrio (2017) may paniniwala na tila alak na nakalalasing o may mahika ang ilang tula at awit. Mapapansin sa sumusunod ang mga gamit ng mga salita sa bawat linya ng mga rawitdawit upang ipakita ang emosyon sa mambabasa.

Sipi mula sa “Salamat, Pandemya” ni Milagros Ebuenga

<i>Salamat pandemya sa pagkigkig samo</i>
<i>Naheling mi salang gibogibo</i>
<i>Karatan asin katagasan nin puso</i>
<i>Paglamang sa kapwa, mga gibong salto.</i>
 <i>Masakit man sa puso mi</i>
<i>An kagadanan na pirme harani</i>

*An buhay kun daeng swerte
Itatapok ka sana laog kan bote.*

Sipi mula sa “Si Manang Pulana” ni Elpidio O. Ramos

*Si Manang Pulana nagsakatsa tuba-tuba
Nagisi ang saya nahiling ang letra
Kang sakuyang binasa C-O Co, CA-Ca
Kanso bilogon ko librong buka-buka*

*Si Manang Pulana nagbanwit sa bubon
Sunibad nin pantat, kasiling binatun
Kanso nadakop na an sirang magayon
An sabi ni Mana “Ay hu dakulaon!”*

Sipi mula sa “Sa Simbahan” ni Roel Encelan

*San ako nagsimba
Saato kapilya
Daghan an mga pamilya
Na nagbabati sa misa
May-on ako sin nareparo
Dati an mga babayi may sul-ot na manto
Niyang kun mag-sul-ot
An bado ka mga halip-ot
Daghan an tawo sa luwas
Pag sulod mo adaw kahiwas
Sayo pa na reparo
An iba to-om an rosaryo
Pero diri man nahihimo sa tunay
Malin mao pa ngani an may sungay.*

Sipi mula sa “Musikero” ni Roel Encelan

*May-on ako sin kakila
Tawo na mayadon kumanta
Manlain lain na lugar an inabutan
Para mapa ogma an kadaghanan
Minsan kunanta sa beer plasa
Nabagat ko pagka-aga
Nem toy nakay an pandok mo guromos
Mao kay wara sentimos
Wara pa kami bayadi
Maghulat kuno hanggan petsa baynte
Mayad pa sa minatay mag gurogitara
Sabayan sin mahandab na kanta
Kay pag abot sin pagka-aga
Sigurado an kwarta.*

Sa mga tulang siste o parikala nina Roel Encelan, at Elpidio Ramos ay sadyang nakakaaliw ang paggamit ng mga salitang mapagbiro para pagaanin ang isang mabigat na isyung panlipunan. Simpleng mga salita ang ginamit ng makata na madaling naitawid ang mensahe sa mga mambabasa, dahil kinakitaan ito ng realidad. Samakatuwid, ang mga rawitdawit sa Sorsogon ay simpleng realidad na madaling unawain nang kahit na simpleng mamamayan. Kaya ang mga rawitdwit sa Sorsogon ay maaaring basahin ng kahit na sino o anomang antas sa lipunan. Sa pamamagitan nito, madaling maipalalaganap ang mga adhikain o saloobin ng bawat isa.

Ayon kay Almario (2017), ang siste ay ang masayá at mapagpalayang simbuyo na umiiral sa makata na kailangang matalik na nakasalig sa realidad. Nabanggit sa pag-aaral ni Rubio (2018) na ang panitikan ng bawat lugar ay panitikan ng mundo at ang lahat ng sektor ng lipunan ay may mahalagang ambag upang ang bawat akda

ay mabuo, mapanatili, mapaunlad at makatawid sa mga mambabasa.

Paksain - Ang mga rawitdawit ay may iba't ibang nakapaloob na paksain an siyang binibigyan pansin. Ang mga ito ay maaaring Sumisentro sa mga bayani, mga kalamidad, personal na buhay ng mgay-akda at maaaring gamitin ang kahit na anong paksa sa paggawa n tula. Madalas pumapaksa sa buhay, kapaligiran, paghihirap, pag-ibig, at romansa.

Pag-ibig sa kapaligiran ang mga paksain ng tula ni Olayres sa “**Huroron sa Aguingay**”;

*Sa bungto san Bulusan
Nagkasarayo an kahayopan;
Na maghuroron basi mapag-iristoryahan
An peligro na kanira namamatean.*

*Katutnga an gab-i an kowaw nagbayabay
Na an huroron hihimuon sa Aguingay,
Segun kuno ini sa pagboot san okay
Basi dire maaraman san mga taga-Barangay.*

Karagdagan pa rito ang kanyang rawitdawit na ang “**Barangay San Roque**”.

*O Barangay San Roque, baryong tinubuan,
Pinadaba ka san Dios na Makakamhan.
Wara sin maurog pa sa kagayunan
San naiiba mo na kapalibutan.*

*Magayunon an imo eco-turismo
Sa Kabikulan sayo ka na Paraiso;
Sa mga nilalang, sayo ka na santuwaryo,
Kaya ikaw sa amo inuorgulyo.*

*An bendisyon sa imo san Kagurangnan
Nakairog san turo san uran;
An grasya nagbubulos sa kasanggayahan,
Kaya an Mahal na Dios amo inpapasalamatan.*

*An tubi na hale sa kabubudlan,
An harupoy san hangin sa kadlagan,
An pagkasarayo san katawohan,
Nagdadara sa amo sin kaginhawaan.*

Ipinakilala ng makata ang kagandahan ng kanilang bayan, at ang kahalagahan nito. Kakikitaan din ng pasasalamat sa nagbigay ng mga ito. Isang kaugalian, marahil, na gustong itangi ng makata. Isyung panlipuan naman ang tema ng “**An Lugo-lugo san Sibuyas**” ni Olayres.

*Marasa pa baya ini an ako kamutangan
Trendeng ako sa tsirismisan,
Sa social media nan maski sa irinuman
Ako an inpaparabugtian.*

*An makamuro-mondo kay ako inpaparadarali *
Kay ako kuno dire na makapobre
Sayo na kuno ako na oligarki
Kaya nadadamay maski an presidente.*

*Gusto ko na ngani magpasali,
Kay inihimo na ako na bokey;
Pwede na kuno ako na alahas san babaye,
Kay an balor ko irog san ginto nan brilyante*

Gayundin ang mga tula ni Ebuenga sa “**Ta’no?**” at “**Turaok**”

*Ol ismyl na naman an mga ritrato
Nakatoga na kapotkapot an linukot na koponban
Iyo daa an diplomang dinaplosan
Sa haros nagkapirang taon.*

*Si mga magurang na iyo an nagkamang
kan sakripisyo kan pag-aradal
Yaon sa gilid nagluluha-luha na nakata’naw
sa saiyang aking nasa entablado,
Ta si nene nakatapos na man an saindang pagal.*

*Ta’no ta gari peke an ngirit ni nany sa ritrato?
Ta’no ta an saiyang lalaw’ogon mayong kusog na magrokyaw?
Ta’no?*

*Pagka-aga pagmuklat kan mata ni pade’
Pighanap an tabo’ malimugmog s’yempre
Biglang ibinuga sa ogis pang-derby
Nganing suwertehon, ibubulang ini*

*Imbes na turaok an madangog digdi
Kundi an kinutat kan ngislo’ ni made
An saiyang dagit бага labilabi
Ta kaso udma pa sa tuklong si pade.*

Kahirapan naman ang ipinakita ni Huevos sa kaniyang “**Kawaraon**”. Masasalamín sa tulang ito ang kawalan o kasalatan sa pamilyang Filipino sa pang araw-araw na buhay.

*Mga tawo pirming problema an pagkaon
Dai aram kon sain kukuwaon
Kaya minsan paghab-as an solusyon
Dai ninda tig-iisip na ini lain magayon.*

Ipinakita naman ang kahalagahan ng pagpili ng magiging kabiyak sa tula ni Huevos sa kaniyang “**Noby**”. Isa ito sa mga kulturang halos makalimutaan na dahil sa pag-aasawa nang wala sa tamang edad ng mga kabataan.

*Siya nagtutuga nin kasiraman nin buhay
Ipapahiling sa imo gabos na ugaling marhay
Gabos na bagay sa saimo iaalay
Pagkamoot niya sa imo orog na tunay
Ano daw kun siya saimo madamay
Sa oras nin saimong pag-agrangay
Siya daa yaon lang pagkamoot nagsusup-ay
Nagtatao siya sin pagmati na marahay-rahay.*

Sa kabuoan ang paksain ng rawitdawit ay tumatalakay sa pag-ibig, pangungulila, kapalaran sa buhay, sa kamatayan, at sa kalungkutan. Malaya sa mga paksain ang rawitdawit. Maari ring maging paksa ang kasalukyang ganap sa kapaligiran. Sa panahon ngayong mataas ang impluwensya ng social media, mahalagang lingunin natin ang ugat ng ating pagiging Pilipino, sa kultura at literaturang rehiyonal sapagkat ang ideyang madudukal dito ay ang magbibigay sa atin ng pagkaunawa sa ating pagka-Pilipino (Nibalvos, 2019).

Ang mga rawitdawit ay nagbibigay ng buhay at kahulugan sa teksto ng tula. Ito ang sentro ng pagsasalaysay o pagsusuri ng makata sa kanyang mga salita at mensahe. Ang pagpili ng paksain ay mahalaga upang maipahayag ng maayos at epektibo ang layunin ng tula at maipakita ang damdamin, opinyon, o karanasan ng makata. Ngunit ang mga manunulat ng rawitdawit ay may kalayaan sa kanyang paksa. Binanggit ni Balde Jr.,

(2009) sa kaniyang pag-aaral na ang mga paksain ay kahayagan ng iba't ibang kalagayan sa buhay.

4. Konklusyon at rekomendasyon

Iba-iba ang mga katangian ng rawitdawit sa mga bayan ng Sorsogon ayon sa kakanyahan, pinagmulan, elemento, estilo at paksain. Inirerekomenda na pagtuunan ng pansin ang paggamit ng Bikol bilang midyum sa paglikha ng mga akdang pampanitikan upang higit na mapaunlad ang kayamanang artistiko ng bayan. Magkaroon ng grupo ng mga makata na magiging sandigan ng bawat isa sa pagpapaunlad at pagpapatibay ng kayamanang artistiko ng lalawigan at lilikha ng mga akdang sasalamon sa bawat buhay isang Sorsoganon upang makapag-ambag ng inspirasyon sa mga susunod na henerasyon. Magkaroon ng karagdagang kaalaman ang mga manunulat na Sorsoganon sa mga elemento ng tula sa pamamagitan ng mga palihan, at iba pang mga katulad na gawain. Gamitin ng kalipunan bilang lunsaran sa pagtuturo at pagkatuto na makatutulong upang higit na makilala ng mga mag-aaral ang kanilang sarili at matuto sa totoong hamon ng buhay. Magsagawa pa ng iba pang pananaliksik na magbibigay-pansin at pagsusuri sa iba pang mga elemento ng rawitdawit, upang higit na mapaunlad ang mundo ng panulaan sa Sorsogon.

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Weaving the threads of the Philippines: Understanding the opportunities and challenges of the women embroiders of Lumban Laguna

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ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Available Online: 20 February 2025

Revised: 27 January 2025

DOI: 10.5861/ijrse.2025.25853

Accepted: 15 February 2025

Abstract

The Philippines has a rich tradition of embroidery, particularly in regions like Laguna, where women artisans play a crucial role in preserving cultural heritage while facing economic and social challenges. This study aims to explore the specific obstacles and opportunities encountered by these women embroiderers, with the research question: What do you think is the contribution or what more do you think the embroidery industry can contribute to the economy and culture of the Philippines. Human Capital Theory was used in this study, it posits that investments in education, skills, and training improve individual productivity and economic outcomes. In the context of women embroiderers, this theory can be applied to understand how investments in skill development and training can enhance their craft and economic opportunities. The researchers employed an ethnographic study design, which is a great method for looking into the traditions and cultural practices of a particular community. This design allows for the exploration and understanding of the complex interaction that exists between women embroiderers, their vocation, and the broader cultural background of Lumban, Laguna. The focus on customary needlework in Lumban, Laguna, highlights the unique cultural heritage of the Philippines and the impact of craft on the way of life and means of survival for those who engage in it. The study on women embroiderers in Laguna reveals both challenges and opportunities shaping their craft and industry. Key challenges include material scarcity, with thread and fabric shortages impacting production timelines,

especially for custom orders. Time pressures are also significant, as many embroiderers work long hours to meet client demands, which can affect their work-life balance. Skill transmission poses another issue, with younger generations showing less interest in traditional hand-sewing techniques, risking the continuity of this cultural practice. Machine breakdowns, for those reliant on embroidery machinery, further complicate production schedules. The study provides a comprehensive understanding of the current state of the embroidery industry, its challenges, and its long-term aspirations. The participants' responses reveal a clear need for support in skill development, financial resources, and market visibility. The integration of traditional craft with modern business practices, digital tools, and tourism-based strategies offers a pathway for the industry to thrive.

Keywords: embroiderers, cultural heritage, economic and social challenges, traditional craft, tourism-based strategies

Weaving the threads of the Philippines: Understanding the opportunities and challenges of the women embroiders of Lumban Laguna

1. Introduction

Embroidery is one of the significant cultures in the Philippines. This is an activity where many women participate most importantly in traditional settings (Fame, 2021). Embroidery is a significant cultural tradition in the Philippines, deeply rooted in the heritage and identity of its people. Nowhere is this more evident than in Lumban, Laguna, known as the “Embroidery Capital of the Philippines.” Lumban has been home to skilled artisans who craft intricate, hand-embroidered designs that are admired both locally and internationally. This craft, passed down through families, is not just an art form but also a vital source of livelihood. Despite its cultural and economic value, embroidery in Lumban faces numerous challenges and opportunities that shape the lives of its embroiderers, most of whom are women. The integration of urban agriculture into city planning offers numerous benefits. Despite its potential, the effectiveness of urban agriculture models varies across different regions due to factors such as regulatory frameworks, access to technology, and socio-economic conditions. In the Philippines, urban agriculture has gained attention as a response to the increasing challenges of food security, poverty, and environmental sustainability in rapidly urbanizing areas. With more than 47% of Filipinos living in urban areas, the country faces growing pressure on its food supply chains, particularly in densely populated regions like Metro Manila (Philippine Statistics Authority, 2020). The COVID-19 pandemic further exposed vulnerabilities in the food system, leading to disruptions in supply chains, price fluctuations, and limited access to fresh produce, particularly for low-income households (Asian Development Bank, 2021).

This not The embroiderers of Lumban must identify difficulties such as financial constraints, limited access to equipment and insufficient support. Traditional hand embroidery is labor intensive and time consuming, making it challenging to compete in a fast paced, cost driven global market. According to the study of Berondo (2023), embroidery is a very remarkable Philippine art and now it has been associated with many other native Philippine products that are being exported to almost all parts of the world. Thus, embroidery was called “work” and evoked the notion that patience and perseverance go into embroidery. Thus, the ideology of femininity as service and selflessness and the insistence that women work for others, not for themselves, surfaced. The lack of opportunities for skills training and exposure to new technologies often hinders their ability to innovate and expand their craft. Additionally, in the study of Plaridel (2021), the fine and exquisite skill of Filipino embroiderers was acknowledged by other countries, and the Philippines became famous for its embroidery. Additionally, Filipino women and their daughters took to embroidery with a flair and with more than considerable enthusiasm

Additionally, a competition from machine-made embroidery and a decline in interest among younger generations, which threaten its future (Narra Studio, 2018) is one of the challenges the artisans are facing. A growing generational gap in embroidery expertise threatens the craft's survival, as fewer young people are learning traditional techniques. Embroiderers create intricate designs on fabric, reflecting the Philippines' rich cultural heritage. However, the craft faces significant challenges, including the labor-intensive nature of the work, financial instability, and lack of recognition for the artisans' skill like what most of the embroiderers in Lumban, Laguna is experiencing. Addition to this are the low wages and long hours, many embroiderers struggle to sustain their livelihood. If these issues are not addressed, the traditional craft of hand embroidery risks becoming obsolete.

In the Philippines, embroidery can be quite a delicate art form in much more by hand. In the study of Villareal (2024), there have been local initiatives to preserve this time- honored craft. Deeply rooted in the town's heritage, embroidery reflects the creativity and identity of the Filipinos since the era of colonization. Innovations such as digital platforms for selling, training programs for skill development, and the adoption of

new technologies like automated embroidery machines can help embroiderers reach wider audiences and improve production efficiency. Moreover, Lumban's cultural legacy and the global appreciation for Filipino craftsmanship position its embroidery industry as a potential driver of cultural preservation and economic growth. Thus, Lumban's burdeos masterfully weave with their nimble fingers and keen eyes, creating beautiful quality embroidery as detailed as ever. Usually, their hand embroidery is made with colorful threads and intricate designs, often with natural elements, traditional symbols, and cultural ones. In the study of Baroidan (2019), needles and threads have provided the livelihood of generations of families in this quaint town by the Pagsanjan River in Laguna.

In this study, researchers will focus on the opportunities and challenges of the women embroider in Lumban, Laguna. This will determine the various challenges faced by the embroidery craft such as challenges in technical, in financial constraints and on what are the lack in different institutions or organizations. This study will also focus on the experiences of women embroiderers in Lumban, Laguna, that will help the researchers to identify the challenges and opportunities they face in sustaining this traditional craft. By exploring their struggles such as technical difficulties, financial limitations, and the absence of institutional support alongside opportunities in market expansion, skills development and adaptation to trends, this study aims to shed light on the resilience and resourcefulness of Lumban's embroiderers. It also seeks to provide insights into how their contributions can be better supported and valued in preserving this timeless art form. Furthermore, this study will identify the opportunities for the embroiderers from Lumban, Laguna. Specifically, in the economic market, business opportunities and how it expands the business in the embroidery industry.

2. Background literature

According to Caballero et al. (2020), the minimal exposure of locally crafted embroidery in both domestic and international markets prevents artisans from maximizing their skills. In the absence of steady market demand, embroiderers struggle to secure a sustainable income, prompting some to abandon their craft in pursuit of more stable employment opportunities. Research indicates that the COVID-19 pandemic has further affected the industry, leading to reduced sales and order cancellations for artisans (Garcia & Dela Cruz, 2021). According to Bautista et al. (2020), despite the Philippines' rich cultural heritage in embroidery, there is a noticeable absence of targeted legislation or programs designed to protect and promote it as a viable livelihood. While, according to Cruz and Santiago (2021), embroiderers often work under informal arrangements without benefits or job security, making them vulnerable to exploitation. The lack of institutional support also has broader implications for the embroidery industry's survival in a rapidly modernizing economy. Reyes (2022) emphasizes that, without policies actively promoting traditional crafts, younger generations are increasingly disinclined to pursue embroidery, which may lead to the erosion of this cultural heritage.

Studies have shown that these conditions are worsened by the absence of ergonomic tools and appropriate workstations, which are often unavailable to embroiderers operating from home or in informal settings (Lalitha et al., 2021). This lack of peer interaction and absence of a supportive community can intensify stress and adversely affect mental health (Kaur & Singh, 2022). Women embroiderers, especially those in informal sectors, often lack health insurance or the financial means to address their physical or mental health needs (Ali & Habib, 2020). As modernization and globalization increasingly impact local crafts, the interest among the youth in acquiring traditional techniques is markedly low. This trend is amplified in a digital age, where younger individuals tend to favor careers in technology-centric fields over artisan crafts (Teodoro & Reyes, 2021). The general perception of embroidery as a craft that demands extensive time and effort contributes to this waning interest, as young people are more drawn to faster and more lucrative job opportunities (Javier & Aguilar, 2022).

Studies have highlighted the tension between preserving traditional methods and capitalizing on economic prospects offered by global markets (Gonzalez, 2023). Cultural organizations and local government entities are working to integrate traditional skills into educational curricula and provide opportunities for younger generations to engage with their cultural heritage. Despite these initiatives, they remain limited in scope,

necessitating more substantial policy measures to ensure the craft's survival amid rapid modernization (Ramos, 2024). As public awareness increases regarding the environmental repercussions of conventional production methods—such as water waste and chemical use—companies that prioritize sustainable practices will gain a competitive advantage in the marketplace (Jones et al., 2021).

Organizations can investigate alternative, non-toxic dyes, energy-efficient machinery, and waste-reduction techniques to minimize their carbon footprint (Martinez & Ramirez, 2022). This shift creates opportunities for smaller, artisanal embroidery firms to flourish by embracing sustainable practices. With a focus on craftsmanship and eco-consciousness, the embroidery industry can expand into new markets while supporting the broader global movement towards sustainability (Brown & Roberts, 2020). This tendency, alongside a growing appreciation for the cultural heritage inherent in handmade products, equips the embroidery sector to leverage both environmental and consumer preferences, thus providing an exciting opportunity for long-term growth (Hernandez, 2021). These collaborations are vital in organizing formal training programs and workshops that can provide specialized skills in modern embroidery techniques and business management (Rodriguez et al., 2022).

A collaboration between NGOs and LGUs in the Philippines has led to the implementation of skill development programs, where participants gain certifications and knowledge that boost their competitiveness in global markets (Agustin, 2021). The embroidery industry can benefit from a more comprehensive and inclusive growth model, ensuring the sector's continued success and its capability to navigate contemporary challenges (Dela Cruz & Torres, 2023). The use of targeted ads, influencer partnerships, and online storytelling, helps embroidery artisans market their products more effectively, reaching niche markets in the fashion and tourism industries (McKinsey & Company, 2020). Collaboration between the embroidery industry and sectors such as fashion and tourism is increasingly facilitated by digital platforms. For instance, these platforms allow fashion designers and brands to discover and integrate traditional embroidery into their collections, thus introducing artisanal techniques to international markets (Smith, 2021).

The rising demand for sustainable and authentic fashion, as highlighted by trends favoring eco-conscious and heritage-based designs, fosters a natural synergy between embroidery artisans and the fashion industry (McKinsey & Company, 2020). This experience could be marketed as a crucial part of promoting Philippine cultural heritage, which is increasingly appealing to both domestic and international travelers. Moreover, these collaborations could position Lumban as a key destination for cultural tourism, enhancing awareness of traditional art forms and promoting sustainable economic growth within the community (Dizon, 2021). The local craft industry could expand its market reach, attract new clientele, and foster greater appreciation for the artistry of Filipino craftspeople, while also supporting the economic and cultural vibrancy of the region (Tiu, 2022). Embroidery, which has been traditionally led by women in many areas, enables them to utilize their skills to support their families' financial stability and foster self-reliance (Cordero, 2021). The introduction of online training modules during the pandemic enabled artisans to learn marketing strategies, such as leveraging social media to reach broader audiences (Lopez & Bautista, 2023).

3. Findings

Table 1

Intervention Plan Recommendations by Participants for Local Government and Tourism Stakeholders

PARTICIPANTS	KEY THEMES	KEY QUOTES	ANALYSIS	SUMMARIZED COOPERATIVE RELATIONSHIP
Informant 1 (Casedo's Embroidery Employee I)	Training and Social Media for Marketing	"Local governments could help smaller embroidery shops by giving them access to training and workshops on modern designs and techniques... social	The participant emphasizes the need for skill building in design and social media, highlighting a gap in marketing knowledge among embroiderers. This	Participants emphasize financial support, visibility, and marketing to bolster the embroidery industry. They also highlight youth engagement, trade promotion, and resource-sharing as key

		media... attract new customers."	insight suggests local government involvement could enhance business visibility and appeal to factors.
Informant 2 (Casedo's Embroidery Owner)	Trade Fairs, Public Education, Cultural Promotion	"The government could organize trade fairs and exhibitions... to be seen by a wider audience... present embroidery as a respected career choice."	The owner views government organized fairs as essential for broader visibility and public education about Filipino embroidery, underscoring the potential to cultivate national pride and position embroidery as a viable career path.
Informant 3 (Casedo's Embroidery Employee 2)	Curriculum Integration	"We would benefit from partnerships with schools to introduce embroidery as part of the curriculum... they will be more likely to consider it in the future."	By integrating embroidery into the school curriculum, the participant sees potential to inspire youth and sustain the craft through generational knowledge transfer, emphasizing an educational approach to career path awareness in embroidery.
Informant 4 (Casedo's Embroidery Employee 2)	Financial Support	"It's important for the government to provide more accessible loans or grants for smaller embroidery businesses... allow them to compete with bigger companies."	The focus here is on financial support through loans and grants, which could help small businesses purchase quality materials and increase their market competitiveness, including potential entry into international markets.
Informant 5 (Burdahand Embroidery Owner)	Tourism Integration and Partnerships	"Local tourism offices [could] include our shops in tourism maps... Collaborations with hotels or tour groups... could boost visibility for smaller shops."	The participant proposes partnerships with local tourism to promote embroidery shops as part of travel itineraries, tapping into tourism-driven revenue opportunities by presenting embroidery as a unique sou
Informant 6 (Local Embroiderer 1)	Resource Sharing and Cooperative Workspaces	"Affordable workspace... shared spaces or cooperatives for small artisans... to share skills with younger people who are interested but can't afford tools."	Suggesting a communal approach, this response highlights the value of shared workspaces and resources, which could support artisans financially and foster a learning environment for young aspiring embroiderers.
Informant 7 (Local Embroiderer 2)	E-commerce and Social Media	"Government- led training on e-commerce could help us build an	Emphasizing digital literacy, the participant sees ecommerce as crucial for growth,

online presence... Social media is very powerful... more people would know about our craft."	suggesting government support in digital marketing as a way for smaller businesses to reach broader, potentially global audiences.
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4. Discussions

The findings from participant interviews reveal several key opportunities that the participants perceive for expanding their embroidery businesses and increasing income. Each participant highlighted distinct themes, which collectively emphasize customization, promotion, cultural preservation, government support, and retail opportunities as pivotal avenues for growth.

One of the most pronounced opportunities identified by Informative 1 is the potential for customization. Participants noted that customizing designs can significantly enhance their profit margins, as clients are often willing to pay a premium for unique, personalized products. This aligns with existing literature on consumer behavior, which suggests that personalized goods often attract higher prices due to their perceived value (Pine & Gilmore, 1999). By focusing on customization, embroidery businesses can carve out a niche market that not only increases revenue but also strengthens customer loyalty. Overall, the data indicates that participants in the embroidery market perceive a myriad of opportunities for growth and increased income. By focusing on customization, seeking international visibility, promoting cultural heritage, leveraging government support, and exploring retail partnerships, these businesses can enhance their market presence and financial viability. This multifaceted approach not only promises economic benefits but also plays a critical role in sustaining the cultural significance of embroidery in their communities.

The responses from participants, who are small embroidery business owners and employees, highlight significant challenges and opportunities within the local embroidery industry in Laguna, Philippines. An analysis of the qualitative data reveals recurring themes, including the need for marketing training, financial support, integration into tourism, and generational knowledge transfer. Each theme underscores a broader structural issue that embroiderer's face, which directly impacts the sustainability and growth of their craft.

Several participants pointed to a lack of marketing skills, particularly in social media and e-commerce, as a barrier to reaching younger, tech-savvy audiences. This aligns with findings by Carvalho et al. (2023), who emphasized the importance of digital literacy for artisans in maintaining competitiveness in an increasingly digital marketplace. The data suggests that local government initiatives focusing on digital marketing could address this knowledge gap. For instance, Informative 1 stated, "With these skills, small embroiderers could market themselves better and attract new customers," while Informative 7 noted that training in e-commerce could expand reach to non-local customers. This collective call for digital skills training indicates a clear need for policy-driven educational programs that target the digital divide among artisans, reinforcing previous literature that emphasizes skill development as a foundation for economic growth in artisanal sectors (Jones & Bradley, 2022). Participants, particularly those from smaller shops, noted the lack of access to funding opportunities as a limiting factor for business growth. Informative 4 shared that "more accessible loans or grants" would enable smaller businesses to acquire quality materials and equipment, facilitating competition with larger companies. This need for financial support is corroborated by Espina and Montero (2021), who found that accessible micro- loans significantly improve the resilience and scalability of small enterprises. Additionally, grants for small embroidery businesses could serve as a direct pathway to participating in larger markets, both locally and internationally, by empowering them with the resources needed for production and operational expansion. Financial support is thus essential not only for sustaining current operations but also for enabling local artisans to compete in the global market.

Participants like Informative 5 emphasized the potential of embedding embroidery shops within local tourism itineraries to enhance visibility and generate demand. By positioning embroidery as a unique cultural souvenir, tourism can become a channel for economic growth within the embroidery industry, attracting a consumer base that values authenticity and cultural heritage. This recommendation aligns with the findings of Mendoza and Cruz (2022), who demonstrated that tourism initiatives that highlight cultural crafts yield substantial economic benefits for both artisans and local communities. Integrating embroidery into tourism could leverage the growing trend of cultural tourism, allowing artisans to reach diverse customer bases through strategic collaborations with local tourism offices, hotels, and tour groups.

The data also reflects a concern about the generational continuity of embroidery. Participants, particularly Informative 3, noted that introducing embroidery in school curricula could help instill interest among the youth. In the context of cultural heritage, embedding traditional crafts in education aligns with findings by Liu and Wong (2021), who found that early exposure to cultural crafts fosters an appreciation for traditional arts among younger generations. This approach could help address the broader issue of declining interest in traditional crafts, as younger generations are often less inclined to pursue careers in this field. By creating structured educational pathways for embroidery, local government agencies could cultivate a new generation of artisans, preserving the craft and ensuring its transmission to future generations.

Collectively, the participants' responses present a roadmap for fostering a sustainable embroidery industry in Laguna. Their suggestions underscore an interconnected approach where skill-building, financial support, tourism integration, and generational education can collectively sustain and revitalize the embroidery craft. Literature suggests that when these components are implemented together, they create an ecosystem conducive to artisanal growth (Dela Cruz & Ramasamy, 2022). Thus, an integrated approach by local government and tourism stakeholders is essential for addressing the multifaceted challenges these embroiderers face. The proposed interventions not only offer immediate economic relief but also support long-term sustainability by fostering local pride, heritage preservation, and community engagement in the embroidery sector.

The study on women embroiderers in Laguna reveals both challenges and opportunities shaping their craft and industry. Key challenges include material scarcity, with thread and fabric shortages impacting production timelines, especially for custom orders. Time pressures are also significant, as many embroiderers work long hours to meet client demands, which can affect their work-life balance. Skill transmission poses another issue, with younger generations showing less interest in traditional hand-sewing techniques, risking the continuity of this cultural practice. Machine breakdowns, for those reliant on embroidery machinery, further complicate production schedules.

Despite these hurdles, opportunities exist for growth. Customization of designs provides a profitable niche, with clients willing to pay higher prices for personalized embroidery. Expanding into broader markets, both locally and internationally, is facilitated by platforms like Facebook, enabling embroiderers to reach clients beyond their immediate areas. Additionally, government support through trade fairs and loans, partnerships with local retailers, and integration. Local government and tourism authorities should collaborate to create training programs, organize trade fairs, and include embroidery shops in tourism itineraries to boost visibility and market access for smaller businesses. Additionally, partnerships with schools, tourism offices, and ecommerce platforms should be explored to provide artisans with the necessary resources, skills, and opportunities to compete on a larger scale.

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Enhancing sustainability and food security: Evaluating the effectiveness of coffee shop food donation programs in achieving Sustainable Development Goals

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ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25860

Abstract

Food security and environmental sustainability remain critical challenges worldwide. Coffee shop food donation programs offer an innovative approach to address these concerns, aligning with Sustainable Development Goals (SDGs) 2 (Zero Hunger) and 12 (Responsible Consumption and Production). This study evaluates the effectiveness of food donation programs in Makati City coffee shops, particularly Starbucks Philippines, in reducing food waste and improving food security. A quantitative, descriptive design was employed, surveying 103 Starbucks employees across multiple branches. Data collection utilized a structured online questionnaire validated by experts and reliability-tested using Cronbach's Alpha. Findings reveal a very high extent of program implementation across donation processes, partnerships, employee involvement, and program management. Significant reductions in food waste and improvements in resource efficiency were reported. Environmental impacts included reduced methane emissions through diversion of surplus food from landfills, aligning with SDG 13 (Climate Action). Additionally, the programs promoted responsible consumption and enhanced compliance with sustainability goals. Challenges in logistics, food safety, and community awareness were identified, suggesting areas for improvement. The study highlights the dual benefits of these initiatives—addressing local food insecurity and fostering sustainable practices. Policy recommendations include optimizing logistics, enhancing partnerships, and integrating innovative technologies to scale impact. These findings demonstrate the potential for food donation programs to create

meaningful change in urban food systems while supporting corporate social responsibility.

Keywords: food donation programs, Sustainable Development Goals, food security, sustainability, environmental impact

Enhancing sustainability and food security: Evaluating the effectiveness of coffee shop food donation programs in achieving Sustainable Development Goals

1. Introduction

In response to the escalating concerns regarding food security and environmental sustainability, innovative solutions have emerged to address these critical challenges. Coffee shop food donation initiatives have gained prominence as a viable approach to mitigating food waste while contributing to the achievement of social and environmental objectives. These initiatives align with the United Nations' Sustainable Development Goals (SDGs), particularly SDG 2 (Zero Hunger) and SDG 12 (Responsible Consumption and Production). Food waste is a pervasive issue worldwide, with significant economic, social, and environmental repercussions. According to the Food and Agriculture Organization (FAO), approximately one-third of all food produced for human consumption is wasted, amounting to nearly 1.3 billion tons annually. This wastage not only leads to resource depletion but also exacerbates global challenges such as hunger and climate change (Marcelo, 2019). Consequently, coffee shops across the globe have implemented food donation programs to repurpose surplus food, thereby addressing food security and sustainability objectives.

The Philippine Context - The Philippines faces severe food security challenges due to factors such as poverty, natural disasters, and economic instability. Millions of Filipinos experience food insecurity, with many struggling to access sufficient, safe, and nutritious food. Simultaneously, the country generates an estimated 2.4 million tons of food waste annually. The United Nations' 2030 Agenda for Sustainable Development aims to halve global food waste; however, food wastage remains alarmingly high while food insecurity persists due to the COVID-19 pandemic, climate change, conflicts, and economic disruptions (United Nations Environment Programme [UNEP], 2021; United Nations, 2022). Recent estimates indicate that consumer-level food waste accounted for 930 million tons worldwide in 2019. In 2021, 2.3 billion people faced food insecurity, while 828 million people suffered from hunger, signaling a major setback in global efforts to eliminate hunger by 2030 (United Nations, 2022).

Coffee Shop Food Donation Initiatives in Makati City - Makati City, a prominent business district in Metro Manila, embodies the complex interplay of commercial vibrancy and socio-economic disparity. The city presents distinct challenges related to food security and sustainability, reflective of broader trends in Philippine urban centers. Coffee shop food donation initiatives in Makati play a crucial role in alleviating food insecurity and reducing food waste. By redistributing surplus food, these initiatives directly support SDGs 2 and 12, illustrating how localized actions contribute to broader global sustainability targets. This study aims to assess the effectiveness of coffee shop food donation programs in Makati City by analyzing their impact on community welfare, environmental sustainability, and their alignment with SDG objectives.

Research Gaps and Objectives - Despite the growing interest in food donation programs, significant research gaps remain regarding their effectiveness in achieving food security and sustainability in Makati City. Notably, there is a lack of quantitative data assessing how these programs contribute to reducing food waste and improving food security for beneficiaries. Additionally, research is limited on the logistical challenges, food safety considerations, and economic implications for participating businesses. Understanding public awareness, perceptions of food donation, and the influence of policy frameworks are also areas requiring further investigation. Comparative studies with other urban areas and explorations of technological innovations could provide valuable insights into optimizing these initiatives. Addressing these gaps will enable a more comprehensive evaluation of coffee shop food donation programs and their role in advancing the SDGs for food security and sustainability (Cattaneo & Watanabe, 2018).

Purpose of the Study - The primary objective of this study is to examine coffee shop food donation

programs as a strategy for integrating SDGs related to food security and sustainability in Makati City. This research aims to evaluate the effectiveness of these initiatives in reducing food insecurity by reallocating surplus food to those in need, thereby contributing to SDG 2. Furthermore, the study will analyze how these programs support SDG 12 by minimizing food waste and fostering sustainable consumption practices within the coffee shop industry. Through a comprehensive assessment, this research will identify operational challenges, assess economic impacts, and explore community and business engagement. The findings will serve as a foundation for policy recommendations, improved program implementation, and the promotion of best practices, ultimately fostering a more sustainable and equitable urban food system in Makati City (Reiter et al., 2019).

2. Theoretical Framework

Social Exchange Theory - According to Social Exchange Theory (SET), social conduct arises from an exchange process in which people want to reduce costs and maximize advantages from their contacts (Homans, 1958). The Sustainable Development Goals on food security and sustainability can be achieved through the use of Social Exchange Theory to comprehend the dynamics and motives underlying coffee shops' food donation programs. By tackling food insecurity and boosting their social capital and brand reputation through food donation programs, coffee shops not only improve the well-being of society but also foster strong relationships within the community and long-term customer loyalty. From a sustainability and ethics standpoint, coffee businesses can profit from non-tangible outcomes.

Sustainability Theory - According to the Brundtland Commission (1987), sustainability theory is closely related to the concepts of environmental, social, and economic sustainability. It highlights the significance of fulfilling present-day needs without sacrificing the capacity of future generations to meet their own. Sustainable theory offers a crucial framework for comprehending how coffee shop food donation programs relate to the larger Sustainable Development Goals (SDGs), especially those that deal with sustainability and food security. Through the donation of excess food, coffee shops help achieve SDG 2 (Zero Hunger) by addressing local food insecurity and reducing food waste—a major environmental concern. Sustainability Theory provides a comprehensive framework for understanding how coffee shop food donation programs can effectively contribute to long-term economic, environmental, and social goals under the SDGs.

3. Methodology

Research Design - The study adopts quantitative approach that will enables the researchers to analyze numerical data, while qualitative insights help capture deeper perspectives on challenges and benefits experienced by stakeholders.

Data Collection - Data will be collected through structured surveys administered with coffee shop managers and food donation program beneficiaries. The survey will use a 4-point Likert scale.

Sampling Method - A purposive sampling technique will be used to select coffee shop employees and managers involved in donation programs, ensuring that participants have relevant experience and knowledge.

Ethical Considerations - This study will adhere to ethical research standards by obtaining informed consent from all participants, ensuring confidentiality, and maintaining data security. Participants will be fully informed of the study's purpose, risks, and their right to withdraw at any time. Ethical approval will be sought from the relevant institutional review board to ensure compliance with ethical guidelines.

Data Analysis - The study will employ statistical analysis to evaluate the quantitative data collected from surveys. Descriptive statistics such as percentages and mean scores will be used to summarize respondent demographics and perceptions of food donation programs. The Likert-scale responses will be analyzed using weighted mean calculations to determine overall sentiment and levels of agreement. Regression analysis will be conducted to assess the relationship between food donation program implementation and its impact on

4. Background literature

Food Donation Programs and Sustainability - Patel and Singh (2020) stated that food donation initiatives align with Sustainable Development Goals (SDGs) by redistributing surplus food to those in need. Garcia et al. (2021) emphasized that food donation programs help mitigate environmental issues by diverting edible food from landfills, reducing carbon footprints.

Consumer Perception and Participation - Lee and Kim (2019) found that consumers are more likely to support businesses engaged in food donation efforts if they perceive these initiatives as ethical and socially responsible. Torres et al. (2022) highlighted that transparency in donation processes enhances consumer trust, encouraging participation and repeat patronage.

Challenges in Implementation - Johnson and Reyes (2020) reported that businesses often struggle with storage, transportation, and food safety regulations, limiting their ability to donate excess food efficiently. Wilson (2018) pointed out that fear of legal repercussions discourages some establishments from participating in donation programs despite existing liability protections.

Economic and Business Impacts - Smith et al. (2021) noted that tax incentives for food donations encourage establishments to participate while offsetting operational costs. Brown (2019) found that businesses engaging in donation programs often experience increased brand loyalty and positive public perception, leading to long-term financial gains.

Local Trends in Makati City - Dela Cruz and Santos (2019) reported that food service establishments in Makati City have started integrating food donation programs in response to corporate social responsibility initiatives and government incentives. Reyes (2022) observed that younger consumers in urban areas are more supportive of businesses involved in food donations, citing ethical consumption as a primary motivator.

5. Findings

Table 1

Extent of Implementation of Food Donation Programs of the Coffee Shop in terms of Donation Process

Indicators	WM	VI	Rank
Clear donation system	3.50	VHE	3
Partnership with non-profits	3.50	VHE	3
Staff training & customer awareness	3.55	VHE	1
Transparency & donation tracking.	3.53	VHE	2
Fundraising events & promotions	3.41	VHE	4

Overall Mean 3.50 VHE

The coffee shop's food donation program is highly implemented (overall mean: 3.50, VHE). Staff training & customer awareness (3.55) ranked highest, while fundraising events (3.41) ranked lowest, indicating room for improvement. Strong staff involvement, transparency, and nonprofit partnerships enhance the program's impact.

Table 2

Extent of Implementation of Food Donation Programs of the Coffee Shop in terms of Partnership and Collaborations

Indicators	WM	VI	Rank
Partnerships with Nonprofits	3.50	VHE	1
Regular Communication	3.47	VHE	2
Joint Promotions	3.36	VHE	3
Providing Space for Events	3.30	VHE	4
Co-hosting Campaigns	3.28	VHE	5

Overall Mean 3.38 VHE

Table 4 highlights the coffee shop's strong commitment to partnerships and collaborations in its food donation program, with an overall mean of 3.38 ("Very High Extent"). The highest-rated indicator (3.50) is partnerships with nonprofits, emphasizing alignment with reputable organizations to enhance social impact. Regular communication (3.47) is also prioritized for coordination and transparency. The lowest-rated aspect (3.28) is co-hosting events, suggesting opportunities for more engagement. Overall, these efforts strengthen community trust, increase visibility, and contribute to addressing food insecurity.

Table 3

Extent of Implementation of Food Donation Programs of the Coffee Shop in terms of Employee Involvement

Indicators	WM	VI	Rank
Employee training	3.48	VHE	2
Feedback sessions	3.44	VHE	3
Event planning	3.35	VHE	4
Staff incentives	3.08	VHE	5
Volunteerism	3.99	VHE	1

Overall Mean 3.27 VHE

Table 3 highlights the extent of employee involvement in the coffee shop's food donation program, with an overall mean of 3.27 ("Very High Extent"). The highest-rated indicator (3.48) is employee training to promote the initiative to customers. Regular updates and feedback (3.44) rank second, ensuring staff engagement. Participation in planning events (3.35) also scores high. Lower-rated aspects include incentivizing staff (3.08) and encouraging volunteerism (2.99), indicating areas for improvement. Overall, employee involvement plays a crucial role in the success of the donation program.

Table 4

Extent of Implementation of Food Donation Programs of the Coffee Shop in terms of Program Management

Indicators	WM	VI	Rank
Clear goals and objectives	3.59	VHE	4
Designated program oversight team	3.61	VHE	3
Regular monitoring and evaluation	3.64	VHE	2
Transparent financial management	3.65	VHE	1
Effective partnerships and communication	3.54	VHE	5

Overall Mean 3.61 VHE

The coffee shop's food donation program management is highly effective (WM = 3.61, VHE). Financial management scored highest (WM = 3.65), ensuring transparency and accountability. Monitoring and evaluation (WM = 3.64) help track progress and improve strategies. A designated oversight team (WM = 3.61) ensures smooth operations, while clear goals (WM = 3.59) guide program direction. However, partnership management (WM = 3.54) needs improvement. Strengthening collaboration with nonprofits can further enhance the program's impact.

Table 5

Extent of Food Donation Program (Reduction in Food Waste)

Indicators	WM	VI	Rank
Surplus food donated, not wasted.	3.66	VHE	3
Effective inventory management practiced.	3.64	VHE	4
Donated food meets safety standards.	3.72	VHE	1
Staff trained in food handling.	3.69	VHE	2
Food waste data analyzed regularly.	3.64	VHE	4

Overall Mean 3.67 VHE

The coffee shop's food donation program is highly effective in reducing food waste (WM = 3.67, VHE). The highest-rated indicator is food quality and safety checks (WM = 3.72), ensuring donated food meets health standards. Staff training on food handling (WM = 3.69) helps preserve food for donation. Inventory management (WM = 3.64) and data analysis (WM = 3.64) support waste reduction. The program aligns with sustainability goals by minimizing excess food and maximizing its benefit to communities.

Table 6*Extent of Food Donation Program (Resource Efficiency)*

Indicators	WM	VI	Rank
Optimizes ingredients, reduces waste.	3.65	VHE	2
Uses inventory management, portion control.	3.66	VHE	1
Reduces environmental impact of waste.	3.60	VHE	4
Partners with food banks, organizations.	3.64	VHE	3
Tracks and analyzes food donations.	3.57	VHE	5

Overall Mean 3.63 VHE

Table 6 highlights the very high extent (3.63) of food donation programs in promoting resource efficiency among coffee shops. The top-ranked practice (3.66) is inventory management and portion control, ensuring minimal surplus. Optimizing ingredients (3.65) and partnering with food banks (3.64) further enhance sustainability. Waste reduction efforts (3.60) help lower environmental impact, while tracking and analyzing donations (3.57) ranks lowest, indicating room for improvement. Overall, coffee shops effectively balance waste reduction, resource optimization, and community support, with data tracking as a key area for enhancement.

Table 7*Extent of Food Donation Program to Support Sustainability Goals in terms of Environmental Impact*

Indicators	WM	VI	Rank
Reduces waste, lowers methane emissions.	3.58	VHE	3
Lowers waste, saves energy resources.	3.63	VHE	1
Lessens footprint, supports sustainability.	3.59	VHE	2
Encourages eco-friendly packaging use.	3.51	VHE	4
Promotes green initiatives, efficiency.	3.51	VHE	4

Overall Mean 3.57 VHE

Table 7 shows the very high extent (3.57) of coffee shops' food donation programs in reducing environmental impact. The top-ranked factor (3.63) is lowering food waste, which reduces energy and resource consumption. Donating food instead of discarding it (3.59) helps minimize the overall environmental footprint. Waste diversion from landfills (3.58) decreases methane emissions. Eco-friendly packaging and broader environmental initiatives (3.51) rank lowest, indicating room for improvement. Overall, coffee shops demonstrate strong environmental commitment, with opportunities to enhance sustainable packaging and waste reduction practices.

Table 8*Extent of Food Donation Program to Support Sustainability Goals in terms of Promotion for Responsible Consumption*

Indicators	WM	VI	Rank
Encourages mindful food purchasing.	3.65	VHE	2
Uses signage for awareness.	3.66	VHE	1
Highlights value of leftovers.	3.60	VHE	4
Trains employees on sustainability.	3.64	VHE	3
Collaborates for community workshops.	3.57	VHE	5

Overall Mean 3.63 VHE

Coffee shops highly implement food donation programs to promote responsible consumption, with an overall mean of 3.55 (Very High Extent). The top-rated practice (3.62) is employee training on sustainability, reinforcing mindful food habits. Encouraging customers to buy only what they need follows at 3.58. Awareness efforts, including signage (3.52) and campaigns on leftovers (3.50), further support sustainability. Community collaborations for workshops also scored 3.50, indicating room for expansion. Overall, these initiatives position coffee shops as advocates for responsible consumption and waste reduction.

Coffee shops strongly implement food donation programs to support sustainability, with an overall mean of 3.53 (Very High Extent). The highest-rated practice (3.58) is adherence to environmental regulations, ensuring compliance with food safety and waste management standards. Actively reducing food waste follows at 3.56, emphasizing resource conservation. Integrating eco-friendly practices, such as efficient inventory management

(3.55), further enhances sustainability efforts. Regular performance assessments (3.50) and partnerships with sustainability-driven organizations (3.47) highlight areas for improvement. Overall, these initiatives establish coffee shops as key contributors to environmental responsibility and waste reduction.

Table 9

Extent of Food Donation Program in Supporting Sustainability Goals

Indicators	WM	VI	Rank
Compliance with environmental regulations	3.58	VHE	1
Food waste reduction	3.56	VHE	2
Integration of eco-friendly practices	3.55	VHE	3
Performance tracking and reporting	3.50	VHE	4
Partnerships with sustainability organizations	3.47	VHE	5

Overall Mean 3.53 VHE

Table 10

Extent of Food Donation Program in Supporting Sustainability Goals

Model	Unstandardized B Coefficients	Standardized Beta Coefficient	P-value	R-square
(Constant)	0.852	-	<.001	0.786
Donation Process	0.204	0.236	0.006	
Partnership and Collaboration	0.054	0.063	0.446	
Employee Involvement	0.096	0.125	0.091	
Program Management	0.422	0.510	<.001	

Overall Mean 3.53 VHE

The regression analysis indicates that **program management** is the most influential factor in the effectiveness of food donation programs, with an unstandardized B coefficient of **0.422** and a **p-value of <.001**. This highlights the significance of structured processes, coordination, and resource allocation in minimizing food waste and maximizing the program's impact.

The **donation process** also plays a critical role (**B = 0.204, p = 0.006**), suggesting that clear guidelines and efficient logistics contribute to the program's success. **Employee involvement** has a positive but less statistically significant effect (**B = 0.096, p = 0.091**), indicating that while staff engagement is beneficial, it does not independently drive success as strongly as program management.

In contrast, **partnership and collaboration** (**B = 0.054, p = 0.446**) show minimal impact, suggesting that external partnerships are not fully leveraged. The findings emphasize the importance of internal operations over external collaborations in ensuring the sustainability of food donation programs.

Overall, the **high R-square value (0.786)** suggests that the identified factors collectively explain **78.6%** of the variability in program effectiveness. Strengthening **program management and donation processes** while enhancing employee engagement and strategic partnerships could further improve sustainability outcomes.

6. Discussion and Implications

The findings of this study align with existing literature on consumer perception and participation in food donation programs. As Lee and Kim (2019) emphasize, consumers are more inclined to support businesses actively engaged in food donation efforts when these initiatives are perceived as ethical and socially responsible. This is particularly relevant in the context of Makati City, where ethical consumption trends, as noted by Reyes (2022), indicate that younger consumers are more likely to patronize businesses involved in social initiatives. Transparency in donation processes further strengthens consumer trust, as highlighted by Torres et al. (2022), suggesting that businesses implementing clear and accountable donation mechanisms may experience increased customer loyalty and sustained engagement. These findings underscore the necessity for businesses to integrate transparent communication strategies, such as public reports on donation impact, to enhance consumer participation.

Despite the potential benefits, several challenges in implementation persist, primarily related to logistical and regulatory constraints. Johnson and Reyes (2020) identify storage limitations, transportation costs, and compliance with food safety regulations as major barriers to efficient food donation. In urban settings such as Makati City, where space constraints and strict health regulations are prevalent, businesses may find it difficult to establish effective donation workflows. Additionally, Wilson (2018) highlights that fear of legal repercussions remains a deterrent, despite the presence of liability protections. This indicates a need for greater awareness and education regarding legal safeguards for businesses engaged in food donation, possibly through government-led information campaigns or industry partnerships with regulatory bodies.

From an economic and business perspective, food donation initiatives present tangible financial benefits. Smith et al. (2021) emphasize the role of tax incentives in encouraging business participation while mitigating operational costs. This aligns with Brown's (2019) findings that businesses integrating donation programs often experience enhanced brand loyalty and positive public perception, which translate into long-term financial gains. Given that consumer trust and ethical consumption are growing trends in urban areas like Makati City (Reyes, 2022), businesses have a strategic opportunity to enhance their competitiveness by actively participating in donation programs. These insights suggest that policymakers could further refine tax incentive structures and other financial support mechanisms to increase business engagement in sustainability efforts.

At the local level, food donation programs are increasingly being adopted by establishments in Makati City, driven by corporate social responsibility initiatives and government incentives (Dela Cruz & Santos, 2019). This reflects a broader shift towards sustainability in the food service industry, further reinforced by consumer expectations for ethical business practices. The growing support among younger consumers (Reyes, 2022) suggests that businesses that proactively engage in donation programs not only contribute to social welfare but also strengthen their market position among ethically conscious customers.

The implications of these findings are significant for both industry stakeholders and policymakers. First, businesses should prioritize transparency in their donation processes to foster consumer trust and engagement. Second, addressing logistical challenges through improved infrastructure, partnerships, and government support can facilitate the smooth implementation of donation programs. Finally, the economic advantages of food donation, particularly in terms of brand loyalty and financial incentives, indicate that participation in these programs can serve as a competitive advantage. Moving forward, further research can explore the long-term impacts of food donation programs on consumer behavior and business profitability, particularly within highly urbanized environments such as Makati City.

6.1 Recommendations

To enhance the sustainability outcomes of food donation programs in coffee shops, several strategic initiatives should be implemented. First, improving the donation process can be achieved by enhancing community engagement through storytelling, where coffee shops share impact stories via social media, in-store displays, and newsletters. This approach raises awareness, strengthens customer engagement, and inspires greater participation. Additionally, organizing special fundraising events, such as themed charity initiatives where a percentage of sales supports donation programs, can increase both financial support and consumer involvement.

In terms of partnerships and collaborations, strengthening long-term relationships with non-profit organizations is essential. Coffee shops should formalize agreements with non-profits, set fundraising targets, and engage in co-marketing initiatives to ensure sustained support and operational efficiency. Expanding partnership networks beyond local organizations to include national and global sustainability groups, food banks, and environmental NGOs can further enhance the reach and visibility of donation programs. Employee involvement is another critical factor in sustainability efforts. Incentivizing employee participation through recognition programs, bonuses, or additional time off can foster a culture of sustainability within the

organization. Furthermore, implementing regular training programs on sustainability practices, donation impact, and effective customer communication will equip employees with the necessary knowledge and motivation to support these initiatives actively.

Effective program management plays a pivotal role in ensuring the long-term success of donation programs. Coffee shops should develop data-driven program adjustments by implementing regular tracking and analysis to assess effectiveness and identify areas for improvement. Additionally, establishing clear key performance indicators (KPIs) and structured reporting mechanisms, such as quarterly or annual reports, will maintain transparency, ensure accountability, and enhance credibility among stakeholders. Reducing food waste should also be a priority, which can be addressed by optimizing inventory management through predictive analytics and advanced inventory systems to prevent food surplus. Leveraging technology, such as mobile applications or software solutions, can facilitate real-time tracking of food waste reduction progress and improve donation efficiency.

In the area of resource efficiency, adopting a circular economy model by repurposing coffee shop waste—such as composting coffee grounds or collaborating with local farmers—can minimize environmental impact. Investing in energy-efficient equipment, including water-saving technologies and eco-friendly machinery, will further support sustainability by reducing resource consumption and operational costs. To mitigate the environmental impact, coffee shops should transition to 100% eco-friendly packaging for food donations by ensuring that all materials are recyclable or compostable. Broadening sustainability efforts to include initiatives such as water conservation, solar energy adoption, and the use of sustainable materials (e.g., reusable cups) can significantly enhance a business's environmental responsibility. Promoting responsible consumption among customers is another crucial aspect of sustainability. Launching awareness campaigns through in-store signage, digital media, and promotional materials can educate consumers on the importance of food waste reduction and donation benefits. Partnering with local schools and institutions to conduct sustainability workshops and educational programs can extend community engagement and cultivate responsible consumption behaviors among younger generations.

Finally, ensuring compliance with sustainability goals requires continuous assessment and adaptation. Coffee shops should conduct annual reviews of sustainability objectives to align with emerging trends and best practices. Engaging customers in sustainability efforts by publicly sharing impact reports, progress dashboards, or sustainability newsletters can foster transparency, build trust, and encourage greater community support. By implementing these comprehensive recommendations, coffee shops can significantly enhance the effectiveness of their food donation programs, contribute to sustainability goals, and promote responsible consumption practices within their communities.

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Exploring dissertation writing trends in doctoral education: Identifying gaps for academic support

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ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25861

Abstract

Utilizing trend analysis of prevailing institutional data of Doctor of Education in Educational Administration (EdD EdAd) students enrolled in dissertation writing, this study has sought the doctorate students' dissertation writing trends in terms of enrolment status, enrolment gaps, transition from passing the comprehensive examination to Dissertation Writing 1; transition from Dissertation Writing 1 to Dissertation Writing 2; and based on the emerging trends, the other goal was to identify areas needing assistance, intervention or academic support. As to enrolment trend, findings revealed notable gaps, with 39% of students approaching the maximum duration permitted for their graduate studies. In terms of transitioning to dissertation writing, more than 50% have smoothly transitioned from their success in the comprehensive examinations to Dissertation Writing 1 but were found stagnating while writing their dissertation proposals. Some were found to have transitioned smoothly from Dissertation Writing 1 to Dissertation Writing 2 without a trace of enrolment gap in the entire scholastic journey but notably, a cluster of students have stopped for five consecutive terms in Dissertation Writing 2. The shaped scenario by the trend analysis has mainly pinned the phenomenon of stagnation which may lead to implications on institutional policy redirection in terms of dissertation writing and academic support in general. The findings of the study, particularly the dissertation writing trends are intended for utilization in the second phase which is on determining the realities behind dissertation writing stagnation and eventually propose an intervention scheme as a form of academic support.

Keywords: dissertation writing, exploration, doctoral education, trend analysis, academic support

Exploring dissertation writing trends in doctoral education: Identifying gaps for academic support

1. Introduction

Academic writing as attributed by researches is collectively defined as an organized and systematic scientific writing utilized for research writing in the higher education levels (Al-Mubarak, 2017). General agreement, though, has the stance that academic writing requires the use of formal language by researchers and students as they express novel thoughts, express their perspectives, and cite studies from scholarly works (Labaree, 2009 in Alostath, 2021). Recently, graduate students who demonstrate poor academic writing skills are increasing due to weak confidence; they fear negative feedback; others do not have access to quality research sources; some are indecisive on a research problem; and most students are generally unskilled in the written craft (Holmes et al., 2018; Collins, 2015).

From the above claimed nature of academic writing in higher education and the challenges that go with it, Leming (1977) in Alostath (2021) accentuated the importance of supporting graduate students' academic writing and prepare them for professional life with Alostath (2021) calling out for the design a specialized course to assist graduate students in the enhancement of their writing skills. Attributive to Akyürek and Afacan (2018), graduate education equates to an extensive learning process where students follow critical courses, conduct research and produce a dissertation. Completing a research study is perceived as a daunting task for students as they acquire in-depth knowledge in the related field and plan the study according to an appropriate research design (Qasem & Zayid, 2019).

Completion of a postgraduate dissertation is influenced by significant factors. These include ones that are related to the student (such as personal issues and level of academic competency) and the institution (Wanasinghe, 2020). The personal life of a postgraduate student has a strong impact on their ability to complete a dissertation successfully. Issues related to personal concerns, domestic responsibilities, financial state, employment, and health can have their substantial impact; moreover, dwindling interest in the selected research topic and shifts in career may also cause some effect (Wright, 2003.)

Within students' education program, they may also encounter academic issues such as intrusive supervisors, difficulty in determining a research problem and topic as well as difficulties in obtaining legal permission to conduct the study (Alam, 2013). Institutional factors that affect students' completion of their dissertation include the availability of concurrence, guidance, funds, and physical facilities for the students (Safari et al., 2015). Factors related to the research supervisor, representative of the institution, include the nature of the student-supervisor relationship, supervisor's knowledge and interest in the area of study, regular contact between student and supervisor as well as provision of timely feedback (Yousefi et al., 2015). Matin and Khan (2017) state that students not having adequate discussions with supervisors on a regular basis can affect their completion of postgraduate research. Apart from this, the research environment, peer support, and facilities available are some of the environmental factors that affect postgraduate students' completion of research studies.

Utilizing the prevailing data from the Information Technology Support (ITS) office of all Doctor of Education in Educational Administration (EdD EdAd) students enrolled in dissertation writing for academic year 2023-2024 and summer term of 2024, this study was guided by the following interrogatives: 1. What are the dissertation writing trends in terms of the following? 1.1 enrolment status; 1.2 enrolment gaps; 1.3 transition from passing the comprehensive exam to Dissertation Writing 1; 1.4 transition from DW 1 to DW2; 2. Based on the trends, what inputs to student academic support can be identified? Having found these have aided in determining the critical factors to address in the subsequent phase of this study.

2. Review of Literature

Claimed by Akyürek and Afacan (2018) in Wanasinghe, (2020), graduate education requires an extensive learning process where learners follow cerebral courses, conduct research and write a dissertation. Conducting a research study is a daunting work in which students bring with them an in-depth knowledge in the related field and plan the study according to a relevant research method and design (Qasem & Zayid, 2019). The final output of the research study is expected to reflect originality, critical and independent thinking, and integrates rigorous and robust documentation through a well-prepared structure (Matin & Khan, 2017). Completion of a postgraduate dissertation is influenced by different factors which include those related to the student (such as personal issues and level of academic competency) and those of the institution. For teachers, obtaining a bachelor's degree represents an important turning point in their academic careers and is unquestionably a positive step forward. Even while earning a bachelor's degree is an impressive accomplishment, it frequently is not enough to make the most impact on student's lives. Thus, upgrading themselves through enrollment in graduate programs equips them with an advanced technical understanding of their subject matter (Patulin, 2023).

3. Methodology

Trend analysis was applied as a method of collecting data wherein it utilizes historical data as well as current data sets (<https://www.quantilope.com/1/29/24>) to determine how the research subjects behave and how institutions react. Trend analysis focuses on institutional trends over a period of time and can be used as an ongoing resource to keep ahead of curriculum changes. To determine the trend of the current enrollees in Dissertation Writing, data were taken from the enrolment record of the identified subjects from having passed the comprehensive examination to their entry enrolment in Dissertation Writing 1 onwards up to their eventual completion of the degree. In terms of identifying who will be included in the study, the EdD-EdAd students who are enrolled in Dissertation Writing 1 and Dissertation Writing 2 for the first, second and summer terms of the school year 2022-2023 and 2023-2024.

4. Results and Discussion

This section discusses the findings of the study, particularly on the dissertation writing trends concerning students enrolled in Dissertation Writing 1 and Dissertation Writing 2.

Dissertation Writing Trends - The dissertation writing trends are based on the enrolment records of the EdD-EdAd students in Dissertation Writing 1 (DW 1) and Dissertation Writing 2 (DW 2) from the time they enrolled in these subjects up to the current enrolment while the study was conducted, that is Summer Term of SY 2022-2023. Dissertation writing trends discusses the enrolment status, enrolment gaps, transition from passing the comprehensive examinations to dissertation writing 1, and transition from DW 1 to DW 2.

Enrolment Status - There are fifteen (15) EdD-EdAd students traced as actively enrolled in dissertation writing for the last two school years, including summer of SY 2023-24 when the study was conducted. Thirteen (13) of these students are on their Dissertation Writing 1 while two (2) of them are already enrolled in Dissertation Writing 2. Meaning, these students enrolled in DW2 have already gone through proposal hearing and final writing of the revised proposal based on the suggestions of the panel members and got the go signal for the collection of data. From the thirteen students identified as having Dissertation Writing 1, three of them are currently enrolled in summer for SY 2023-2024 while the other 12 have stopped enrolling DW 1 in the previous 2nd semester or in the first semester of SY 2023-2024. Meanwhile, the two identified DW 2 students did not enrol in summer of SY 2023-2024. The specific data on enrolment status are provided in Table 1.

Enrolment Gaps - Based on the discussion about the enrolment status of the EdD-EdAd students, it could be said that there are enrolment gaps identified among those taking DW 1 and DW 2 subjects. In Table 2, it is specifically shown that out of the 13 students taking DW1, eight (8) of them have enrolled the subject within the range of 1 to 5 academic terms, none was found as having enrolled within the range of 6 to 10 academic terms,

one (1) enrolled for 15 academic terms, three (3) have enrolled for number of academic terms within the range of 16-20, and one of them have enrolled for 21 academic terms.

Table 1*Enrolment Distribution of the EdD-EdAd DW Students*

Dissertation Writing Subjects	Number of Enrolees	Percentage Distribution
Dissertation Writing 1	13	86.67 %
Dissertation Writing 2	2	13.33 %
Total	15	100%

The status of students found to have been enrolled in DW1 for already 5 to 21 academic terms is deemed alarming. This results need validation and be considered a priority in terms of conducting further studies to find out the reasons why these students are stagnating in dissertation writing by answering the questions: What are holding them to successfully write their dissertation proposals? What academic support do they need to continue and complete their dissertation proposals?

As regards to the number of academic terms that DW 1 students were noted to have stopped enrolling the subject, the data presented in Table 2, reveal that there are nine (9) of them who stopped enrolling DW1 ranging from 1-5 academic terms and 2 fall under the range 6-10. Meaning, they have stopped dissertation writing for certain number of academic terms. The most striking among the results is the prevalence of a DW1 student who stopped enrolling the subject for 31 academic terms already. The scholastic journey of these students, particularly in dissertation writing is worth reviewing so that they can be helped or appropriate academic support can be provided to them. Studying further this situation of Dissertation Writing 1 students will help findings ways such that their experiences will not happen or will be avoided to happen among next set of DW1 students.

Table 2*Enrolment Gaps among EdD-EdAd DW1 Students*

Dissertation Writing 1 Students (DW1S)	Actual Number of Terms Not Enrolled before DW1	Number of Terms Taken for DW1	Number of Terms Not Enrolled/Stopped Enrolling in DW1 (Enrolment Gaps)
DWS-1	0	3	2
DWS-2	0	21	3
DWS-3	0	15	3
DWS-4	25	2	0
DWS-5	1	18	6
DWS-6	1	5	31
DWS-7	0	16	4
DWS-8	1	3	5
DWS-9	0	1	1
DWS-10	0	3	1
DWS-11	20	2	9
DWS-12	0	3	1
DWS-13	0	19	5

As regards to the two identified students enrolled in Dissertation Writing 2, both are found to have enrolled in the subject for three academic terms already and one of them stopped enrolling the subject for five academic terms, as reflected in Table 3. Enrolment in Dissertation Writing 2 for 3 academic terms is also something that need attention because a particular student can possibly finish Dissertation Writing 2 within a semester, so the question is still on the reasons why the range of time spent to complete the dissertation is lengthened and why these students stopped dissertation writing for a while as could be gleaned from their enrolment data in Table 3.

Table 3*Enrolment Gaps among EdD-EdAd DW2 Students*

Dissertation Writing 2 Students (DW1S)	Actual Number of Terms Not Enrolled before DW2	Number of Terms Taken for DW2	Number of Terms Not Enrolled/Stopped Enrolling in DW2 (Enrolment Gaps)
DWS-1	0	3	1
DWS-2	1	3	5

5. Transition from Passing the Comprehensive Examinations to Dissertation Writing 1

This section discusses the enrolment status of the dissertation writing students, particularly after they have passed the comprehensive examinations up to the time they enrolled in Dissertation Writing 1. In this study, it is considered as the transition period from passing the Comprehensive Examinations to Dissertation Writing 1. Based on the data provided in Tables 2, it can be discussed that there are 61.54% or 8 out of 13 EdD-EdAd DW1 students who transitioned to DW1 immediately after passing the comprehensive examinations. Meaning, there was no enrolment gap found in the transition period among these students. Meanwhile, there were three (3) among them who stopped first for one academic term before enrolling in Dissertation Writing 1.

Transition from DW 1 to DW2 - In terms of transition from DW1 to DW2, this section highlights the discussion on the status of the dissertation writing students, particularly on their enrolment transition. One of the two students on DW2 immediately enrolled in the subject after finishing DW1 which is indicated by the successful proposal hearing with a rating of 75% and above, including the submission of the revised dissertation proposal based on the suggestions of the panel of examiners. The other one stopped first for one (1) academic term before proceeding or enrolling in DW2. There is the possibility that this happened because this student extended time in revising one's dissertation proposal after the proposal hearing. However, this is just a theory that needs validation as to the truth behind the delayed transition from DW1 to DW2. Hence, the need to conduct further investigation on this concern which again may turn into student's need for academic support in order to comply with academic requirements particularly, the revised dissertation proposal on time.

6. Conclusions and Recommendations

More than fifty percent of the dissertation writing students were found to have transitioned immediately from passing their comprehensive examinations to DW1 but were found stagnating while they are already writing their dissertation proposals. Hence, the recommendation to conduct further study to look into the reasons why they stagnate in order to identify and provide them the most suitable academic support. Fifty percent of the DW2 students were found to have transitioned immediately from DW1 without a trace of stopping one's scholastic journey, particularly in dissertation writing. However, fifty percent was found to have stopped for 5 consecutive academic terms in DW2. Hence, the recommendation to conduct a follow-up study to find out the reasons behind this finding with the end-in-view of providing the most needed academic support.

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Needs analysis on Barangay Singkamas, Makati City as potential adopted community of the College of Tourism and Hospitality Management of University of Makati: Basis for comprehensive community extension development plan

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ISSN: 2243-7703
Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25862

Abstract

This needs analysis examines Barangay Singkamas in Makati City to inform the development of community extension programs by the College of Tourism and Hospitality Management (CTHM) at the University of Makati. Singkamas is a densely populated urban area with a diverse demographic and economic profile, facing significant challenges and opportunities. Despite its historical and economic vibrancy, the barangay grapples with disparities and environmental issues, necessitating targeted interventions. Using a mixed-methods approach, the study combines quantitative surveys and qualitative interviews to assess the community's needs and available resources. Key findings indicate a strong demand for skill development programs, particularly in cooking and gardening. Respondents highlighted cooking skills, including bread and pastry making, and gardening for flower and vegetable production as essential for economic stability and community engagement. These skills are seen as avenues for income generation and fostering local cohesion. Capacity building programs were also identified as critical for both personal and community growth. Participants expressed interest in workshops that would enhance their vocational and entrepreneurial skills, enabling them to better navigate economic challenges. The study concludes that community extension initiatives must be tailored to address these specific needs, focusing on skill development in cooking, baking, and gardening, and emphasizing capacity building. By aligning the programs with local priorities, this approach aims to promote sustainable development and improve the overall well-being of Barangay Singkamas residents. The findings provide actionable insights for designing a comprehensive community extension development plan that is both context-specific and impactful.

Keywords: community extension, Barangay Singkamas, needs analysis, skill development, capacity-building, economic stability

Needs analysis on Barangay Singkamas, Makati City as potential adopted community of the College of Tourism and Hospitality Management of University of Makati: Basis for comprehensive community extension development plan

1. Introduction

Conducting a needs analysis for Barangay Singkamas in Makati City is important for creating effective community extension programs by the College of Tourism and Hospitality Management (CTHM) at the University of Makati. This analysis helps identify community needs, allowing for tailored and impactful interventions. Research shows that assessing local conditions is valuable in aligning programs with community priorities, which enhances their effectiveness and encourages community participation. Community needs assessments are essential for designing relevant extension programs, especially in urban areas like Barangay Singkamas. This area has diverse socio-economic backgrounds, this serves as a good example to study how targeted programs can influence local development and well-being. Academic institutions, like CTHM, play a key role in connecting academic knowledge with practical community service, aiming to meet local needs and promote sustainable practices. The success of these programs depends on a thorough understanding of the community's needs, available resources, and social dynamics.

Barangay Singkamas in Makati City, Metro Manila, is a busy urban area with a rich history, evolving from a rural community due to economic growth. Its name comes from the Tagalog word for jicama, symbolizing its agricultural roots. The barangay has over 30,000 diverse residents, facing challenges like economic disparities, job security, and pollution. Community programs are important to link academic institutions with local needs for better solutions. The College of Tourism and Hospitality Management (CTHM) at the University of Makati wants to enhance community well-being with specific services. However, there is a gap in understanding the unique needs of Barangay Singkamas, which is crucial for adapting programs effectively. Research shows that assessing local needs is important, but little analysis focuses on Barangay Singkamas. Most existing studies look at general urban issues and do not consider the specific economic and cultural traits of local areas like Singkamas. This lack of detailed information hinders CTHM's ability to customize its programs effectively.

Research Objectives - The researchers aim to conduct a needs analysis through an assessment of the possible Barangay for adaptation as a community of the college of tourism and hospitality management, in which the output will have an in-depth understanding of the current needs and situation that will result in proposing a comprehensive community extension program for the barangay. Specifically, the study aims to:

1. To determine the profile of the residents in the possible adapted Barangay of Singkamas in Makati City.
2. To conduct a Needs Assessment among the residents of the Barangay that will assess their skills, livelihood needs, capacity-building needs, literacy program, special service's needs, environmental needs, and issues facing by the family.
3. To understand the Barangay's most urgent needs through open discussions with key informants and how these needs affect the community's daily life.
4. To compare and analyze the responses of the participants in the specific needs assessment and to the open-ended discussion on in-depth discussion for needs assessment among key informants.
5. To produce a Comprehensive Community Extension Development Plan that are sustainable and innovative among the residents of the community.

Scope and Limitation of the Study - This study analyzed the needs of Barangay Singkamas to guide the

University of Makati's College of Tourism and Hospitality Management in developing community extension programs. It focused on identifying the barangay's specific needs, resources, and dynamics. As a densely populated urban area in Makati City, Barangay Singkamas reflects broader urban challenges. The study involved residents, local officials, community leaders, and organizations, ensuring diverse perspectives through representative data collection. This study focused exclusively on Barangay Singkamas, without extending to other areas in Makati City or Metro Manila. While relevant to similar urban communities, comparisons or generalizations were beyond its scope. Data collection was limited to a specific time frame, meaning changes outside this period were not considered. The study addressed general community needs and resources but did not explore specialized issues in depth unless they emerged as significant. Due to time, budget, and resource constraints, the research used cross-sectional data, providing a snapshot of the community's conditions at a given time.

2. Literature reviews

- Chavan, (2022) Needs assessments can be used to record what is going on with a group or with a specific population. A needs assessment is often done for a certain group, organization, or business to help the group do its mission better or be more productive
- Johnson & Lee, (2021). Organic plant production is increasingly recognized for its benefits in promoting environmental sustainability, improving food security, and supporting local economies
- Smith, (2021) Recent studies suggest that the growing popularity of artisanal and homemade baked goods presents opportunities for small-scale entrepreneurs to enter niche markets, capitalize on local ingredients, and cater to personalized consumer preferences.
- (Martinez, 2021). As consumers increasingly seek quality and artisanal food products, these skills offer opportunities to create value-added products that can be marketed locally and potentially beyond
- (Nguyen, 2021) Effective fish processing techniques, including deboning, enhance the value of fish products, reduce waste, and improve product quality. This skill is particularly relevant in coastal and fishing communities where maximizing the use of available resources is crucial for economic and food security
- (Perez, 2021) Vermicasting contributes to waste management and soil fertility improvement, aligning with global trends towards sustainable agricultural practices.

3. Research Methodology

A mixed-method approach was used for the study. This approach combined both quantitative and qualitative research techniques to provide a holistic understanding of the community's needs. It allowed for a comprehensive analysis by integrating numerical data with in-depth qualitative insights. The mixed-methods design was implemented in two main phases: quantitative data collection and qualitative data collection. The researchers believed that this was the most suitable type of research design for the needs assessment of the community or potential adapted community. The mixed-methods approach described was a "Sequential Explanatory Design," characterized by a specific sequence and integration of quantitative and qualitative data collection and analysis.

Quantitative Phase: This phase involved gathering numerical data through structured surveys or assessments, such as the frequency of interest in different livelihood skills, literacy programs, and environmental concerns. This data provided a broad overview of the community's needs and priorities. **Qualitative Phase:** Following the quantitative phase, qualitative data were collected through interviews, focus groups, or open-ended survey responses. This data delved deeper into the reasons behind the quantitative results, exploring the community's perceptions, motivations, and detailed explanations. **Combining Data:** The integration phase involved analyzing

how the qualitative findings explained or added depth to the quantitative results. This meant using qualitative insights to understand the context, reasons, and implications of the quantitative trends.

A total of 95 sample sizes was utilized in the research paper. The sample size of 95 is based on a statistical calculation designed to ensure that the findings are representative of the population while balancing precision and practicality. Moreover, conducting a needs analysis involves financial and time resources. A sample size of 95 is often chosen to fit within these constraints while still providing valuable insights. Larger sample sizes require more resources for data collection, processing, and analysis. For the qualitative phase, a total of 5 key informants were interviewed, focusing on local government officials, community leaders, and representatives from local organizations.

A stratified random sampling technique was used to ensure that the sample accurately reflected the demographic diversity of Barangay Singkamas. The barangay was divided into strata based on factors such as residential zones and socio-economic status. A random sample was then drawn from each stratum to achieve a representative sample of the population. Surveys were administered through face-to-face interviews and, where feasible, online platforms. Trained enumerators conducted the face-to-face interviews to ensure accurate data collection and to address any queries respondents might have. Face-to-face and online surveys were distributed to residents with internet access to maximize reach and efficiency. For the qualitative phase, purposive sampling was used to select participants for interviews and focus groups. Key informants were chosen based on their roles and involvement in the community, while focus group participants were selected to ensure diverse representation across age, gender, and socio-economic status. Interviews and focus groups were conducted in-person or via online platforms, depending on participant availability and accessibility. Each session was audio-recorded (with consent) and transcribed for analysis. The interview guides and discussion topics were developed based on preliminary findings from the quantitative phase and existing literature on community needs. A self-made questionnaire, based on related literature and studies, and the experiences of the researchers as extensionists, was used to formulate the questions. Surveys were administered through face-to-face interviews and, where feasible, online platforms. For the qualitative phase, a semi-structured interview guide was used, with questions formulated based on related literature and the researchers' experiences.

4. Results and Discussion

The Results and Discussion section provides a detailed analysis of the findings from the needs assessment conducted in Barangay Singkamas. This section synthesizes the data collected through both quantitative surveys and qualitative interviews to address the key research questions and objectives. It provides a comprehensive analysis of the community's specific needs, priorities, and resources, highlighting key patterns, trends, and insights.

Table 1
Hobbies of the Residents in Barangay Singkamas, Makati City

Capability Building Program	Frequency	Percentage
Personality Development	83	87%
Menu Planning	78	82%
Family Planning	75	79%
Disaster Risk Reduction Awareness	69	73%
Maternal Health & Baby Care	68	72%
First Aid Training	62	65%
Financial Management	58	61%
Rights of Solo Parents	52	55%
Social Media Etiquette and Awareness	50	53%
Environmental and Nature Conservation	49	52%

N = 95 total respondents

The needs analysis for Barangay Singkamas highlights preferences for capability-building programs via information education campaigns (IEC) and advocacy. Among 28 assessed programs, the top ten show strong

community interest in personal development, practical skills, and vital social issues. This data provides valuable insights into the most impactful areas for community development efforts. The highest interest among respondents is in personality development, with 83 expressing a desire to participate. This trend reflects a societal focus on personal growth and self-improvement. Personality development programs enhance self-awareness, communication skills, and confidence, which are vital for personal and professional success (Smith, 2021). These programs can improve interactions, leadership, and social effectiveness, fostering a cohesive and empowered community.

The interest in menu planning, with 78 respondents, highlights a practical need for skills that impact daily living and health. Effective menu planning helps maintain nutritional balance and manage finances. It aligns with research emphasizing nutrition education's role in promoting healthier eating habits and reducing financial stress (Johnson & Lee, 2021). Equipping residents with these skills can help families make informed food choices, improve their diet, and optimize grocery budgets. The interest in family planning, expressed by 75 respondents, highlights a critical community concern. Family planning programs offer essential information on reproductive health, contraception, and the impact of family size on personal and economic stability. Recent studies show family planning enhances maternal and child health, reduces unintended pregnancies, and improves overall quality of life (Perez, 2021). This interest indicates a need for accessible resources and support to help individuals make informed decisions about family growth and health.

The interest in disaster risk reduction (DRR) awareness, shown by 69 respondents, reflects a community's readiness to address natural hazards and emergencies. DRR programs are essential for equipping residents with the knowledge and strategies to prepare for, respond to, and recover from disasters. The literature emphasizes the role of DRR education in minimizing the impact of natural calamities and building community resilience (Nguyen, 2021). This interest highlights a proactive approach to improving community safety and preparedness. With 68 respondents indicating interest, maternal health, and baby care programs are a priority. These programs are vital for supporting mothers and infants during pregnancy, childbirth, and early childhood. Research highlights the importance of comprehensive health education in reducing infant mortality, promoting healthy parenting practices, and enhancing family well-being (Martinez, 2021). This interest underscores the need for programs offering valuable information and support to expectant and new parents.

First aid training, with 62 respondents showing interest, highlights a practical concern for emergency preparedness. First aid skills are crucial for providing immediate assistance in medical emergencies, significantly impacting health outcomes and safety. Research supports first aid training's effectiveness in reducing injury severity and improving survival rates (Smith, 2021). The program's popularity indicates a community desire to be equipped with essential life-saving skills. The interest in financial management among 58 respondents highlights a community desire to enhance personal financial literacy. Effective financial management is essential for economic stability and long-term financial health. Recent studies emphasize the significance of financial education in making informed decisions, managing debt, and planning for the future (Johnson & Lee, 2021). This interest points to a need for programs that offer practical skills in budgeting, saving, and investing.

The interest in the rights of solo parents, shown by 52 respondents, highlights the need for awareness and support for single-parent families. Programs focusing on legal rights and social support for solo parents can address their unique challenges. Literature underscores the importance of targeted support to improve the quality of life and access to resources for solo parents (Perez, 2021). This interest suggests a desire for community programs that empower and support single parents. With 50 respondents showing interest, social media etiquette and awareness highlight the increasing importance of digital communication in daily life. Proper social media use and understanding of online behavior implications are crucial for maintaining relationships and protecting privacy. Recent research emphasizes the need for digital literacy programs to navigate online interactions and safeguard personal information. (Nguyen, 2021). This program's inclusion indicates the community's need to adapt effectively to the digital age.

Lastly, the interest in environmental and nature conservation, shown by 49 respondents, highlights a commitment to sustainability and environmental stewardship. Conservation programs can raise awareness and encourage action to protect natural resources and promote sustainable practices. Research supports community-based conservation efforts in improving ecological health and fostering a culture of environmental responsibility (Martinez, 2021). This interest reflects a growing concern for environmental issues and a desire to participate in sustainability initiatives. Overall, the capability-building program preferences in Barangay Singkamas demonstrate a balanced interest in personal development, practical skills, and key social issues. These align with current trends that highlight personal growth, community resilience, and sustainable practices. Customizing community development programs to focus on these areas can boost individual capabilities while meeting essential community needs, fostering a more knowledgeable, empowered, and resilient community.

Table 4*Other Special Services Needed*

Special Services Needed	Frequency	Percentage
Feeding Program	69	73%
Dental and Medical Mission	54	57%
Blood Letting	52	55%
Planning Design on Water System	48	51%
Water Testing	43	45%

N = 95 total respondents

The needs analysis for Barangay Singkamas highlights the community's priorities for special services and programs through information education campaigns (IEC) and advocacy. The top choices among the options considered emphasize critical health and infrastructure needs, showing a strong community focus on improving health outcomes and ensuring access to essential services. The blood-letting program, with 52 respondents showing interest, underscores the community's need for blood donation and transfusion services. These programs are essential for maintaining a sufficient blood supply for medical emergencies and routine procedures. Recent studies highlight the effectiveness of community-based blood donation drives in ensuring a steady blood supply and raising awareness about voluntary blood donation (Nguyen, 2021). The program's popularity indicates a community readiness to support and engage in life-saving initiatives.

The interest in planning design for water systems, shown by 48 respondents, highlights a community concern for improving local water supply and management infrastructure. Effective water system planning ensures reliable access to clean water, vital for public health and well-being. Research emphasizes the importance of community involvement in addressing local needs and enhancing water quality and accessibility (Martinez, 2021). By focusing on water system design, the community can enhance infrastructure, ensure sustainability, and improve health outcomes. The interest in water testing, expressed by 43 respondents, highlights the need for safe and reliable water sources. Regular water testing is essential for detecting contaminants and ensuring water safety standards are met. Studies confirm that water quality testing is crucial for preventing waterborne diseases and safeguarding public health (Perez, 2021). This interest reflects a proactive approach to maintaining safe water supplies and mitigating health risks associated with water quality.

The data from Barangay Singkamas reveals a strong emphasis on health and infrastructure needs. The community prioritizes feeding programs, dental and medical missions, blood-letting initiatives, water system planning, and water testing, showcasing a comprehensive strategy to improve essential services and overall well-being. These priorities align with public health and community development trends, highlighting the need for accessible healthcare, effective nutrition programs, and robust infrastructure. Addressing these needs can enhance health outcomes, support sustainable practices, and improve the overall quality of life in Barangay Singkamas.

The needs assessment carried out for Barangay Singkamas offers important perspectives on the community's wishes regarding literacy programs via an Information Education Campaign (IEC) and advocacy. The findings

indicate specific interests in different educational offerings, highlighting an emphasis on practical abilities and technological skills. Recognizing these inclinations assists in customizing community development extension initiatives to effectively meet local demands and improve overall community competencies. The greatest interest lies in computer literacy programs, with 31 residents showing a willingness to take part. This inclination highlights an increasing acknowledgment of the significance of digital skills in today's technology-oriented society. Computer literacy is essential for obtaining information, engaging in the digital economy, and partaking in diverse educational and career endeavors. Recent research emphasizes the vital function of digital literacy in closing the digital gap and enhancing job prospects (Smith, 2021). In a time when digital skills are becoming more vital for achievement, offering computer literacy training can equip individuals with crucial abilities for personal and career growth.

Table 5
Literacy Program

Literacy Program	Frequency	Percentage
Computer Literacy (Basic and Advanced)	31	33%
Electrical Basics (Simple House Wiring)	18	19%
Basic Photography	14	15%
Tutorial (Math, Science, English, Filipino)	11	12%
Home Automation System	8	8%

N = 95 total respondents

Following this, the interest in a basic electrical program focused on simple house wiring, with 18 respondents, indicates a need for practical skills related to home maintenance and safety. Basic electrical skills are valuable for performing simple repairs and installations, which can enhance self-sufficiency and reduce dependence on professional services for minor issues. Research underscores the importance of vocational training in electrical skills for improving safety and ensuring proper handling of electrical systems (Johnson & Lee, 2021). This program can provide residents with the knowledge to address common electrical issues safely and effectively, contributing to home safety and personal competence.

Basic photography, with 14 respondents, reflects an interest in creative skills and the ability to capture and document important moments. Photography programs can foster artistic expression, provide opportunities for community engagement, and support local businesses and events through visual documentation. Recent literature highlights the value of creative skills in enhancing community participation and promoting local culture (Nguyen, 2021). Offering basic photography training can enrich residents' ability to engage in creative projects and capture community events, contributing to cultural and social vibrancy. The tutorial program, which includes Math, Science, English, and Filipino, with 11 respondents, shows a demand for academic support and educational enrichment. Educational tutorials can address learning gaps, support academic achievement, and enhance students' understanding of key subjects. Studies indicate that targeted educational support can improve academic performance and provide students with the tools needed for success in their studies (Martinez, 2021). By offering tutorials in these core subjects, the community can support students' educational needs and promote lifelong learning.

Table 6
Environmental Programs

Environmental Programs	Frequency	Percentage
Recycling	82	86%
Tree Planting Activity	79	83%
Solid Waste Management	74	78%
Flower and Vegetable Gardening	63	66%

N = 95 total respondents

The needs analysis for Barangay Singkamas provides insightful data on the community's preferences for environmental programs, as indicated by the responses to an Information Education Campaign (IEC) and

advocacy. The table reveals a clear prioritization of various environmental initiatives, reflecting the community's commitment to sustainable practices and environmental stewardship. The program preferences, ranked by frequency, offer valuable insights into the community's environmental concerns and aspirations. The most favored program is recycling, with 82 respondents expressing interest. This strong preference highlights a growing awareness of the importance of waste reduction and resource conservation. Recycling programs are essential for minimizing the volume of waste sent to landfills, conserving natural resources, and reducing environmental pollution. Recent studies emphasize the positive impact of recycling on reducing greenhouse gas emissions and conserving energy (Smith, 2021). The community's interest in recycling suggests a proactive approach to environmental management and a willingness to engage in practices that support sustainability.

Tree planting activities follow closely, with 79 respondents showing enthusiasm. Tree planting is a fundamental environmental activity that contributes to carbon sequestration, habitat creation, and overall ecosystem health. Literature underscores the benefits of tree planting for mitigating climate change, improving air quality, and enhancing biodiversity (Nguyen, 2021). The high level of interest in tree planting indicates a community commitment to improving local environmental conditions and fostering long-term ecological benefits. Solid waste management, with 74 respondents, reflects a significant concern for effective waste handling and disposal. Solid waste management programs are crucial for maintaining public health, preventing environmental contamination, and promoting sustainable waste practices. Research highlights the importance of comprehensive waste management systems in reducing pollution, managing waste effectively, and promoting recycling and composting (Johnson & Lee, 2021). The community's interest in solid waste management suggests a desire to address waste-related challenges and implement strategies for better waste management and environmental protection. Flower and vegetable gardening, with 63 respondents, indicates an interest in enhancing local green spaces and promoting self-sufficiency. Gardening programs can provide numerous benefits, including improving urban aesthetics, increasing local food production, and fostering community engagement. Recent literature points to the value of community gardening in promoting mental well-being, encouraging environmental stewardship, and providing fresh, nutritious food (Martinez, 2021). The community's interest in gardening suggests a commitment to greening the neighborhood and cultivating a more sustainable lifestyle through personal and communal gardening efforts.

In summary, the preferences for environmental programs in Barangay Singkamas reflect a strong commitment to sustainability and environmental stewardship. The high interest in recycling, tree planting, solid waste management, and gardening demonstrates a community-wide recognition of the importance of protecting and enhancing the local environment. By focusing on these areas, community development programs can effectively address environmental challenges, promote sustainable practices, and foster a more environmentally conscious and resilient community. Engaging in these activities not only contributes to ecological health but also enhances the quality of life for residents through improved environmental conditions and community cohesion.

Table 7
Problems Faced by The Family in Barangay Singkamas

Problems Faced by the Family in Barangay Singkamas	Frequency	Percentage
Insufficient Income to Cover Family Expenses	83	87%
Financial Support for Children's Education	79	83%
Unemployment	64	67%
Child Labor	37	39%

N = 95 total respondents

The needs analysis for Barangay Singkamas reveals critical issues faced by families, as identified through the Information Education Campaign (IEC) and advocacy. The data highlights several pressing problems, ranked by frequency, that provide a comprehensive view of the economic and social challenges within the community. Understanding these challenges is crucial for designing effective community development extension programs that address the specific needs of residents. The most frequently reported issue is insufficient income to cover family expenses, with 83 respondents indicating this as a major concern. This problem underscores the financial

strain faced by many families, which can impact their ability to meet basic needs such as food, housing, healthcare, and education. Research indicates that financial instability is a significant barrier to achieving economic security and improving quality of life (Smith, 2021). Families struggling with insufficient income often experience higher levels of stress, reduced access to essential services, and increased vulnerability to economic shocks. Addressing this issue through programs aimed at improving income stability, such as job training, financial literacy, and income-generating activities, could help alleviate these pressures and support economic resilience.

Financial support for children's education is the second most significant issue, with 79 respondents highlighting it as a concern. The cost of education can be a substantial burden for families, particularly in low-income communities where resources are limited. Research emphasizes the critical role of education in breaking the cycle of poverty and enhancing future opportunities for children (Johnson & Lee, 2021). When families lack the financial means to support their children's education, it can lead to higher dropout rates, reduced academic performance, and limited long-term prospects for young individuals. Programs that provide scholarships, educational grants, or subsidized learning materials can play a vital role in ensuring that children have access to quality education and can achieve their full potential. Unemployment is the third major issue, affecting 64 respondents. Unemployment poses significant challenges for families, including loss of income, increased financial stress, and reduced economic stability. The impact of unemployment extends beyond immediate financial concerns, affecting overall well-being, mental health, and family dynamics (Nguyen, 2021). Addressing unemployment through job creation programs, vocational training, and support for local businesses can help provide individuals with the skills and opportunities needed to secure stable employment and contribute to economic growth within the community.

Child labor, with 37 respondents noting it as a problem, highlights a serious concern regarding the exploitation and well-being of children. Child labor can have detrimental effects on children's health, development, and educational attainment. The research underscores the need for strong child protection measures and educational support to combat child labor and ensure that children can fully participate in their education and personal development (Martinez, 2021). Programs that focus on raising awareness about child labor, enforcing child labor laws, and providing support for affected families can help address this issue and promote a safer, more equitable environment for children.

In summary, the issues identified in Barangay Singkamas reflect a range of economic and social challenges faced by families. The high prevalence of insufficient income, financial support for education, unemployment, and child labor underscores the need for targeted community development programs that address these critical areas. By focusing on income stability, educational support, employment opportunities, and child protection, community development extension programs can effectively address the underlying causes of these issues, enhance family well-being, and contribute to overall community resilience and prosperity.

Table 8
Qualitative Insights of the Residents of Barangay Singkamas

Key Themes	Key Qualitative Descriptions	Summary of Key Qualitative Description
Skill Development in Cooking	Residents express a high interest in cooking skills, such as bread and pastries making, empanada and doughnut making, and fish deboning. These skills are seen as practical for generating income and improving family nutrition.	The demand for cooking skills reflects a desire for economic empowerment and improved dietary habits. These skills can create livelihood opportunities and enhance food security.
Gardening and Plant Production	Interest in gardening programs, including flower and vegetable gardening and organic plant production, is prominent. Gardening is valued for its potential to reduce food expenses and improve local aesthetics.	Gardening and plant production programs offer practical benefits such as reduced grocery costs, improved community green spaces, and potential income from selling produce.

Income Generation	There is a clear need for livelihood projects that provide opportunities for income generation. Cooking and gardening are seen as viable options for creating small businesses and supplementary income.	Livelihood projects focused on cooking and gardening are perceived as viable means to improve financial stability and self-sufficiency within the community.
Capacity Building Programs	Residents are interested in capacity-building programs that enhance their skills in cooking and gardening. These programs are seen as crucial for personal development and community enrichment.	Capacity building in cooking and gardening is viewed as essential for empowering residents, fostering personal growth, and strengthening community bonds through shared activities.
Community Engagement	Programs in cooking and gardening are believed to foster community engagement and cooperation. Collaborative projects can enhance social ties and create a supportive network for sharing skills and resources.	Engaging in cooking and gardening projects can strengthen community relationships, promote cooperation, and build a sense of collective achievement and support.

The needs assessment for Barangay Singkamas, particularly focusing on livelihood projects in cooking and gardening, along with capacity-building programs, reveals several pressing concerns and opportunities that are critical for community development. These insights underscore the importance of tailored programs that can address both immediate needs and long-term goals for residents.

4.9.1. Skill Development in Cooking emerges as a significant need, with many residents expressing a strong interest in acquiring cooking skills. Specific areas of interest include bread and pastries making, empanada and doughnut making, and fish deboning. These skills are not only valued for their potential to improve family nutrition but also for their practicality in generating income. Cooking skills can lead to the creation of small-scale food businesses, which provide supplementary income and economic opportunities. According to recent literature, skill development in culinary arts can enhance economic self-sufficiency and support local entrepreneurship (Smith, 2021). Programs that focus on these skills can empower residents to improve their financial stability and contribute to a more diverse local economy.

4.9.2. Gardening and Plant Production also rank highly among community interests. Residents are eager to engage in flower and vegetable gardening, as well as organic plant production. Gardening is seen as a way to reduce food expenses, enhance local aesthetics, and potentially generate income through the sale of produce. Research supports the benefits of gardening for reducing grocery costs, improving local environments, and fostering community cohesion (Nguyen, 2021). Implementing gardening programs can provide practical benefits, such as fresh produce for families and improved green spaces, while also offering opportunities for economic activity through agricultural ventures.

4.9.3. Income Generation through these livelihood projects is a key theme. There is a clear perception that cooking and gardening can serve as viable means of income generation. These activities offer residents practical ways to supplement their income and achieve greater financial stability. The potential for creating small businesses or selling homegrown produce can play a significant role in enhancing the economic resilience of families. Studies indicate that income-generating activities, particularly those that leverage local skills and resources, can effectively address financial challenges and improve overall well-being (Johnson & Lee, 2021).

4.9.4. Capacity-building programs are also highlighted as crucial. Residents recognize the value of programs that build their skills in cooking and gardening. These programs are seen not only as a means of personal development but also as a way to enrich the community. Capacity building can enhance individual competencies and contribute to collective community growth. According to recent research, capacity building is essential for fostering personal empowerment and strengthening community ties through shared knowledge and skills (Martinez, 2021).

4.9.5. Community engagement is another important aspect. Engaging in cooking and gardening projects is

believed to foster stronger social connections and collaborative efforts within the community. These activities can enhance social cohesion by creating opportunities for residents to work together, share resources, and support one another. Literature highlights the role of community projects in building social capital and promoting a sense of belonging and mutual support (Perez, 2021).

In summary, the needs identified in Barangay Singkamas reflect a strong interest in cooking and gardening as key areas for livelihood and capacity building. These programs are seen as vital for improving economic stability, personal development, and community engagement. By focusing on these areas, community development programs can address immediate needs, provide valuable skills, and foster a more resilient and cohesive community. Implementing targeted programs in cooking and gardening, alongside capacity-building initiatives, will help residents achieve greater self-sufficiency, enhance local economies, and strengthen community bonds.

4.10. Vertical triangulation - Vertical triangulation is a methodological approach that integrates both quantitative and qualitative data to provide a more comprehensive understanding of a research problem. In the context of a community extension development plan for Barangay Singkamas, combining quantitative and qualitative findings allows for a richer, more nuanced analysis. Below is a sample vertical triangulation output that combines the results from both quantitative and qualitative discussions for the research paper.

4.10.1. Livelihood Skills Training Program: Cooking and Gardening

Quantitative Findings:

- **Cooking Skills:** High interest in bread and pastries making (74 respondents), followed by organic plant production (73 respondents).
- **Gardening:** Strong interest in flower and vegetable gardening (63 respondents).

Qualitative Insights:

- **Cooking Skills:** Residents expressed a strong desire to enhance their culinary skills for better nutrition and income generation. They see cooking not only as a personal skill but as a potential business opportunity. Community members believe that improved cooking skills can lead to the establishment of small-scale food businesses, which can provide supplementary income.
- **Gardening:** Participants indicated that gardening could significantly reduce food expenses and enhance local aesthetics. Gardening is perceived as a means to contribute to the community's environmental health while offering economic opportunities through the sale of homegrown produce.

Combined Analysis: The quantitative data highlights a clear preference for cooking and gardening skills, which is corroborated by qualitative feedback that emphasizes both personal and economic benefits. The integration of these findings suggests that community programs should focus on practical cooking workshops and comprehensive gardening training to meet the expressed needs.

4.10.2. Capacity Building Programs: Menu Planning and Personality Development

Quantitative Findings:

- **Menu Planning:** High interest in learning about menu planning (78 respondents).
- **Personality Development:** Strong demand for personality development programs (83 respondents).

Qualitative Insights:

- **Menu Planning:** Residents see menu planning as crucial for managing food expenses and improving family nutrition. They are interested in practical skills that can help them make informed food choices and manage household budgets more effectively.
- **Personality Development:** The qualitative data reveals a strong desire for personal growth and enhanced communication skills. Residents believe that improving their personality and self-management skills will benefit both their personal and professional lives.

Combined Analysis: The quantitative data on high interest in menu planning and personality development aligns with qualitative descriptions of their importance for personal and economic development. This suggests that the community development plan should include targeted workshops in both areas to address these needs comprehensively.

4.10.3. Literacy Programs: Computer Literacy and Basic Computation

Quantitative Findings:

- **Computer Literacy:** Notable interest (31 respondents).
- **Basic Computation:** Moderate interest (11 respondents).

Qualitative Insights:

- **Computer Literacy:** Residents recognize the importance of computer skills for personal development and business operations. They seek practical training to enhance their digital skills, which are essential for modern-day tasks and job opportunities.
- **Basic Computation:** There is a need for basic financial management skills to support personal and business finances. Residents expressed that improved computation skills are vital for better budgeting and financial planning.

Combined Analysis: The data reflects a clear need for computer literacy and basic financial skills, with qualitative feedback underscoring the importance of these skills for both personal and business contexts. Integrating these insights, the extension plan should include robust training modules in computer literacy and basic computation to address these needs effectively.

4.10.4. Environmental Programs: Recycling and Solid Waste Management

Quantitative Findings:

- **Recycling:** High interest (82 respondents).
- **Solid Waste Management:** Notable interest (74 respondents).

Qualitative Insights:

- **Recycling:** Residents are highly motivated to engage in recycling programs as they recognize the

environmental and health benefits. They are interested in learning more about effective recycling practices and waste reduction techniques.

- **Solid Waste Management:** The community is keen on improving waste management practices, which they believe will enhance local cleanliness and sustainability.

Combined Analysis: Both quantitative data and qualitative feedback emphasize a strong interest in environmental programs. This suggests that implementing comprehensive recycling and solid waste management initiatives will meet the community's needs and support environmental sustainability goals.

4.10.5. Family Issues: Financial Support and Unemployment

Quantitative Findings:

- **Insufficient Income:** High frequency (83 respondents).
- **Financial Support for Education:** Significant concern (79 respondents).
- **Unemployment:** Notable issue (64 respondents).

Qualitative Insights:

- **Insufficient Income:** Residents struggle with managing their finances and covering basic expenses, which affects their overall quality of life. There is a significant need for programs that can provide financial support and income-generating opportunities.
- **Financial Support for Education:** The high demand for financial support for children's education reflects the community's concern about educational accessibility and the long-term impact on their children's future.
- **Unemployment:** Unemployment is a major issue impacting the community's economic stability. Residents are seeking solutions that can provide job opportunities and skill development.

Combined Analysis: The quantitative data highlighting financial insufficiency, educational support needs, and unemployment aligns with qualitative insights into the community's financial struggles. Addressing these issues through targeted livelihood programs and support initiatives will be crucial for improving economic stability and educational outcomes.

5. Conclusion

In summarizing the insights gathered through both quantitative and qualitative analyses, this conclusion encapsulates the key findings of the needs assessment for Barangay Singkamas and offers actionable recommendations designed to address the identified gaps and enhance community development.

5.1 Livelihood Skills and Training Program - The needs analysis reveals a strong interest among Barangay Singkamas residents in various livelihood skills, particularly in cooking and gardening. A significant majority expressed a desire to engage in training programs related to food preparation and gardening. The data shows that the most popular programs include bread and pastry making, producing organic plants, and various food processing techniques such as making ham and empanadas. There is a high demand for training in homemade and processed food production, indicating a community interest in enhancing culinary skills and starting small food

businesses. This interest aligns with the residents' current skills in cooking and food preparation, suggesting that such programs would be well-received and could lead to successful income-generating ventures. In addition, The high level of interest in gardening, including flower and vegetable cultivation, points to a need for programs that enhance these existing skills. The popularity of gardening programs reflects an awareness of the benefits of homegrown produce and sustainable practices.

5.2 Skills Equipped. The results indicate that the residents of Barangay Singkamas are already equipped with substantial skills in cooking, sewing, and gardening. This existing skill set provides a solid foundation for further development and specialization in these areas. With a majority of residents possessing skills in cooking and sewing, there is an opportunity to build on these strengths by offering advanced training or certification programs that could lead to small business opportunities or professional development. The current knowledge in gardening suggests a well-established interest in sustainable practices. Leveraging this knowledge through more advanced gardening techniques or community garden projects can enhance food security and community cohesion.

5.3 Capacity Building Program. The needs analysis highlights the importance of capacity-building programs, particularly in menu planning, personality development, and disaster risk management. These areas address critical needs for personal and community development. Effective menu planning skills are essential for improving nutrition and managing household resources efficiently. Residents have shown interest in learning how to create balanced meal plans. In addition, personality development is crucial for personal growth and professional advancement. The desire for such programs indicates a community commitment to enhancing individual skills and confidence. Further, given the vulnerability to natural disasters, training in disaster risk management is essential for improving community preparedness and resilience.

5.4 Other Special Services Needed. The community's interest in additional services such as feeding programs, dental and medical missions, and blood-letting programs reflects a need for health and nutrition support. There is a clear need for feeding programs to address food security and nutritional deficiencies, demand for medical and dental missions indicates gaps in access to healthcare services, and Blood-letting programs are needed to support local blood banks and healthcare facilities.

5.5 Literacy Program. The analysis shows a need for literacy programs focusing on computer skills and basic computation for business purposes. With the increasing reliance on technology, computer literacy is essential for personal and professional development. Residents need training to enhance their digital skills. Basic computation skills are crucial for managing personal finances and small businesses effectively.

5.6 Environmental Programs. The community has expressed a need for environmental programs focused on recycling, solid waste management, and gardening. Effective recycling and waste management programs are necessary to address waste disposal issues and environmental sustainability. In addition, promoting flower and vegetable gardening supports environmental conservation and provides residents with the means to grow their produce. The needs analysis for Barangay Singkamas indicates a strong demand for livelihood programs in cooking and gardening, capacity-building initiatives in menu planning and personality development, and critical literacy programs in computer skills and basic computation. Additionally, there is a need for special services such as feeding programs and medical missions, as well as environmental programs focusing on recycling and waste management. Addressing these needs through targeted community development programs will enhance residents' quality of life, support economic development, and promote environmental sustainability.

On qualitative discussion, the needs assessment for Barangay Singkamas highlights a strong community interest in cooking and gardening, reflecting a significant opportunity for developing livelihood projects that enhance both personal and economic well-being. Implementing targeted capacity-building programs and income-generating activities in these areas will not only improve financial stability but also foster greater community cohesion and resilience.

On vertical triangulation output, quantitative data highlights a significant demand for livelihood training in cooking, gardening, and related skills. Community members expressed a strong interest in acquiring practical skills that can lead to economic opportunities, such as bread and pastry making, gardening, and various capacity-building programs. The data identified specific areas of concern, including the need for capacity building in personality development and menu planning, literacy programs focusing on computer skills and basic business computation, and environmental programs addressing recycling and solid waste management. Qualitative data provides deeper insights into the reasons behind the quantitative results. Community members expressed that cooking and gardening skills are seen not only as a means to improve household nutrition and reduce expenses but also as potential sources of income. Capacity-building programs are valued for their role in personal and professional development, while environmental programs are critical for improving local sustainability and health. Qualitative responses reveal that these needs directly affect daily lives, with financial instability, lack of educational support, and inadequate disaster preparedness being major concerns. The qualitative data underscores the importance of addressing these issues to enhance overall community well-being.

6. Recommendation

Based on the comprehensive analysis of the needs assessment data, the following recommendations are proposed to address the identified issues and leverage opportunities for community development in Barangay Singkamas. These recommendations aim to enhance livelihood opportunities, support capacity building, improve literacy and technical skills, and promote environmental sustainability.

6.1. Livelihood Skills Training Program. Focus on expanding and deepening training programs in food preparation and gardening, utilizing the community's existing skills and interests to create opportunities for income generation and personal growth. Given the high level of interest in cooking, food processing, and gardening, it is crucial to tailor the livelihood skills training program to these areas. The community's established skills in these fields suggest a robust foundation on which to build. Specifically: (1) **Cooking and Food Processing** - Implement advanced workshops in bread and pastry making, homemade and processed foods, and related culinary skills. These programs should include hands-on training and business management components to help participants translate their skills into viable income-generating ventures. Collaborate with local chefs and culinary experts to provide high-quality instruction and ensure that participants gain practical experience. (2) **Gardening:** Since many residents are already engaged in gardening, offering advanced training on topics like organic farming, sustainable practices, and innovative gardening techniques will enhance their capabilities. Establish community gardens or cooperative gardening projects to allow participants to apply their skills in a real-world context and benefit from shared resources.

6.2. Skills Currently Equipped. Leverage existing community skills in cooking, sewing, and gardening by offering advanced training and certification programs to further develop these abilities and create new opportunities for residents. Residents of Barangay Singkamas possess notable skills in cooking, sewing, and gardening, providing a strong foundation for advanced training and professional development: (1) **Cooking and Sewing:** Offer specialized courses and certification programs to enhance residents' cooking and sewing skills. These programs can focus on advanced techniques, quality control, and business management, preparing participants for potential small-scale enterprises or freelance opportunities. Additionally, consider providing platforms for showcasing and selling their products, such as local markets or online platforms. (2) **Gardening:** Enhance existing gardening skills by introducing advanced horticultural techniques and sustainable practices. Provide opportunities for residents to participate in community gardening projects, allowing them to apply their skills practically while fostering community engagement.

6.3. Capacity-building Program. Develop and implement comprehensive capacity-building programs in menu planning, personality development, and disaster risk management to enhance personal skills and community resilience. Capacity building is essential for personal and community development. The following areas are critical for enhancing the residents' skills and resilience: (1) **Menu Planning:** Design workshops that focus on balanced

nutrition, cost-effective meal planning, and meal preparation. These programs should aim to improve dietary habits and financial management related to food expenses, benefiting both individual households and the community as a whole. (2) **Personality Development:** Offer training programs that focus on personal growth, communication skills, and professional development. These programs can help residents build confidence, improve interpersonal skills, and enhance their employability. (3) **Disaster Risk Management:** Implement training sessions on disaster preparedness, risk assessment, and response strategies. Given the vulnerability to natural disasters, equipping residents with these skills is vital for improving community resilience and safety.

6.4. Other Special Services Needed. Address critical health and social needs through targeted services such as feeding programs, medical and dental missions, and blood-letting programs to improve the well-being of residents. The need for additional services highlights significant gaps in health and social support: (1) **Feeding Programs:** Implement regular feeding programs to address food insecurity and nutritional needs. Collaborate with local organizations and businesses to provide nutritious meals and support for vulnerable populations; (2) **Medical and Dental Missions:** Organize periodic medical and dental missions to provide essential health services to residents. These missions can help bridge gaps in access to healthcare and address common health issues within the community (3) **Blood-Letting Programs:** Coordinate with blood banks and healthcare providers to organize blood-letting drives. These programs are crucial for supporting local healthcare facilities and ensuring a steady supply of blood for emergencies.

6.5. Literacy Programs Needed. Enhance literacy and technical skills through computer literacy programs and basic computation courses to support personal and business development. Improving literacy and technical skills is essential for personal and professional advancement: (1) **Computer Literacy:** Develop computer literacy programs that cover basic skills, software applications, and internet usage. These programs should be accessible to all residents, with a focus on practical applications relevant to daily life and business; (2) **Basic Computation:** Offer courses in basic computation to help residents manage finances, run small businesses, and improve overall financial literacy. These programs should include practical exercises and real-world scenarios to enhance learning.

6.6. Environmental Programs Needed. Implement environmental programs focused on recycling, solid waste management, and community gardening to promote sustainability and improve environmental practices. Addressing environmental concerns is crucial for promoting sustainability and improving community health: (1) **Recycling and Waste Management:** Develop and implement recycling programs and solid waste management initiatives. Educate residents on waste segregation, recycling practices, and the environmental benefits of proper waste management. Provide necessary infrastructure, such as recycling bins and waste collection services; (2) **Community Gardening:** Support community gardening projects to enhance green spaces, promote sustainable practices, and provide residents with the means to grow their produce. This initiative can also serve as an educational tool for teaching environmental stewardship and sustainable living.

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Strengthening baptismal and Eucharistic beliefs and practices towards fully developed faithful

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ISSN: 2243-7703

Online ISSN: 2243-7711

OPEN ACCESS

Received: 30 December 2024

Revised: 27 January 2025

Accepted: 15 February 2025

Available Online: 20 February 2025

DOI: 10.5861/ijrse.2025.25863

Abstract

The Sacraments of Baptism and Holy Eucharist initiated Christianity in the Philippines, providing Filipinos with a foundation to commemorate five centuries of the faith's presence and its reinforcement of people's devotion to God. However, technological progress and societal modernization have led to notable transformations in various facets of Filipino Catholics' lives, impacting their spiritual practices. This study aims to revisit the Baptismal and Eucharistic beliefs and practices of college students at Sta. Teresa College, Bauan, Batangas, to help strengthen their faith towards becoming fully developed faithful. The findings reveal that students hold strong Baptismal beliefs, as indicated by a high composite mean. However, their baptismal practices are observed to a moderate extent. Similarly, another high composite mean reflects their strong Eucharistic beliefs, while a moderate composite mean indicates a moderate level of engagement in Eucharistic practices. The study concludes that students' Baptismal and Eucharistic beliefs significantly influence their respective practices. Additionally, Catholic students face issues such as societal expectations and their behavior during Holy Mass. Addressing these issues through targeted religious education and community involvement can enhance the alignment of their beliefs and practices, fostering a more committed and spiritually mature Catholic student community.

Keywords: baptismal, beliefs, Eucharist, practices, sacrament

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1. Introduction

The Sacraments of Baptism and Holy Eucharist marked the beginning of Christianity in the Philippines. This gift gave Filipinos the reason to celebrate the fifth centenary of the coming of Christianity on how it strengthens the faith of the people to God. However, due to technological advancements and modernization, significant changes have been occurring in different aspects of Catholic Filipinos' lives including their faith-life. It has been pointed out by the National Catechetical Directory for the Philippines (NCDP, 2007) that there exists a gap between faith and life among Filipino Catholics. The emerging crises among many Filipino Catholics in knowing, understanding, and practicing their faith is alarming (Roche, 2004). Cornelio (2013) expressed the same sentiments when he observed that some of the Catholic youth are not faithfully going to Church on Sundays, while others profess being religious but do not truly understand what they believe in.

The sacredness of the Sacrament of Baptism has been given high regard by the Filipino Catholics. Asis (2016, p.92) noted that it is one of the popular social occasions in Philippine society and has been given importance by many Filipinos, however, "there is disparity between the authentic Theology of Baptism, as a call to a new life in Christ and the actual way by which the sacrament is understood and practiced in the Philippines today". He also cited that many families are preoccupied with meal preparations and selecting godparents instead of receiving seriously the religious instructions on Baptism (Asis, 2016). As stated by the Catechism of the Catholic Church "the Sacrament of Baptism is the basis of the whole Christian life, the gateway to life in the Spirit, and the door which gives access to the other sacraments" (CCC, #1213, p.293) which should be well understood by the baptized Filipino Catholics to live out authentically his/her faith. However, "most Filipino Catholics have a general idea of Baptism, but little interest in how it works. Nor, despite the catechesis or religious instruction they may have received, do they have any clear idea of what Baptism has to do with their ordinary lives, even in their spiritual lives" (CFC, #1596, p. 455). Asis (2016) pointed out that there is a greater need for the Filipino Catholics to better understand this sacrament to encourage them to participate more not only in the Baptismal Rite but also in those other sacraments that nurture Christian life.

As baptized Filipino Catholics, celebrating the Sacrament of the Holy Eucharist is one of the important sacraments that one must attend to. Faithfully attending this sacred celebration helps an individual to deepen his / her relationship with God and to realize the importance and true essence of the sacrament in his / her life. "The Holy Eucharist has been defined and explained well by the different teachings of the Church; however, its meaning was not fully comprehended well by some Filipino Catholics" (Abante, 2021, p.1). According to Catechism for the Filipino Catholics (CFC, #1197, p.77), many of them believe that attending the Holy Eucharist is the most basic action of worship however, "only few have the chance to consider all the incredibly rich meanings and values of the Eucharist" and "frequently lack proper understanding of the Eucharist" (CFC, #1671, p. 479). Moreover, CFC (1997) cited that "despite the deep faith of parishioners, Filipino Catholics are often quite vague or confused about how the Mass can link them with Christ and to worship God" (#1671, p. 479).

Conversely, a 2023 report by the Social Weather Stations (SWS) revealed that only 38% of Filipinos attend religious services weekly. This decline suggests a waning engagement with the Eucharist, central to Catholic worship (Cabico, 2023). Also, the pandemic has disrupted traditional religious gatherings, including Mass attendance. While many Filipinos adapted by observing services online, the shift has affected communal participation in the Eucharist (Malolos et al., 2021). With the celebration of the 500 Years of Christianity in the Philippines, the given context led this study to revisit the Baptismal and Eucharistic beliefs and practices of the college students in Sta. Teresa College, Bauan, Batangas.

2. Citations

2.1 *The Sacrament of Baptism*

The Sacrament of Baptism is the first sacrament a Filipino Catholic received and the key to receive other sacraments. It is one of the Sacraments of Initiation, together with the Sacrament of Confirmation and the Holy Eucharist. “The faithful are born anew by Baptism, strengthened by the Sacrament of Confirmation, and receive in the Eucharist the food of eternal life” (CCC, #1212, p. 293). Receiving this “Sacrament of Baptism is not just a one-time event” (de Mesa and Cacho, 2012, p.99) but a life-long process because it entails every baptized Filipino Catholic with a certain mission. de Mesa and Cacho (2012) emphasized that this sacrament “is a life-time commitment to Christ; a discipleship that embraces a lifestyle patterned in Jesus’ Spirit” (p.99).

The Sacrament of Baptism uses signs and symbols which convey many mysterious things to the one being baptized (de Guzman and Panganiban, 2017). Through this sacrament, the baptized Catholics are “freed from sin and reborn as sons of God; become members of Christ, are incorporated into the Church and made sharers in Her mission” (CCC, #1213, p. 293). Jesus was baptized by John the Baptist at the Jordan River (Mt 3:13–17; Mk 1:9–11; Jn 1:32–34) which signifies Jesus’ deep sense of identity, “uniquely related to God his Abba in a profoundly special way. This divine endorsement prepared Jesus for mission” (Asis, 2016, p.94). To baptized Catholics, they too were anointed for a mission “to be a priest by living a life of prayer; to be a prophet by announcing the Word of God; and to be king to live with integrity” (de Guzman and Panganiban, 2017, p. 110).

2.2 *The Sacrament of Holy Eucharist*

The Sacrament of the Holy Eucharist is the “centerpiece of the seven ritual sacraments” (CFC, 1665, p. 477) and the “source and summit of the whole Christian life” (CCC, 1324, p. 313). Jesus instituted the eucharistic sacrifice of His body and blood to perpetuate the sacrifice of the Cross throughout the centuries (Sacrosanctum Concilium, 47). “Jesus is present as Man and God in the Eucharist consecrated during every Mass” (de Guzman and Panganiban, 2017, p. 132) and through this Eucharistic celebration, the faithful became “united with the heavenly liturgy and anticipate eternal life” (CCC, 1326, p. 314). According to de Mesa and Cacho (2012), this sacrament is a celebration of the faithful’s gratitude to the graciousness of God which Jesus personified because God’s unconditional love never dies. Jesus said, “I am the living bread that came down out of heaven; if anyone eats from this bread, he will live forever; and the bread which I will give for the life of the world also is My flesh” (John 6:51).

The Catechism of the Catholic Church (CCC, 1348) stated that “Christians come together in one place for the Eucharistic assembly” (p.319). As members of the Body of Christ, it is not sufficient for Christians to be physically present but rather, he/she should participate well by reverently hearing the Word of God and sharing in the mind of the church as he/she worships (Dulles, 2004). Moreover, the Sacrosanctum Concilium reminded the faithful of the earnest desire of the Mother Church that the “faithful should be led to that fully conscious, and active participation in liturgical celebrations which is demanded by the very nature of the liturgy” (SC, 14).

The study aimed to propose plan of activities to deepen spiritual understanding and cultivate active discipleship. Specifically, the researchers sought answers to the following questions:

- What is the extent of the students' Baptismal and Eucharistic beliefs and practices?
- Is there a significant relationship between the students’ Baptismal and Eucharistic beliefs and practices?
- What are the issues and concerns of students as Catholics?
- Based on the analysis, what plan of activities may be proposed?

3. Tables and figures

The following tables show the results derived from the questionnaire administered in Sta. Teresa College, College Department in Bauan, Batangas. The tables provide the summative data of the students' extent of beliefs and practices regarding Sacraments of Baptism and Holy Eucharist. Table 1 shows that the composite mean establishes the student-respondents' average responses on the extent of their Baptismal Beliefs. Thus, if the composite mean is higher, the positive response is stronger.

The students' response got the composite mean of 3.57 which affirms that their Baptismal Beliefs is to a great extent. This suggests a strong foundational understanding and commitment to baptismal doctrines, emphasizing its importance as a sacrament of initiation and a gateway to spiritual life. The student-respondents also believed to a great extent that this sacrament is a life-time mission and a commitment to Jesus which got the highest weighted mean of 3.97. It indicates that they believe that they have duties and responsibilities as Christians in fulfilling their mission as part of the Church. This is relative to the statement of de Mesa and Cacho that receiving the Sacrament of Baptism is a life-long process and it entails every baptized Filipino Catholic with a certain mission. With a weighted mean of 3.87, students affirm that they also believe that the signs and symbols in the Sacrament of Baptism have deeper meanings. They believe that the baptismal water, candles, white cloth, and other materials are sacred. Having received this sacrament, they also believed to a great extent that it took away their original sins which got a weighted mean of 3.81. The student-respondents' beliefs on Baptism show good responses. Such results are different with the observation of Asis (2016) who claimed that there is disparity between the authentic Theology of Baptism and the actual way by which the sacrament is understood. As cited in CCC (#1596), most of the Filipino Catholics might have a general idea of what Baptism is but they have little interest in how the sacrament works.

Table 1

The Students' Extent of Baptismal Beliefs

Baptismal Beliefs <i>I believe that...</i>	Weighted Mean	Verbal Interpretation
the Sacrament of Baptism is a life-time mission and commitment to Jesus.	3.97	Great Extent
the signs and symbols in the Sacrament of Baptism have deeper meanings.	3.87	Great Extent
the Sacrament of Baptism takes away the original sins.	3.81	Great Extent
the Sacrament of Baptism is the gateway to life in the Spirit, and the door which gives access to the other sacraments.	3.79	Great Extent
the Sacrament of Baptism unites us with the other members of Christ's Body, the Church.	3.79	Great Extent
the Church is the baptized people forming the Christian community.	3.77	Great Extent
the Sacrament of Baptism is a one-time event.	3.76	Great Extent
I still need to study further the catechesis on the Sacrament of Baptism to better understand its meaning and importance.	3.70	Great Extent
I have an in-depth understanding of the Sacrament of Baptism.	3.28	Moderate Extent
COMPOSITE MEAN:	3.57	Great Extent

On the other hand, the students agree that the need to study further the catechesis on the Sacrament of Baptism to better understand its meaning and importance is to a great extent with a weighted mean of 3.70. This shows a recognition of the complexity of the sacrament and a desire for continued learning. Furthermore, the result implies that while students have a basic understanding, they acknowledge the complexity of the sacrament and desire a more comprehensive grasp of its theological and spiritual significance. Kang & Velliari argued that ongoing religious education is crucial for the development of a nuanced understanding of sacraments. They stressed that continuous catechesis helps believers to internalize and live out the teachings of their faith more effectively. O'Connell found that students who engaged in lifelong religious education had a more profound understanding of their faith's rituals and were better equipped to articulate the significance of sacraments like Baptism.

The students affirm that they have an in-depth understanding of the Sacrament of Baptism which garnered a weighted mean of 3.28. The moderate mean score suggests that students feel they have a basic understanding of the Sacrament of Baptism but recognize that their knowledge is not comprehensive. This indicates a gap in detailed theological education. It means that while students believe they possess basic knowledge, their understanding is not sufficiently comprehensive. It implies that there is room for improvement in the depth and quality of religious education being provided. The result is relevant to the findings of McGrath which emphasized the need for deeper catechetical instruction in religious education to ensure that students move beyond surface-level understanding to grasp the full theological and spiritual implications of sacraments. Consequently, Brennan & Leach found that students with more in-depth religious education demonstrated a better understanding of sacraments and were more likely to engage with their faith communities actively.

Table 2

Students' Extent of Baptismal Practices

Baptismal Practices <i>As baptized Catholic, I...</i>	Weighted Mean	Verbal Interpretation
live a life of prayer.	3.73	Great Extent
pattern my life to Jesus' discipleship.	3.63	Great Extent
do my responsibilities as son/daughter of God.	3.51	Great Extent
proclaim the Good News of Jesus through words and deeds.	3.48	Moderate Extent
uphold to live with honesty and integrity.	3.44	Moderate Extent
commit myself to be a witness of Jesus' life and ministry	3.44	Moderate Extent
fulfill my baptismal responsibilities by exercising God's gift of charism.	3.43	Moderate Extent
exercise Christ's priestly, prophetic, and kingly mission.	3.31	Moderate Extent
share the Word of God in public.	3.23	Moderate Extent
join in different religious organizations in our parish to deepen my relationship with God.	3.00	Moderate Extent
COMPOSITE MEAN	3.42	Moderate Extent

Students' Extent of Baptismal Practices. Baptismal practices refer to the actions, habits, and expressions of faith that reflect the commitments and responsibilities of a baptized Christian. These practices are rooted in the sacrament of Baptism, which is the first of the seven sacraments in the Catholic Church and marks the initiation into the Christian community. Table 2 presents the composite mean on the students' extent of baptismal practices.

As baptized Catholics, the students observe to a moderate extent the baptismal practices in their lives with a composite mean of 3.42. The results also show that to a great extent, the students live a life of prayer which got the highest weighted mean of 3.73. It manifests a good indication that praying is a part of their daily life that nourishes their faith in God. With the weighted mean of 3.63, the students pattern their life to Jesus' discipleship to a great extent. As baptized Catholics, it shows that they observe following the teachings and life of Jesus in their daily routine. To a great extent, the student-respondents observe doing their responsibilities as sons and daughters of God, which got the weighted mean of 3.51. It implies that students practice their duties well as baptized Catholics at home, in school, and in their community. With a good result, it manifests that the student-respondents practice what they believe in the Sacrament of Baptism. Such results show a difference with the work of Asis (2016) who noted that there is a disparity between the Filipino Catholics' understanding and practice on the Sacrament of Baptism.

Conversely, Conversely, the exercise of Christ's priestly, prophetic, and kingly mission, with a weighted mean of 3.31, indicates a moderate extent of practice. This suggests that while students understand the importance of these roles, they may lack a clear understanding or practical application of how to embody these aspects in their daily lives. This implies a potential gap between theoretical understanding and practical application of these aspects of faith. The study of Groome highlighted the significance of understanding and living out the priestly, prophetic, and kingly roles of Christ, and noted that deeper catechetical education can help

students better grasp and integrate these roles into their lives. More so, Dean suggested in his study that mentorship and practical examples can aid young people in understanding and fulfilling these missions, indicating a need for more experiential learning opportunities in religious education.

With a weighted mean of 3.23, students indicate a moderate extent of sharing the Word of God in public. This suggests some hesitation or lack of confidence in public evangelism. Students may feel unprepared or fear social repercussions, indicating a need for more training and support in public speaking and evangelization. Concerning the result, the study of Gibson emphasized the importance of public witnessing for faith development, suggesting that increasing opportunities for students to practice and receive feedback can enhance their public evangelism efforts. Also, Smith in his study, discussed the challenges young people face in public evangelism, noting that structured support and training can significantly boost their confidence and willingness to share their faith publicly.

The lowest-ranked practice, with a weighted mean of 3.00, indicates that students engage in joining religious organizations within their parish to a moderate extent. This suggests that while some students participate in parish activities, a significant portion may not be actively involved. This lack of involvement could be due to a variety of factors such as a lack of awareness, interest, or perceived relevance of these organizations to their personal spiritual growth. The study of Roehlkepartain found that youth who participate in parish activities are more likely to experience significant faith development, indicating a need for strategies to increase student engagement in these organizations. Moreover, Dollahite & Thatcher emphasized that active participation in religious organizations fosters a deeper sense of community and spiritual growth, suggesting that enhancing the appeal and accessibility of these groups could encourage greater student involvement.

Table 3

Students' Extent of Eucharistic Beliefs

Eucharistic Beliefs <i>I believe that...</i>	Weighted Mean	Verbal Interpretation
the Holy Eucharist means thanksgiving to God.	3.90	Great Extent
Jesus is the bread of life.	3.90	Great Extent
faithfully attending the Holy Eucharist helps me to deepen my relationship with God	3.87	Great Extent
Jesus is present as Man and God in the Holy Eucharist.	3.81	Great Extent
the Holy Eucharist is the highest form of prayer.	3.77	Great Extent
Jesus Christ instituted the Holy Eucharist.	3.71	Great Extent
the Holy Eucharist is the source and summit of the whole Christian life.	3.70	Great Extent
I still need to understand further the catechesis and importance of the Sacrament of Holy Eucharist.	3.62	Great Extent
I have an in-depth understanding of the Holy Eucharist.	3.36	Moderate Extent
I am quite confused on how the Mass can link with Christ and to worship God.	2.65	Least Extent
COMPOSITE MEAN:	3.63	Great Extent

Eucharistic beliefs refer to the teachings and doctrines that Catholics hold about the Eucharist, which is considered the most central and sacred sacrament of the Church. These beliefs are grounded in Scripture, Tradition, and the teachings of the Church. Table 3 displays the composite mean on the students' extent of Eucharistic beliefs.

The students' response yielded a composite mean of 3.63 which affirms that their Eucharistic Beliefs are to a great extent. The student-respondents also believed to a great extent that the Holy Eucharist means thanksgiving and Jesus is the bread of life with a weighted mean of 3.90. These imply that the students have good understanding and belief that attending the Holy Eucharist is a way to give thanks to the Lord every Sunday. Likewise, they truly believed that the Bread of Life that they are receiving in the Holy Communion is Jesus Christ. With a weighted mean of 3.87, the student respondents believe to a great extent that when they attend faithfully in the Holy Eucharist, it helps them to deepen their relationship with God. The results indicate that

they give importance on the Sacrament of Holy Eucharist because they believe that it is a venue for them to encounter Jesus and deepen their relationship with the Lord. Such results differ with the explanation of Catechism for Filipino Catholics (CFC, 1997) that only few acknowledged the rich meaning and values of the Holy Eucharist because of improper understanding of the sacrament. Likewise, the present paper's results differ with the study of Abante which affirmed that even though the Holy Eucharist has been defined and explained well by the different teachings of the Church, still, some Filipino Catholics lack of full understanding of the sacrament.

Table 4*Students' Extent of Eucharistic Practices*

Eucharistic Practices <i>As a Catholic, I...</i>	Weighted Mean	Verbal Interpretation
I am always excited to receive Jesus in the Holy Communion.	3.76	Great Extent
I do the proper gestures that are required while attending the Holy Eucharist.	3.69	Great Extent
I extend help to the needy as a concrete action of my faith.	3.52	Great Extent
I focus my whole attention on the celebration of the Holy Eucharist and exert effort at all times.	3.51	Great Extent
I am always in proper disposition whenever I attend the Holy Eucharist.	3.40	Moderate Extent
I always participate fully, actively and consciously in the Holy Eucharist celebration either face-to-face or virtual.	3.28	Moderate Extent
I faithfully attend the Holy Eucharist celebration every Sunday either alone, with my family or friends.	3.24	Moderate Extent
I serve in the Holy Eucharist in the parish where I belong (lector, choice, altar knight, collector and the like).	2.90	Moderate Extent
I am sometimes distracted with my cellphone or other factors while attending the Holy Eucharist.	2.57	Moderate Extent
I observe the Sunday Dress Code whenever I attend the Holy Eucharist either face-to-face or virtual.	2.50	Moderate Extent
Composite Mean	3.34	Moderate Extent

Students' Extent of Eucharistic Practices. Eucharistic practices refer to the actions, habits, and behaviors that reflect a Catholic's reverence, faith, and devotion to the Holy Eucharist. These practices demonstrate the significance of the Eucharist in daily life and spiritual growth, fostering a deeper relationship with God and the Church.

As shown on Table 4, the student-respondents observe Eucharistic Practices to a moderate extent with a composite mean of 3.34. To a great extent, most of them are always excited to receive Jesus in the Holy Communion which got the highest weighted mean of 3.76. It shows that students are happy not only to listen to the Word of God but to be in union with Jesus through the Holy Communion. Second in rank which got the weighted mean of 3.69, student-respondents do the proper gestures that are required while attending the Holy Eucharist. It manifests that they respect the sacredness of this sacrament by participating properly during the celebration. This is congruent with the statement of Dulles (2004) which affirms that being present in the assembly as members of the body of Christ is not sufficient but everyone should actively participate and hear the Word of God with reverence.

However, the belief and practice of serving in the Holy Eucharist within the parish have a weighted mean of 2.90, indicating moderate extent. This suggests that while some students participate in liturgical roles, there is room to encourage more active involvement in parish services. Promoting the value and benefits of serving in these roles can enhance community engagement and spiritual growth. The result is confirmed by the study of William who revealed the positive effects of active participation in liturgical roles on personal faith development and community building, suggesting that increased involvement can lead to deeper spiritual experiences. Meanwhile, Garcia highlighted strategies to encourage youth participation in church services, noting that fostering a sense of belonging and responsibility can increase engagement.

With a weighted mean of 2.57, students acknowledge a moderate extent of distraction from cellphones or other factors during the Holy Eucharist. This suggests that distractions are a common issue, potentially affecting the quality of their participation and focus during the Mass. Addressing this issue through education on the importance of attentiveness and strategies to minimize distractions can enhance their Eucharistic experience. In relation to the result, Thompson explored the impact of digital distractions on religious observance and the importance of creating strategies to mitigate these distractions to maintain focus during worship. Also, Johnson discussed practical methods to reduce distractions during religious services, emphasizing the importance of a focused and respectful atmosphere.

The lowest-ranked practice, with a weighted mean of 2.50, indicates that students moderately observe the Sunday dress code when attending the Holy Eucharist. This suggests a potential lack of emphasis on the importance of dressing appropriately for Mass, which can reflect one's reverence and respect for the celebration. Encouraging students to observe the dress code can foster a sense of solemnity and respect for the Eucharistic celebration. Miller discussed the impact of external expressions, such as dress codes, on fostering a reverent atmosphere during religious services, suggesting that proper attire can enhance the worship experience. Smith highlighted the cultural and psychological effects of adhering to dress codes in religious contexts, noting that such practices can influence attitudes and behaviors positively.

The following tables provide the summative data of the relationship of the students' responses between Baptismal and Eucharistic beliefs and practices. The sacraments of Baptism and the Eucharist are foundational to the Catholic faith. Both are central to a Catholic's spiritual life, providing grace, fostering faith, and guiding the faithful toward living a Christ-centered life. The following table shows the relationship between the students' Baptismal and Eucharistic Beliefs and Practices. Relationship between the students' Baptismal Beliefs and Practices. The result of the analysis of the relationship between the students' Baptismal Beliefs and Baptismal Practices is indicated in Table 5.

Table 5

Relationship between the students' Baptismal Beliefs and Practices

Variables	Computed value	p-value	Decision on Ho
Baptismal Beliefs and Baptismal Practices	0.454	0.000	Reject

It can be seen from Table 5 that the assessment of the respondents on their Baptismal Beliefs and Baptismal Practices obtained a computed value of 0.454, with a p-value of zero which is less than the 5 percent level of significance. Such p-value led to the rejection of the null hypothesis. This suggests that there is a statistically significant relationship between students' beliefs about baptism and their practices related to baptism. This implies that the Baptismal Practices of the respondents is dependent on their Baptismal Beliefs. It affirms that the student-respondents' beliefs in Baptism are what they also live out in their day-to-day living. In other words, students who hold strong beliefs about baptism are likely to engage in practices that align with those beliefs. The significant correlation highlights the importance of understanding religious beliefs in shaping religious practices among students.

Supporting the result is the study of Abuhabib who found a significant correlation between religious beliefs and practices among university students, emphasizing the role of faith in guiding behavior. Jones and Smith reported similar findings, demonstrating that strong beliefs often translate into consistent religious practices. Moreover, in a study on the impact of religious education, Rodriguez noted that students with a thorough understanding of their faith's doctrines were more likely to adhere to religious practices.

Table 6

Relationship between students' Eucharistic Beliefs and Practices

Variables	Computed value	p-value	Decision on Ho
Eucharistic Beliefs and Baptismal Practices	0.548	0.000	Reject

It can be seen from the table that the assessment of the respondents on their Eucharistic Beliefs and Eucharistic Practices obtained a computed value of 0.548, with a p-value of zero which is less than the 5 percent level of significance. Such p-value led to the rejection of the null hypothesis. This shows that the Eucharistic practices of the student-respondents are dependent on their Eucharistic beliefs. It indicates that the student-respondents' beliefs on the Holy Eucharist are what they observe and practice whenever they attend the celebration. This implies that stronger beliefs about the Eucharist are likely associated with more consistent or robust Eucharistic practices. The results suggest that the students' theological understanding and internalization of Eucharistic doctrines are reflected in their practical engagement with the sacrament. This relationship aligns with theories of cognitive-behavioral integration, where beliefs influence behaviors. The findings support the idea that catechesis and religious education could be crucial in fostering beliefs and practices. Programs that strengthen Eucharistic understanding might indirectly enhance participation in Eucharistic practices. The relationship could also reflect the impact of communal and liturgical settings where shared beliefs encourage shared practices, fostering a collective religious identity.

The outcome of the study is corroborated by the findings of Madriaga et al., Francis et al., and Zimmermann and McMahon. Madriaga et al. found a strong correlation between the depth of catechesis and active participation in sacraments, including the Eucharist, emphasizing that well-structured religious education significantly enhances both belief and practice. Francis et al. highlighted in their findings that stronger religious beliefs were consistently linked to higher levels of engagement with practices such as attending mass and receiving sacraments, reinforcing the role of belief systems in shaping behavior. Zimmermann and McMahon explored that shared liturgical experiences, such as the Eucharist, strengthen both individual beliefs and participation through collective religious identity.

The participants shared some of their issues and concerns as Catholics. They shared their personal experiences in practicing their faith as well as their observations of other Catholics. The students disclosed that being pressured by societal expectations, lack of proper decorum and spiritual engagement in attending religious services, particularly the Holy Mass, and lack of focus while attending Holy Mass were some of their issues and concerns as Catholics. The issues and concerns experienced by the students are discussed in the following sections.

Pressure of societal expectations. The students feel some pressure on how other people look at them especially their behavior because they are studying at a Catholic school. The students feel that their actions are scrutinized more because they are seen as representatives of their faith. There is a perception that students in Catholic schools are expected to be perfect and to act differently and more morally than other students. When they fail to meet these expectations, they face criticism. There is an implicit stereotype that all Catholic students must know all religious practices and beliefs, which is not always true. People often see Catholic students as perfect models of good behavior, but the student acknowledges their flaws and imperfections. They feel pressure to meet high expectations, especially regarding religious knowledge and practices, but they admit that they are still learning and growing in their faith.

They thought that if we were at a catholic school they look at us as a perfect student but actually not (Participant 1).

As Catholic students in a Catholic school, people expect us to act differently from other students. In the same way, when we fail to make the required gestures, actions, and decisions, we are more likely to face the consequences of being criticized (Participant 5).

This theme highlights how Catholic students are perceived as moral exemplars and are judged against unrealistic standards of perfection, often leading to challenges in self-expression, personal growth, and managing societal expectations. These dynamics can undermine the intended goals of Catholic education, which are to foster genuine faith, self-awareness, and a commitment to moral and spiritual growth, rather than imposing

perfection. The perception that Catholic students must possess comprehensive knowledge of prayers, rituals, and religious practices reinforces implicit stereotyping, disregarding individual differences in upbringing, exposure, and faith development.

Lack of commitment to attend religious services, particularly the Holy Mass. The data reveals a lack of commitment among students in attending religious services, particularly the Holy Mass. These patterns suggest a declining engagement with religious practices among students, which may reflect broader trends in decreasing religiosity among young people in certain cultural or societal contexts. This trend has significant implications for religious institutions and educational organizations.

One of the issues that I observed was students are not consistently attending Holy Mass (Participant 3).

Some of the students didn't want to attend (Participant 4).

Lack of motivation in participating in religious events (Participant 7).

The inconsistency and reluctance to attend religious services may be influenced by various factors, including the perceived relevance of religious practices to students' lives, competing priorities, or generational shifts in attitudes toward religion. Research by Thiessen and Wilkins-Laflamme (2017) indicates that young people increasingly perceive religion as a private, rather than communal, practice. Additionally, Schnabel and Bock (2017) found that younger generations tend to prioritize individual spirituality or secular values over institutional religious obligations, contributing to lower engagement with organized religious events such as the Holy Mass. Cultural and societal changes may also play a role. The rise of technology, social media, and alternative belief systems has offered students other ways to explore meaning and purpose, reducing the appeal of traditional religious services. This shift often results in religious disaffiliation or a more individualized approach to spirituality, as noted in recent studies (Del Castillo et al, 2020; Gubi & Marsden, 2019).

Lack of proper decorum. There are various concerns and observations about the behavior of Catholic students and other individuals during the celebration of the Holy Mass. Issues such as eating, using phones, talking, and not adhering to the proper dress code during mass are commonly observed. Some students do not see attending mass as an obligation and are inconsistent in their attendance. They may attend just for the sake of it, without feeling a personal connection to the worship.

Some are violating the rules like when attending mass they're eating, sometimes using the phone, sometimes talking with one another (Participant 2).

The proper dress code of the people who attend mass and also chatting during the mass are some things that I observed when attending mass (Participant 6).

The issues reflect a growing trend of declining reverence and attentiveness among individuals, particularly students, during religious gatherings. This can be attributed to societal shifts that prioritize convenience and secular activities over spiritual obligations. The observed lack of proper dress code and chatting during Mass indicates a weakening understanding or respect for the sacredness of the space and event. Such behaviors may dilute the spiritual experience for other attendees. The concerns about rules being violated—such as eating, phone usage, or talking during Mass—reflect a broader trend of distractions and diminishing communal discipline in sacred settings. Inconsistencies in attendance suggest that some individuals, especially students, do not view Mass as a significant or obligatory aspect of their faith. This highlights a gap in religious education and awareness. The lack of motivation to participate in religious events points to a broader issue of spiritual disengagement, where faith practices may no longer resonate with modern-day values and priorities.

Tibayan (2019) affirmed that the Eucharistic celebration is one of the most important sacred events for every Catholic. However, due to the influences of modern culture and tradition, many Catholics do not observe proper

decorum when attending mass. Hence, multimedia materials were produced to promote decorum in the Eucharistic celebration which gained an outstanding rate from the target audience. Meanwhile, Dingle et al. (2019) that the Routinary Class Prayers do not, in any way, affect nor has an impact to the spiritual engagement of the students.

Lack of focus while attending the Holy Mass. The participants revealed that they are easily distracted during the Mass. Many teenagers and other attendees are easily distracted by small things, preventing them from fully engaging with the message of the Holy Mass. They lose focus and concentration because of noise and the use of gadgets. They also observed that many Catholics struggle to give their full attention in church, with only a few appearing fully focused and engaged. According to them, many teenagers today fail to focus on the message of the Holy Eucharist because they're easily distracted by various things.

Most teenagers nowadays do not focus on the message being portrayed while attending the holy eucharist because they are easily distracted by a lot of things (Participant 8).

I think the issues are from the people who act in not appropriate and misbehavior when worshipping God. Not focusing and being distracted from gadgets and other things that surround when having mass (Participant 9).

The widespread distraction during the Holy Mass reflects a deeper issue of modern-day attention challenges, where external stimuli such as mobile phones and social interactions compete for people's focus, even in sacred spaces. The behavior of some individuals, particularly teenagers, suggests a diminished understanding of the significance of the Eucharist and the overall purpose of Mass. More so, the prevalence of inappropriate actions underscores the growing influence of technology and the challenge of maintaining sacredness in a highly digital world. This may be due to insufficient catechesis or a lack of personal spiritual formation. Such distractions not only affect the individuals engaged in them but also disrupt the focus and worship experience of others. This creates a ripple effect of disengagement.

As Catholics, it is not enough to believe in her teaching. It is equally important that along with the beliefs, Catholics must live it out in their daily lives. No matter how many people are baptized as Catholics, this alone does not suffice to classify them as practicing Catholics. Thus, this study aims to revisit the Baptismal and Eucharistic beliefs and practices of college students at Sta. Teresa College, Bauan, Batangas. Ultimately, the researchers seek to propose an enhanced plan of activities that will strengthen the students' Catholic faith and practices.

The proposed plan of activities is based on findings with the lowest mean, particularly regarding students' Baptismal practices such as exercising Christ's priestly, prophetic, and kingly mission, sharing the Word of God in public, and joining various religious organizations in the parish. It also addresses Eucharistic practices, including active participation in the Eucharistic celebration, avoiding distractions during Mass, and observing proper dress codes while attending Mass. Additionally, the plan aims to address challenges students face, such as societal pressures, lack of commitment to attend religious services, particularly the Holy Mass, lack of proper decorum, and lack of focus during the Holy Mass.

The proposed enhanced plan of activities is entitled "Faith in Action: Spiritual Growth and Discipleship Formation," which primarily aims to deepen spiritual understanding, cultivate active discipleship, and strengthen both personal and communal faith. These activities will be integrated into the Religious Education courses from the first year to the third year as part of students' performance tasks. It is hoped that though the activities are academic requirements, the students will realize the true essence of these activities in their personal lives. In their fourth year, it is anticipated that they are already committed to practicing their faith.

The findings highlight both strengths and challenges in the students' Catholic faith journey. While their Baptismal and Eucharistic beliefs are strong, their practices reflect only to some degree, suggesting a gap

between understanding and application. The relevant association between beliefs and practices underscores the importance of fostering active faith expressions to complement their theological knowledge. The identified issues—societal pressures, lack of commitment to religious services, improper decorum, and lack of focus during the Holy Mass—highlight barriers that hinder deeper spiritual engagement. These challenges call for intentional efforts to address both internal and external factors influencing students' faith practices.

The proposed plan, "Faith in Action: Spiritual Growth and Discipleship Formation," provides a holistic approach to addressing these concerns. By focusing on deepening spiritual understanding, promoting active discipleship, and strengthening communal faith, the program aims to bridge the gap between belief and practice. This initiative represents a crucial step toward nurturing students' spiritual lives, empowering them to embody their faith more authentically and meaningfully in their daily lives.

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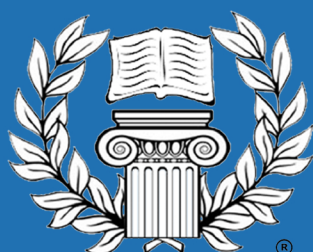
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ISSN: 2243-7703



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