MINDORO JOURNAL OF SOCIAL SCIENCES AND DEVELOPMENT STUDIES

THE OFFICIAL JOURNAL PUBLICATION OF THE OCCIDENTAL MINDORO STATE COLLEGE

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ABOUT THE JOURNAL
Mindoro Journal of Social Sciences and Development Studies (MJSSDS), a peer-reviewed journal, is the official publication of Occidental Mindoro State College published biannually. It aims to promote study and research that forge links between the social sciences and sustainable rural development. This journal is an interdisciplinary publication and welcomes articles from diverse theoretical perspectives and methodological approaches, which engage and contribute to rural development. It also focuses on the significance, roles, and implications of various disciplines on rural societies and community development.

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ABOUT THE JOURNAL

AIMS AND FOCUS

Mindoro Journal of Social Sciences and Development Studies (MJSSDS), a peer-reviewed journal, is the official publication of Occidental Mindoro State College published biannually. It aims to promote study and research that forge links between the social sciences and sustainable rural development. This journal is an interdisciplinary publication and welcomes articles from diverse theoretical perspectives and methodological approaches, which engage and contribute to rural development. It also focuses on the significance, roles, and implications of various disciplines on rural societies and community development.

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Advancing local knowledge: Evidence-based studies in education, environment, health, and community development

Artemio M. Gonzales Jr.
Editor, Mindoro Journal of Social Sciences and Development Studies

FROM THE EDITOR

It is with great pleasure that we present this latest issue of the *Mindoro Journal of Social Sciences and Development Studies (MJSSDS)*. This issue exemplifies the journal's continued commitment to promoting rigorous, locally relevant, and interdisciplinary research that informs policy, practice, and community development. Across diverse domains including education, environmental management, community livelihoods, and maternal health. The articles compiled in this issue demonstrate how evidence-based research can illuminate challenges, identify opportunities, and guide meaningful community interventions in the Philippines.

Education remains a cornerstone of societal development, and this issue features two important studies that explore interventions and individual capacities in learning contexts. *"Effectiveness of Brigada Pagbasa Program on Students' Academic Performance in Filipino: A Comparative Study"* investigates the effect of a national literacy initiative on students' academic achievement. The study demonstrates a statistically significant improvement in Filipino language performance among participants, highlighting the value of structured reading sessions, tutorial activities, and volunteer-supported interventions. This research not only provides empirical evidence on the effectiveness of literacy programs but also highlights the critical role of community participation and school-based initiatives in enhancing learning outcomes.

Complementing this is *"Adversity Quotient and Teaching Internship Achievement of Pre-Service Teachers: A Cross-Sectional Study,"* which examines how resilience, operationalized as adversity quotient, affects pre-service teachers' performance during their internships. The study shows a strong positive correlation between adversity quotient and teaching internship achievement, showing that students who can navigate and overcome challenges are better prepared for professional teaching roles. These findings have important implications for teacher education programs, suggesting the need for interventions and training modules that promotes resilience and adaptive capacity among future educators.

Further extending the focus on education and professional development, *"Organizational Justice, Work Resilience, and Teacher Affective Attitudes of Public Elementary School Teachers in a District in Occidental Mindoro"* explores the relationships between perceptions of organizational justice, resilience, and affective attitudes among teachers. The research reveals that high levels of perceived organizational justice contribute significantly to teacher resilience and positive affective attitudes. These results reinforce the notion that supportive organizational cultures, fair practices, and transparent decision-making processes are crucial for sustaining teacher motivation, well-being, and effectiveness in the classroom. Collectively, these three factors offer a complex understanding of educational success, highlighting the relationship between program interventions, individual capacities, and organizational environments.

Environmental sustainability and community resilience constitute another central theme in this issue. *"Hydro Morphological Assessment Using the Habitat Survey Method of Pandurucan River in San Jose, Occidental Mindoro"* provides an evaluation of a river's physical and ecological state. By employing the River Habitat Survey method, the study identifies low habitat diversity and significant human-induced modifications, emphasizing the urgent need for river rehabilitation and evidence-based management of aquatic ecosystems. This research contributes to a growing body of literature advocating for environmental monitoring as a foundation for sustainable natural resource management, policy formulation, and community-based conservation strategies.

Likewise, community empowerment is highlighted in *"Seas of Opportunity: Development of an Innovative Capacity Building Program for Thriving Seaweed Producers."* This article addresses the challenges faced by coastal farmers in Occidental Mindoro. The study documents knowledge gaps, training needs, and entrepreneurial aspirations among seaweed farmers, highlighting the potential for participatory, community-based capacity-building programs to enhance skills, market orientation, and livelihood resilience. By integrating sustainability practices with entrepreneurship and innovation, the study provides a framework that can help coastal communities transition from subsistence-based aquaculture to sustainable and market-responsive enterprises.

Finally, the issue addresses public health and maternal care through *"Examining the Predictive Role of Breastfeeding Knowledge on Self-Efficacy Among Second-Time Nursing Mothers in Angeles City, Pampanga."* This research demonstrates that breastfeeding knowledge strongly predicts maternal self-efficacy and maternal confidence in breastfeeding. These findings highlight the importance of knowledge-based interventions in prenatal and postnatal care, supporting national and global targets for exclusive breastfeeding, and reinforcing the role of maternal education in improving health outcomes for both mothers and infants.

Taken together, the articles in this issue reflect the journal's interdisciplinary focus and its dedication to addressing the multifaceted needs of communities in the Philippines. From fostering literacy and teacher resilience to improving environmental stewardship, promoting sustainable livelihoods, and enhancing maternal health, the research presented here underscores the vital role of evidence-based interventions in shaping positive social outcomes. These studies collectively illustrate how local research can inform policy, guide practice, and contribute to sustainable and inclusive development across sectors.

We extend our sincere appreciation to the authors for their rigorous and insightful contributions, to our reviewers for their careful and constructive feedback, and to the editorial team for ensuring the quality and integrity of this publication. We also invite our readers, scholars, practitioners, and policymakers alike to engage with the findings in this issue and to share these insights with their respective communities. It is our hope that the knowledge presented here will not only inform but also inspire meaningful action, ultimately contributing to the development of more resilient communities.

Effectiveness of brigada pagbasa program on students' academic program in Filipino: a comparative study

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Article Info	ABSTRACT
	This study aimed to determine the effectiveness of the Brigada Pagbasa Program in enhancing students' academic performance in the Filipino subject at San Vicente National High School. A comparative research design was employed to analyze the academic performance of 50 students before and after their participation in the program during the academic year 2020–2021. The Brigada Pagbasa Program was implemented through structured reading sessions, tutorial activities, and community-supported literacy interventions facilitated by teachers and volunteers. Students' performance was assessed using their final grades in the Filipino subject from Grade 7 (prior to the program) and Grade 8 (after program participation). Results showed that students initially performed at a "moderate" level, with a mean grade of 83.74, which improved to a "high" level, with a mean grade of 87.12 after one year of program implementation. A paired t-test indicated a statistically significant improvement in academic performance ($p < 0.01$). These findings suggest that the Brigada Pagbasa Program was effective in supporting academic achievement in Filipino. However, the study is limited by its focus on a single subject, reliance on historical academic records, and the absence of control for external factors that may have influenced student outcomes.

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1. INTRODUCTION

Reading is widely recognized as the cornerstone of academic success and a vital skill that underpins all other learning disciplines. It is a multifaceted process that goes beyond decoding words; it requires constructing meaning, applying context, and interpreting ideas critically (Wanzek et al., 2017). Despite the Philippines' high literacy rate, many Filipino students continue to face challenges in reading comprehension. Difficulties such as identifying main ideas, making inferences, and connecting textual information to prior knowledge hinder learners' academic performance, particularly in language subjects like Filipino (Idulog et al., 2023).

Brigada Pagbasa is a nationwide reading initiative that seeks to bring together education advocates and stakeholders in a collaborative effort to enhance the reading skills of Filipino children. It serves as a literacy support program complementing the Department of Education's continuing enrichment and remediation activities, while also acting as a social accountability platform that fosters community participation and shares responsibility in ensuring every learner's educational progress (Aquino, 2022). Study revealed that the Brigada Pagbasa program significantly improved students' reading comprehension levels, as evidenced by higher post-test scores and a notable increase in learners categorized under the independent level. The study further emphasized stakeholder participation, funding support, and the availability of reading materials were key factors influencing the program's successful implementation (Hutamares, 2023).

Recent research affirms the program's impact. A study by Almagro et al. (2024) emphasized how well-structured reading programs tailored to specific learning contexts, such as Indigenous People (IP) schools, improved reading outcomes. Similarly, McBreen and Savage (2020) found that targeted reading interventions significantly enhanced the reading motivation and academic performance of students at risk for literacy failure.

Nevertheless, literacy challenges persist. It is observed that many Grade 7 students still struggle with basic reading skills despite years of formal education. These findings underscore the necessity of continuous and data-driven literacy programs that can respond to the evolving needs of learners (Laroza & Amada, 2024). While these studies collectively establish that reading intervention programs contribute to improved literacy outcomes, there remains a paucity of localized and empirical evidence on how the program is implemented across different educational contexts in the Philippines. Most available studies focus on general trends and aggregate results, with limited exploration of contextual factors that influence its success such as the availability of resources, teacher training, school-community partnerships, and the socioeconomic backgrounds of learners (Mirasol et al., 2021). Furthermore, few studies have examined how learners' diverse linguistic and cultural environments or how it addresses varying levels of reading difficulties across grade levels. This gap in the literature underscores the need for in-depth, context-specific investigations that can evaluate not only the program's outcomes but also its processes and mechanisms of impact (Mendoza, 2024;Wakat et al., 2023). Addressing this gap would provide a stronger empirical foundation for refining and scaling literacy initiatives that are responsive to local needs and sustainable within community-driven frameworks.

Considering these issues, this study aimed to assess the effectiveness of the Brigada Pagbasa Program in improving students' academic performance in the Filipino subject at San Vicente National High School. Specifically, it sought to: (1) identify the academic performance of students before the implementation of Brigada Pagbasa, (2) evaluate their performance after the program, and (3) determine whether a statistically significant difference exists in the academic performance of students before and after the intervention.

2. METHODOLOGY

2.1. Design

This study employed a comparative research design to assess the significant difference in academic performance before and after the implementation of the Brigada Pagbasa Program. The design allowed for a systematic comparison of students' academic outcomes, providing a clear picture of how performance evolved over time. Since the Brigada Pagbasa Program is a reading intervention, the study specifically focused on academic performance in the Filipino subject, which serves as an indirect measure of students' reading comprehension and language proficiency. By analyzing performance in this subject, the study aimed to capture the program's impact on students' reading skills, as reflected in their ability to comprehend and engage with the Filipino language and texts.

2.2. Participants

The participants of the study consisted of 50 eight-grade students from San Vicente National High School, selected through purposive sampling. This technique was used to ensure that the respondents were specifically aligned with the study's objectives and represented the student population who participated in the Brigada Pagbasa Program. Purposive sampling allowed for a targeted selection of students who had direct exposure to the program, ensuring relevance to the study's goals.

2.3. Setting

This study was conducted at San Vicente National High School, where the Brigada Pagbasa Program was implemented. The school was selected as the research site due to its active participation in the program, allowing for an effective evaluation of its impact.

2.4. Research Instrument

The primary research instrument consisted of students' official academic records in the Filipino subject, which included cumulative grades from quizzes, assignments, and examinations. These records provided a quantitative measure of students' academic standing and served as the main basis for evaluating changes in performance following the Brigada Pagbasa Program.

2.5. Data Gathering Procedure

To assess the effect of the Brigada Pagbasa Program, data were collected at two key time points: the students' academic performance in Grade 7 (prior to the program's implementation) and their performance in Grade 8 (after completing the program). The analysis focused on students' performance in the Filipino subject, which served as an indirect indicator of reading comprehension and language proficiency.

Given that the Brigada Pagbasa Program primarily aims to strengthen reading skills, students' grades in the Filipino subject—including their performance in assignments, quizzes, and examinations—were utilized to measure the program's overall impact on their reading ability. These academic records were selected as the main data source because they reflect not only language proficiency but also comprehension and analytical engagement with texts.

The researchers coordinated closely with school administrators and Filipino subject teachers to obtain verified academic records for both Grade 7 and Grade 8, ensuring data completeness and reliability. All data collection procedures followed established ethical guidelines, maintaining the confidentiality and integrity of students' academic information.

2.6. Ethical Considerations

Ethical standards were strictly observed throughout the research process. Informed consent was obtained from both the school authorities and the student participants. Confidentiality was maintained concerning the students' academic records, and all data was used solely for the purposes of this study. No personal information was disclosed, and the findings were reported in aggregate to protect the identities of the students.

2.7. Data Analysis

Descriptive and inferential statistical techniques were employed to analyze the collected data. The mean was calculated to determine students' average academic performance before and after program implementation. To assess whether the observed differences between Grade 7 and Grade 8 performances were statistically significant, a t-test was conducted. This statistical approach was selected for its suitability in comparing two related data sets, allowing the researchers to determine whether improvements in academic performance could be attributed to the Brigada Pagbasa Program.

3. RESULTS

3.1. Level of Academic Performance before implementation of Brigada Pagbasa

Results revealed that the level of academic performance in the Filipino subject before the implementation of the Brigada Pagbasa Program was moderate (mean = 83.74). It was also shown that 7 students (14.0%) had scores ranging from 75–79, 15 students (30.0%) from 80–84, 24 students (48.0%) from 85–89, and 3 students (6.0%) from 90–100, while 1 student (2.0%) scored below 75, indicating insufficient knowledge in the subject [Table 1].

Table 1. Level of academic performance before implementation of brigada pagbasa (n=50).

LEVEL OF ACADEMIC PERFORMANCE	FREQUENCY	PERCENT (%)
Very Low	1	2.0
Low	7	14.0
Moderate	15	30.0
High	24	48.0
Very High	3	6.0
Mean= 83.74 (Moderate)		

Scale: 0-75 = Very Low; 75-79 = Low; 80-84 = Moderate; 85-89 = High; 90-100 = Very High

3.2. Level of Academic Performance after Implementation of Brigada Pagbasa

Results revealed that after the implementation of the Brigada Pagbasa Program, the level of academic performance in the Filipino subject was high (mean = 87.12). This finding indicates that the program positively influenced students' academic performance, showing improvement after its implementation. Notably, 22 students (44.0%) scored between 85–89, 8 students (16.0%) between 80–84, and 16 students (32.0%) between 90–100, demonstrating a significant increase in performance levels. Meanwhile, 4 students (8.0%) scored between 75–79, and none (0%) scored below 75 [Table 2].

Table 2. Level of academic performance after implementation of brigada pagbasa (n=50).

LEVEL OF ACADEMIC PERFORMANCE	FREQUENCY	PERCENT (%)
Low	4	8.0
Moderate	8	16.0
High	22	44.0
Very High	16	32.0
Mean = 87.12 (High)		

Scale: 0-75 = Very Low; 75-79 = Low; 80-84 = Moderate; 85-89 = High; 90-100 = Very High

3.3. Academic Performance Before and After Implementation of Brigada Pagbasa

Results revealed a significant difference in the academic performance of students before and after the implementation of the Brigada Pagbasa Program (p-value <0.001). This indicates that the improvement in students' academic performance following the program's implementation was statistically significant. [Table 3].

Table 3. Significant difference on the academic performance before and after implementation of Brigada Pagbasa.

VARIABLE	t-value	p-value
Academic Performance (Before and After Implementation)	7.367	<0.001

*<.01 Significant

4. DISCUSSION

This study explored the transformative impact of the Brigada Pagbasa program on the academic performance of students at San Vicente National High School. Initially, students' academic performance was characterized as moderate, particularly in the Filipino subject. However, after a year-long effort and the implementation of the comprehensive Brigada Pagbasa program, there was a significant and remarkable improvement in their academic performance. This change demonstrates the program's positive influence on the students' learning experience.

Abulon (2014) asserts that structured, intensive, and community-supported supplementary literacy programs can significantly enhance students' academic outcomes. This aligns with findings from Almagro et al. (2024), which examined reading programs for non-readers in Indigenous People (IP) schools. Their study highlighted challenges such as students' difficulties with fundamental reading skills, language transitions, and limited parental support, all of which negatively impacted reading comprehension. It also emphasized the importance of continuous practice, contextualized materials, and differentiated reading programs for improving literacy. These issues reflect the moderate academic performance observed in the Filipino subject before the Brigada Pagbasa Program, suggesting that reading comprehension deficiencies were a major factor hindering students' overall academic success.

McBreen and Savage (2020) further support this idea, emphasizing that strong reading skills are essential for deepening understanding, recognizing context, and accurately interpreting symbols within texts. The results of this study echo these claims, as the Brigada Pagbasa Program improved students' academic performance by strengthening their reading skills, which likely enhanced their comprehension of the Filipino subject. The increase in students' performance, evidenced by higher scores, indicates that the program effectively supported cognitive development, reinforcing the idea that improved reading skills lead to better academic achievement. This study's findings offer substantial evidence that the Brigada Pagbasa program played a crucial role in enhancing reading comprehension, thereby contributing to higher academic performance in the Filipino subject. These results underscore the importance of targeted literacy interventions in fostering academic success.

The statistical analysis conducted further reinforced these observations, revealing a statistically significant difference in students' academic performance before and after the introduction of the Brigada Pagbasa program. This result underscores the program's effectiveness in enhancing students' proficiency, particularly in reading and its related subjects. As noted by Andalajao-Dalanon (2024), interventions aimed at improving reading proficiency often led to broader academic improvements across various learning domains. The Brigada Pagbasa program's holistic approach, which includes reading sessions, tutorial programs, and parental involvement, was a key factor contributing to the significant academic improvements observed among students.

This study highlights the positive impact of the Brigada Pagbasa program on students' reading skills, which in turn improved their overall academic performance. Balansag (2025) emphasizes that effective reading is crucial for successful learning and academic development. The study's results provide strong evidence of this, confirming that the Brigada Pagbasa program's focus on improving reading comprehension directly contributed to better academic outcomes. This improvement can be attributed to the well-structured implementation of the program, the presence of skilled facilitators, and the use of effective instructional tools and materials.

Moreover, the findings of this study affirm the program's value as an educational initiative. The Brigada Pagbasa program not only targets academic enhancement but also emphasizes the importance of developing strong foundational literacy skills, which UNESCO (2006) identifies as essential for lifelong learning and overall educational success. These foundational skills provide students with a solid basis for a more enriched and comprehensive learning experience. The program's success thus highlights the potential of targeted interventions in other key academic areas, demonstrating the importance of educational initiatives that are tailored to the specific needs of learners.

Furthermore, the study's results emphasized the transformative potential of well-designed, comprehensive educational programs like Brigada Pagbasa. As Darling-Hammond et al. (2025) assert, evidence-based interventions, when effectively implemented, can substantially improve educational quality and equity. The positive impact observed on students' academic performance reinforces the need for continued investment in initiatives that aim to elevate the quality of education. These results serve as a compelling reminder to educators and policymakers of the importance of developing and implementing programs that enhance the overall learning experience and outcomes, particularly in foundational subjects such as Filipino.

This study was limited to assessing the academic performance of students in the Filipino subject before and after the implementation of the Brigada Pagbasa Program within a single school setting. The sample size was relatively small and may not represent the broader student population, thereby limiting the generalizability of the findings. Additionally, the study focused solely on quantitative measures of academic performance, without incorporating qualitative insights such as students' reading attitudes, motivation, or engagement levels. External factors such as teacher strategies, parental support, and learning environment were also not controlled, which may have influenced the results.

Based on the findings of the study, it is recommended that the Brigada Pagbasa Program be sustained and expanded to include more students and grade levels to further enhance academic performance, particularly in reading comprehension and Filipino subjects. Teachers are encouraged to integrate interactive reading activities and individualized support to maintain student engagement and motivation. School administrators may consider conducting regular monitoring and evaluation to ensure the effectiveness of the program and identify areas for improvement. Moreover, future researchers are encouraged to include qualitative approaches such as interviews or focus group discussions to gain deeper insights into students' learning experiences and to examine other factors that may influence academic performance, such as parental involvement and socio-economic background.

5. CONCLUSION

This study examined the transformative effect of the Brigada Pagbasa program on the academic performance of students in San Vicente National High School. Initially, the academic performance of students in their Filipino subject characterized as moderate before the implementation of the Brigada Pagbasa program. However, after a dedicated effort and the program's comprehensive intervention, there was a remarkable transformation in their performance, elevating it to a high level. This improvement underscores the significant positive effect of the Brigada Pagbasa program on the students' learning journey. Moreover, statistical analysis further solidified these observations by revealing a statistically significant difference in academic performance when comparing the period before and after the program's introduction. This evidence substantiates the program's effectiveness in enhancing students' proficiency in their subject and reaffirms its role as a valuable educational initiative. It also highlights the importance of targeted interventions in fostering a stronger foundation in key academic areas, ensuring a more comprehensive and enriched learning experience for students.

appreciated the Department of Education's commitment to improving education quality, as highlighted by the program's success. Researchers anticipated further collaboration for enhanced student academic performance and learning experiences.

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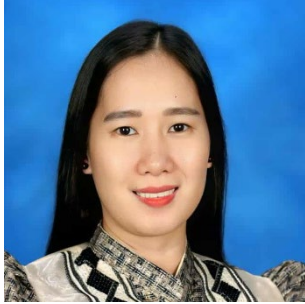
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Adversity quotient and teaching internship achievement of pre-service teachers: A cross-sectional study

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Article Info	ABSTRACT
	The adversity quotient is a measure of a person's ability to overcome challenges and setbacks. It is one of the many important factors that contribute to the students' success in their academic pursuits. This study investigated how pre-service teachers' ability to navigate and thrive in challenging situations, as measured by the adversity quotient, influenced their success and performance during their internship experience. In this quantitative study, a cross-sectional research design was used to examine the relationship between adversity quotient and teaching internship achievement and to investigate whether the pre-service teachers vary in their levels of adversity quotient when they are grouped according to age, sex, and academic program. This study involved 100 pre-service teachers from the College of Teacher Education in a state college in Occidental Mindoro, Philippines. Participants were selected using stratified proportional random sampling. The results of the study showed that the majority of participants in this study are females aged 21 to 23 years old and were enrolled in the Bachelor in Elementary Education program. It was found out that the AQ level of the pre-service teachers is high, and they exhibited an outstanding level of teaching internship achievement. Results also showed that pre-service teachers' level of adversity quotient is positively and significantly correlated with their teaching internship achievement. It was also revealed in this study that the adversity quotient of pre-service teachers does not appear to be significantly influenced by their age, sex, or academic program. With these findings, an intervention program for the AQ enhancement of pre-service teachers was proposed.

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1. INTRODUCTION

Academic success is a complex and multifaceted concept in education, with researchers pinpointing numerous factors that effectively enhance students' academic performance, especially among pre-service teachers. Our current education system, both in the Philippines and elsewhere, focuses on developing the intelligence quotient (IQ), emotional quotient (EQ), and spiritual quotient (SQ). This is because intelligence alone does not guarantee success. Experience demonstrates that numerous individuals with elevated IQs have often failed to attain success, highlighting that intelligence constitutes merely one aspect. To be successful for a long time, you often need more than just intelligence; you also need emotional and spiritual abilities. Emotional Quotient is the measure of our ability to control our emotions, understand others, be aware of ourselves, control our impulses, be persistent, and have constructive relationships with other people. Spiritual quotient, on the other hand, looks at how well someone understands spirituality. The adversity quotient (AQ), a concept introduced by Dr. Paul G. Stoltz (1997), is another important factor in academic success. AQ

elucidates the reasons why certain individuals consistently endure challenges and exhibit diligence, whereas others, including those who are intelligent and emotionally or spiritually stable, may falter and retreat.

Saxena and Rathore (2024) recently wrote about the adversity quotient as the ability of a person to handle and keep going through problems and changing situations, turning problems into chances. This concept is consistent with the claim made by Juwita et al. (2020) that AQ is a science of endurance that assesses a person's capacity to overcome challenges in life so that they can turn setbacks into opportunities. It was mentioned in the study of Safi'i et al. (2021) that since AQ positively correlates with performance, it can have an impact on a person's success. A person with a high AQ will also do well since, in the end, AQ also affects its possessor's performance, autonomy, and achievements.

Teaching internship is a vital phase in every teacher education program here in the Philippines and in other countries as well. This helps students in preparing to become qualified and full-fledged educators. In this stage, future teachers, or the so-called pre-service teachers, are trained in the fundamentals of learning-centered instruction and immersed in the actual classroom experience to become equipped, qualified, and certified teachers of the country (Rogayan & Reusia, 2021). The achievements of pre-service teachers during their teaching internship are often assessed through grading systems that evaluate their performance in various aspects of teaching, like classroom management, lesson planning, student engagement, and pedagogical effectiveness. These ratings provide quantifiable measures of a pre-service teacher's accomplishments and development over the internship time.

It is especially crucial for pre-service teachers to develop and demonstrate high levels of AQ as they become ready to enter the teaching profession. This is due to the fact that becoming a teacher may be difficult, with many challenges and setbacks that demand determination and dedicated effort to surmount. However, despite the importance of AQ as another success factor apart from IQ, EQ and SQ for student achievement, there is limited research on the levels of AQ and its possible relationship to other variables in the context of the pre-service teachers' teaching internship achievement.

Therefore, this study aimed to investigate the levels of AQ and teaching internship achievement among pre-service teachers of a certain college in Occidental Mindoro and to identify the relationship between these variables to discern whether a higher AQ contributes to better teaching internship achievement. By assessing the relationship of AQ and teaching internship achievement among pre-service teachers, future researchers of the college can look further into the effectiveness of the proposed intervention program to enhance the adversity quotient of the college pre-service teachers, ultimately leading to their improved academic success.

Generally, this study aimed to determine the relationship between adversity quotient and teaching internship achievement of CTE pre-service teachers. More specifically, this study sought to:

1. Identify the demographic profile of the pre-service students in terms of age, sex and academic program.
2. Determine the level of adversity quotient of pre-service students.
3. Determine the level of teaching internship achievement of pre-service students.
4. Test if adversity quotient significantly relates to teaching internship achievement.
5. Ascertain any significant difference between the levels of adversity quotient of the pre-service students when grouped according to their demographic profile.
6. Propose an intervention program to further enhance the adversity quotient of pre-service teachers.

2.   METHODOLOGY
2.1. Design

In this quantitative study, a cross-sectional research design was used to examine the relationship between adversity quotient and teaching internship achievement. Likewise, the same design was employed in investigating whether the pre-service teachers vary in their levels of adversity quotient when they are grouped according to age, sex, and academic program. A cross-sectional study is a type of research design in which we gather information from many different individuals at a single point in time where variables are being observed without influencing them (Setia, 2016).

2.2. Sample and Study Site

This study was conducted among the 100 pre-service teachers in the College of Teacher Education in a state college in Mindoro, Philippines, who were enrolled during the Academic Year 2022-2023. The identified samples were chosen using stratified proportional random sampling to ensure that each of the four (4) academic programs of the college is represented proportionally in the sample. It is better to employ this

sampling method to give a more accurate representation of different subgroups within a population, leading to improved precision and validity in research findings.

2.3. Research Instrument

Stoltz' (1997) Adversity Quotient (AQ) questionnaire modified by Yazon et al. (2019) was adapted and administered to the respondents. The AQ Scale consists of 16 items that measure a student's ability to persevere through difficult situations. It consists of 14 items that comprise the four dimensions of control, ownership, reach, and endurance (CORE) dimension that will determine the overall adversity quotient of an individual. The AQ test is an oppositional, scale-based, force choice questionnaire designed to gauge an individual's resilience.

2.4. Data Gathering Procedure

The researcher sought permission to conduct the study from the college dean and the internship coordinator. After approval, the researcher oriented the respondents on the purpose of the study, the voluntary nature of participation, and the confidentiality of their responses. Informed consent was then secured. Their teaching internship achievement scores were obtained from the official records of the internship coordinator. The adapted AQ questionnaire was administered during the respondents' regular internship meetings. Respondents were given enough time to answer the instrument, and the completed questionnaires were checked and encoded. All of the gathered information was treated and analyzed using appropriate statistical methods.

2.5. Ethical Considerations

The study was carried out in consideration of basic ethical practices. The respondents were informed about the purpose of the study, assured that joining was completely voluntary, and reminded that they could choose not to participate at any point without any negative consequences. They were also informed that their answers would be kept confidential and used only for this research. No names were included in the data, and the internship ratings were accessed only with permission from the internship coordinator. All information gathered was handled carefully to protect the privacy of the participants. These measures ensured that the research was conducted responsibly and that ethical standards were consistently observed.

2.6. Data Analysis

Descriptive statistics such as mean, standard deviation, frequency count, and percentage were used in determining the demographic profile and levels of adversity quotient and teaching internship achievement. In determining the relationship between the AQ and teaching internship achievement, correlation analysis using Pearson Product Moment Correlation Coefficient (r) was utilized. The independent t-test (t) and analysis of variance (F) were used to test the significant differences between the levels of adversity quotient of the respondents when they are grouped according to age and sex.

3.   RESULTS

3.1. Demographic Profile of Pre-Service Teachers

The results reveals that a significant portion of the respondents are 22 years old (55%), followed by those who are 21 years old (22%) and 23 years old (15%). 8% of pre-service teachers are 24 years old and above. This suggests that the majority of the respondents who are pursuing teaching as a profession fall within the range of 21 to 23 years.

In terms of sex distribution, the respondents are predominantly females, constituting 79% of the total respondents, while male respondents make up 21%. OMSC pre-service teachers were also enrolled in different academic programs, with the BEEd (Bachelor in Elementary Education) program having the highest representation at 41%, followed by BSEd (Bachelor of Secondary Education) at 36%, BPEd (Bachelor of Physical Education) at 15%, and BTLEd (Bachelor of Technology and Livelihood Education) at 8%. The prevalence of the respondents in the BEEd program implies a specific interest in elementary education [Table 1].

Table 1. Demographic Profile of Pre-Service Teachers (n=100).

DEMOGRAPHIC PROFILE	FREQUENCY	PERCENTAGE
Age		
21 years	22	22
22 years	55	55
23 years	15	15
24 years and above	8	8
Sex		
Male	21	21
Female	79	79
Academic Program		
BSEd	36	36
BEEd	41	41
BPEd	15	15
BTLEd	8	8

3.2. Level of Adversity Quotient of Pre-Service Teachers

The distribution of pre-service teachers' AQ scores across levels shows that most of them have a strong capacity for handling adversity; 56% of them fall into the "High" level, followed by 34% in the "Moderate" level. Surprisingly, none of the pre-service teachers appear to have a "Very Low" AQ level, although a lesser percentage of respondents exhibit lower levels of adversity quotient, with 7% labeled as "Low." The mean AQ score of 3.507 and a relatively low standard deviation of .682 further reinforce the prevailing result of a high adversity quotient level among these pre-service teachers [Table 2].

Table 2. Level of adversity quotient of pre-service teachers.

LEVEL OF ADVERSITY QUOTIENT	FREQUENCY	PERCENTAGE
Very high	3	3
High	56	56
Moderate	34	34
Low	7	7
Very low	0	0
Mean ± SD = 3.507 ± 0.682		

Scale: 1.00-1.49: Very Low; 1.50-2.49: Low; 2.50-3.49: Moderate; 3.50-4.49: High; 4.50-5.00: Very High

3.3. Level of Teaching Internship Achievement of Pre-Service Teachers

As the data reveals, 70 (70%) of them got final ratings of 93 to 98 in their teaching profession course, which is described as outstanding; 23 (23%) got 99 to 100 which is excellent; 7 (7%) got 87 to 92 which is very satisfactory; and none of them got a final grade of 86 and below, which is described as satisfactory, fairly satisfactory, or failed. The mean achievement score of 96.63, along with a moderately low standard deviation of 2.65, strengthens the assertion of outstanding teaching internship performance [Table 3].

Table 3. Level of teaching internship achievement of pre-service teachers.

TEACHING INTERNSHIP ACHIEVEMENT	FREQUENCY	PERCENTAGE
Excellent	23	23
Outstanding	70	70
Very Satisfactory	7	7
Satisfactory	0	0
Fairly Satisfactory	0	0
Failed	0	0
Mean ± SD = 96.63 ± 2.65		

3.4. Relationship between the Levels of Adversity Quotient and Teaching Internship Achievement of Pre-Service Teachers

The correlation analysis results (r=.464) indicates that there is a moderate positive correlation between the level of adversity quotient and teaching internship achievement. The positive correlation

between pre-service teachers' adversity quotient and teaching internship achievement signifies that as the adversity quotient scores increase, teaching internship achievement also tends to increase.

It can also be gleaned from the table that adversity quotient was found to have a highly significant relationship with the teaching internship achievement, as supported by the very low p-value of <0.001. This finding suggests that the observed relationship is unlikely to have happened by chance [Table 4].

Table 4. Correlation on the levels of adversity quotient and teaching internship achievement of pre-service teachers.

VARIABLES	CORRELATION COEFFICIENT (r)	p-value
Adversity Quotient & Teaching Internship Achievement	0.464**	<0.001

***Correlation is significant at the 0.01 level (2-tailed)*

3.5. Difference in the Levels of Adversity Quotient of Pre-Service Teachers When Grouped According to their Demographic Profile

With an F-value of 0.156 and a p-value of 0.926, the findings reveal that there is no significant difference in the levels of AQ among pre-service teachers in terms of their age. Similarly, the ANOVA results indicate that the difference between AQ with respect to academic programs is also not statistically significant, as evidenced by an F-value of 1.555 and a corresponding p-value of 0.169.

In both instances, the p-values exceed the conventional significance threshold of 0.05, indicating that the observed variation in AQ scores among different age or academic program groups is likely attributable to random variability rather than a genuine difference induced by these variables. This interpretation is supported by the high p-value, which indicates that the observed differences are not statistically significant [Table 5].

Table 5. ANOVA on the levels of adversity quotient of pre-service teachers when grouped according to age and academic program.

VARIABLES	F	p-value
Adversity quotient and age	0.156	0.926
Adversity quotient and academic program	1.555	0.169

* Significant if p-value < 0.05

As presented in the table, the t-test statistic is -.276 with a p-value of .783. Since the p-value is higher than the conventional significance threshold of 0.05, the observed difference in AQ among pre-service teachers with respect to their sex is not statistically significant.

This result implies that the AQ, which measures a person's capacity to overcome obstacles, shows no significant variation between male and female pre-service teachers in this specific sample. Consequently, it can be inferred from the available evidence that sex does not play a significant role in influencing the resilience levels of those with aspirations to enter the field of education [Table 6].

Table 6. t-test analysis on the levels of adversity quotient of pre-service teachers when grouped according to sex.

VARIABLES	t	p-value
Adversity Quotient	-0.276	0.783

4.   DISCUSSION
4.1. Demographic Profile of Pre-Service Teachers

The pre-service teachers are in the age range of 21 to 23 years, with a higher proportion of females. The BEEd program holds the most significant representation among academic programs, indicating a focus on elementary education.

A study by Abela et al. (2025) corroborated this finding, revealing that most prospective educators are female, constituting nearly 65% of the senior student demographic in the College of Education. This generally reflects the current trends within the field of education, and the disparity in sex representation within the teaching profession raises the question of its underlying influences. Likewise, the study of Yazon et al. (2021) revealed that the pre-service teachers in the two Asian countries are dominated by female students, and the majority belong to the ideal age bracket.

These findings indicate that teaching continues to be a female-dominated profession, with the majority of enrollees falling within the conventional college-age demographic, implying stable enrollment trends and prompt educational advancement among pre-service teachers. Furthermore, the finding implies that most of the pre-service teachers are getting ready to teach in the foundational years of schooling, where patience, concern, and effective communication are highly valued traits frequently associated with women.

4.2. Level of Adversity Quotient of Pre-Service Teachers

The results of the study show that most pre-service teachers have a high level of AQ. This means that they are resilient, could overcome challenges, and are likely to be successful in their teaching internships and their future careers as teachers. It is encouraging that none of the pre-service teachers had a very low AQ level. This suggests that the pre-service teachers in the study had the necessary resilience and coping mechanisms to confront the challenges of pre-service teaching. This result is further supported by Adnan and Matore (2022), who reported that nearly half of the pre-service teachers in their study demonstrated a high to very high level of adversity quotient, indicating strong resilience and the ability to persist despite academic and practicum-related challenges. In general, these results indicate that pre-service teachers are strong and can handle problems well, which is a favorable sign for their future roles in education. Therefore, stakeholders involved in the development of 21st-century learners should not only promote a growth mindset but also develop other essential factors, such as adversity quotient, to help learners become globally competitive citizens of the society. (Yazon et al. 2021).

The findings of this study suggest that it is important to help pre-service teachers develop their AQ. Training, education, and exposure to positive role models can achieve this. By increasing the AQ of pre-service teachers, we can help them to be more successful in their teaching careers.

4.3. Level of Teaching Internship Achievement of Pre-Service Teachers

The presented results from the pre-service teachers' teaching internship achievement, as measured by their final term grades, offer important information regarding the performance of these individuals during their teaching profession course. As an overall result, the pre-service teachers have an outstanding teaching internship achievement. This implies that these individuals excelled in their teaching internship and demonstrated a high level of competency and skill in the classroom. The fact that the largest percentage of students falls into this category suggests a consistent level of achievement and competence among a substantial portion of the sample. It's noteworthy that none of the pre-service teachers received a final grade below 86, which includes categories such as "satisfactory," "fairly satisfactory," and "failed." This absence of low ratings suggests that the teaching internship program has effectively screened and trained candidates to a level where they consistently meet at least a "very satisfactory" standard. Future studies might discuss the factors contributing to this high level of achievement and its potential implications for their subsequent teaching careers.

The current finding aligns with recent research indicating that pre-service teachers typically exhibit strong academic performance. Bartolome et al. (2025) indicated that pre-service teachers in early childhood education achieved a "very good" general weighted average while sustaining a minimum moderate level of Adversity Quotient, implying that these individuals possess academic competence regardless of the obstacles they encountered throughout their training. In a similar study, Danao et al. (2025) found that pre-service teachers in the Bachelor of Secondary Education program were rated "Very Good" in their academic work and also highly skilled in important 21st-century learning skills like critical thinking, working together, and talking to others. The consistent trend of high academic achievement among pre-service teachers indicates that teacher education institutions are successfully promoting academic excellence. It also implies that these students have the discipline, motivation, and learning strategies they need to become successful teachers in the future. Therefore, to keep these outstanding academic results going, there may need to be ongoing support for the curriculum, efficient teaching methods, and a positive learning environment.

4.4. Relationship between the Levels of Adversity Quotient and Teaching Internship Achievement of Pre-Service Teachers

The adversity quotient (AQ) is a measure of how well a person can handle problems and respond to them by using their strengths and potential. In this context, possessing a robust AQ entails embracing a mindset of resilience and proactive adaptation when faced with challenges in the pursuit of success (Widodo, Gustari & Chandrawaty, 2022).

Even though AQ is a relatively new idea, recent studies have indicated that it is strongly linked to academic outcomes like student performance, self-regulated learning, and subject achievement. These findings indicate that Adversity Quotient is a crucial non-cognitive determinant of academic achievement. Enhancing students' AQ may foster greater persistence, adaptability, and concentration on learning, all of which are crucial for academic success (Safi'i et al., 2021; Hung et al., 2023; Maramis & Waas, 2023).

The present study found that the AQ of pre-service teachers was positively correlated with their teaching internship achievement, indicating that individuals with higher AQ tend to perform better academically and professionally. The pre-service teachers who exhibit higher levels of adversity quotient are more likely to possess higher teaching internship grades.

This result aligns with the research conducted by Lontok et al. (2025), which indicated a moderate positive correlation between AQ and the academic performance of Bachelor of Science in Accountancy students. Hung et al. (2023) also found a strong positive link between students' AQ and their English language skills. This suggests that students who are more resilient and persistent tend to do better in school. These consistent results indicate the importance of cultivating pre-service teachers' capacity to adapt and recover from challenges, as these qualities enhance academic and professional performance.

The positive correlation with teaching internship achievement suggests that pre-service teachers who possess higher levels of resilience and the ability to manage and overcome challenges are more likely to perform well during their internship. This research suggests that developing a high AQ is crucial for pre-service teachers because it affords them the resilience and flexibility they need to succeed in challenging academic and practicum settings. They can handle classroom difficulties, stay motivated in the face of setbacks, and react well to criticism during their teaching internship if they have a high AQ (Parveen et al, 2025). Teacher education program should include activities that build AQ, like reflective journaling, mentoring programs, and resilience workshops, to help future teachers become more emotionally strong and persistent (Arabejo, 2024). In the end, these traits will improve their learning and teaching.

Additional studies could investigate the fundamental mechanism that underlies this correlation while also examining potential strategies for focused interventions that could improve both the adversity quotient and the teaching internship performance of pre-service teachers.

4.5. Difference in the Levels of Adversity Quotient of Pre-Service Teachers When Grouped According to Their Demographic Profile

The result of the ANOVA and t-test analysis of the present study revealed that the adversity quotient of pre-service teachers does not appear to be significantly influenced by their age, sex, and academic program. These findings implied that the average AQ score is the same for pre-service teachers of all ages, in both sexes, and in different academic programs of their choice. These results are somewhat in agreement with the findings of Bartolome et al. (2025), who revealed no significant disparity in AQ between male and female early childhood pre-service educators. The results indicate that the Adversity Quotient is a relatively stable characteristic that is not significantly affected by demographic variables such as gender, age, or academic program. This suggests that both male and female pre-service teachers exhibit similar degrees of resilience and coping skills in response to academic and pedagogical challenges. This means that teacher education programs can use AQ development programs with all their students, not just those in certain programs or genders. This is important because it provides all pre-service teachers the same chance to learn how to be flexible and persistent.

Conversely, the study by Adnan and Matore (2022) contradicts these results, as it found significant differences in AQ based on sex and field of study. They found that male pre-service teachers have higher AQ levels than female pre-service teachers, and that participants from all fields of study exhibit varying AQ levels. Similarly, the finding of Yazon and Ang-Manaig (2019) showed significant differences in the AQ levels of their participants in terms of academic program and field study.

These results of no significant differences can help guide educators and policymakers, indicating that efforts to enhance adversity quotient among pre-service teachers might need to be tailored more towards individual characteristics and experiences rather than general sex and age groups or academic programs. Further research could explore additional factors that might impact adversity quotient and whether these factors have a more substantial influence on the resilience level of the future educators.

4.6. Proposed Intervention Program

The present study's result showed a positive and significant correlation between the pre-service teachers' adversity quotient and their teaching internship achievement. In line with this finding, an intervention program in the form of a two-day seminar workshop with the following topics and activities is being proposed to further enhance the adversity quotient of the pre-service teachers. It was also recommended that this seminar-workshop be given before the deployment of the pre-service teachers.

Understanding Adversity Quotient: This topic would provide an in-depth introduction to adversity quotient, explaining what it is, why it is important, and how it differs from other personal traits like intelligence or emotional intelligence. Participants would learn about the components of AQ, including resilience, adaptability, problem-solving skills, and emotional regulation. We would emphasize the relevance of AQ to personal growth, professional development, and success in the teaching profession. This segment

will concentrate on practical strategies that foster resilience and improve coping skills. Pre-service teachers would learn techniques to manage stress, setbacks, and challenges commonly faced in teaching. Workshops and discussions could cover mindfulness techniques, positive reframing, effective time management, and maintaining a growth mindset. Real-life scenarios from classrooms could be discussed to help participants apply coping strategies to teaching contexts.

Applying AQ in the Classroom: This part of the workshop would explore how adversity quotient translates to effective classroom management and student engagement. It would describe strategies for creating a positive learning environment, fostering open communication, and adapting to diverse student needs. Interactive activities, role-playing, and case studies could help pre-service teachers develop practical skills for addressing classroom challenges while maintaining a constructive outlook.

Reflective Practices and Professional Growth: This topic would guide participants in using their adversity quotient to engage in reflective practices for continuous professional growth. Pre-service teachers would learn how to assess their teaching experiences critically, identify areas for improvement, and implement actionable strategies. The workshop could include journaling exercises, peer discussions, and action planning to encourage ongoing self-improvement based on AQ principles. By covering these essential topics, the seminar workshop would equip the pre-service teachers with a comprehensive understanding of adversity quotient and arm them with practical tools to navigate challenges, foster resilience, and excel in their future teaching careers.

5. CONCLUSION

This study is generally aimed at investigating the relationship between the levels of adversity quotient and teaching internship achievement of pre-service teachers in the College of Teacher Education in a state college in Occidental Mindoro, Philippines. This study was conducted with a sample of pre-service teachers who are predominantly female with ages that range from 21 to 23 years and are enrolled to become elementary school teachers. It was found out that the AQ level of the pre-service teachers is high, and they have an outstanding level of teaching internship achievement. The result means that the pre-service teachers in this study had a high level of resilience and ability to overcome challenges, and they also performed well in their teaching internship. Results also indicated that pre-service teachers' level of adversity quotient is positively and significantly correlated with their teaching internship achievement, which implies that the higher the pre-service teachers' AQ level, the better they performed in their teaching internship course. This study also revealed that pre-service teachers' age, sex, and academic program do not significantly influence their adversity quotient, indicating no significant difference in AQ level across these groups. Based on these findings, the researcher suggests developing an intervention program to assist pre-service teachers in improving their AQ levels.

Future research should investigate the effectiveness of the proposed intervention program aimed at enhancing the AQ levels of pre-service teachers. Ultimately, such intervention could lead to improved academic performance and success among pre-service teachers, which could have positive implications for the teaching profession.

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Hydro morphological assessment using the habitat survey method of Pandurucan River in San Jose, Occidental Mindoro

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Article Info	ABSTRACT
	Describing the physical characteristics and natural processes of a river system required field investigation and site survey. The River Habitat Survey (RHS) was developed to guide water managers to provide technical descriptions of the river ecosystem useful in the conservation and rehabilitation of the riverside habitats. The survey was conducted to assess the hydro morphological features of the river to provide substantial evidence for the corrective measures applicable to the river. This study employed the procedures suggested by RHS to present the habitat quality assessment and habitat modification scores that describe the present diversity and ecology of Pandurucan River in San Jose, Occidental Mindoro. The Habitat Quality Assessment (HQA) scores reflected that the river has poor diversity and naturalness, as shown by the physical features of the channel, bed, and riverbank. The high value of the Habitat Modification Score showed that the river is severely modified by the existing land use, structures, and development in the river, describing the present ecology in the river. The study further proved that rehabilitation strategies must be prioritized in the objective of reviving the Pandurucan River.

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1. INTRODUCTION

Characterizing the physical features of rivers and evaluating the river habitat quality is becoming a popular approach to support river management. Hydro morphology is used to describe the characteristics and processes of the river ecosystem (European Commission, 2000) and supports the assessment of the biological components; biotic elements affecting the richness of the river; the nutrient and organic matter storage, and the aquatic life processes (Vaughan et al., 2009; Elosegi et al., 2010; Elosegi and Sabater, 2013). Therefore, hydro morphological assessment aims to evaluate and classify all the existing hydrological and geomorphological features of the river to assess the condition (Belleti et al., 2015). While approaches to an effective river management system raise pressing issues for many water managers and policymakers, the choice of sustainable river management depends on the quality of information and expert decisions. Most of the failure occurs in the inability to characterize the physical structures of the river and present the chemical and biological factors affecting the river system. In the attempt to conduct a sound hydro-morphological assessment, the conduct of the River Habitat System (RHS) is important. RHS can determine the type of aquatic biological communities present in the river, the land use and land pattern, and the type of river, describing the river flow, channel bed, and slope. The approach is based on data collection on a 500m stretch of the river channel, considering the grid reference, slope, geology, height of the sources, and distance from source, in-stream features of the channels, and riverbank (Environment Agency, 1997b; Fox et al., 1998).

There are various methods introduced to carry out a hydro morphological assessment for river restoration, ranging from the spatial configuration of the physical habitats to broader river condition

assessments, biological assessment methods; conceptual approaches on the holistic, representative, and multiple practices; and multivariate and multimeric approaches (Raven et al., 2002; Fernández et al., 2011, Fryirs et al., 2008; Karr and Chu, 2000; Tharme, 2003; Gostner, 2012). A common approach in hydro-morphological assessment is the RHS, which focuses on the physical structure of the river using the systematic collection of the physical structure of the watercourse of the river channel. RHS is carried out using a standard field survey method, a computer database as an appropriate method for assessing habitat quality, and a system for describing the extent of artificial channel modification (Raven et al., 1997, 1998).

RHS was first used in the United Kingdom to determine the physical quality of rivers as the main data for the environmental assessment and catchment planning; the method was recommended for further refinement to consider the robustness of the data, such as the habitat requirements and impact of channel modification (Raven et al., 2000). A study of Buffagni and Kemp (2002) conducted the RHS using a survey method in determining the type of flows, substrate, and the characteristics of the wetted channel; the study revealed the average number of flow types per site increased between 1.0 to 2.2, while the substrate types were close to 1.0. The RHS was also used in characterizing the Douro basin in Portuguese Land using the ordination, classification techniques, and the 10-spot checks, and discovered factors affecting the river corridor are dependent on typological characteristics (Cortes et al., 2008). Further, RHS investigated the 500-meter length of the river considering the hydrologic conditions, land-use, and the riparian habitat structure; the assessment showed 82-76% channel attributes and 87-98% of channel and bank features (Raven et al., 2010). Moreover, the study of Urošev et al. (2009) applied RHS in classifying the river habitat quality of Golijska, Moravica, and Jerma basins in Serbia; the study revealed that the Habitat Quality Assessment (HQA) index of Moravica and Jerma has higher habitat diversity with lower values of Habitat Modification Score (HMS). Further, RHS, utilizing the HMS and HQA indices, was used in three small lowland rivers in Poland: Zielawa, Zwoleńka, and Zagożdżonk; the study revealed that the values were dependent on the seasons and were greatly affected by the level of vegetation and the number of species observed in the river channels, with 5% maximal value (Kiraga, 2020). Another usability of RHS was presented in forecasting the effects of Zielawa River restoration between the selected stretch of the river; the study found that the use of variants and indices can increase the ecological class from Class V to Class IV (Kiraga and Popek, 2014). Another study on the RHS was applied in classifying the ecological condition of Wardynka River using the HQA and HMS indices; the 48 HQA index and 3 HMS index revealed that the river has a type 4 class, having moderate environmental condition (Spieczyński et al., 2014). The use of drones and photographic data was recently developed as a strategy to carry out RHS and provided an opportunity to upscale the habitat classification and monitor the river system in a more precise and accurate manner (Woodget et al., 2017). RHS using HQA and HMS were used in assessing the river channels of the Wardynka river and Kanał Habdziński of North-western and central Poland; analysis of the study revealed numerical values of 68 HQA score and 19 HMS for Wardynka, identified moderate (Class 3) ecological status; while 33 HQA and 28 HMS determined in Kanał Habdziński classified as Class 4 or poor ecological status (Brysiewicz and Czerniejewski, 2019).

Literature has stated the usefulness of the River Habitat Survey in assessing and classifying the physical structures of the river system as basic information for river management. The ability of the HQA and HMS indices in describing the characteristics of the river was used in this study. The data acquired from the catchment delineation served as the input data in the score sheets and was compared to the applicable standards. The results of the study can provide important information for the conservation project and river basin management plans of Pandurucan River. The river connects the coastal barangays to the proper town and is generally used for recreational purposes. Part of the rehabilitation plan for the river is the investigation of the physical, biological, and environmental factors affecting the river ecosystem. The assessment of water quality has already been conducted and revealed poor water quality (Enriquez, Tanhueco, 2022). In the attempt to determine the factors affecting the causes of contamination, this study aims to present the physical structures of the river, including the characteristics of the surrounding environment. This study presented a hydro-morphological assessment approach in describing the character of chemical and biological sampling points used for assessing water quality.

2.   METHODOLOGY
2.1. Design

This study focused on the application of the River Habitat Survey (HRS) as a structured survey technique in characterizing a river (Raven et al., 1997, 1998b). The approach was adopted to collect data from field observations such as the substrate, flow, erosion, deposition features in the channels, morphological and vegetation structure on the banks, and the land use in the surrounding environment.

2.2. Study Area

Pandurucan River is considered one of the important rivers in the province of Occidental Mindoro (Candelario, 2009). The river plays an important role in connecting barangays to the town and was categorized as Type B or recreational waters by the Department of Environment and Natural Resources (2023). The upstream region is surrounded by mountains and agricultural areas; the middle stream seats through Brgy. Labangan is surrounded by semi-commercial and agricultural areas, while the downstream region is surrounded by commercial and residential areas. The study considered a 500-meter stretch of the River from the Pandurucan Bridge to the downstream region of the river.

A field survey was conducted to gather all the needed data to describe the physical characteristics of the river. Table 1 shows the type of data and sources from which the data were taken, while Image 1 shows the transects considered in the study area.

Table 1. Type of data for hydro morphological assessment.

TYPE OF DATA	SOURCES OF DATA	QUALITY OF DATA
Geomorphological characteristics	QGIS Catchment Delineation (Enriquez, 2022)	Catchment Area: 3,605.10 ha Drainage Area: $5367.33 m^2$
Elevation-DEM	ArcGIS Field Survey	5m x 5m resolution Walkthrough analysis
Channel slope	QGIS Catchment Delineation (Enriquez, 2022)	Slope: 0.21891°
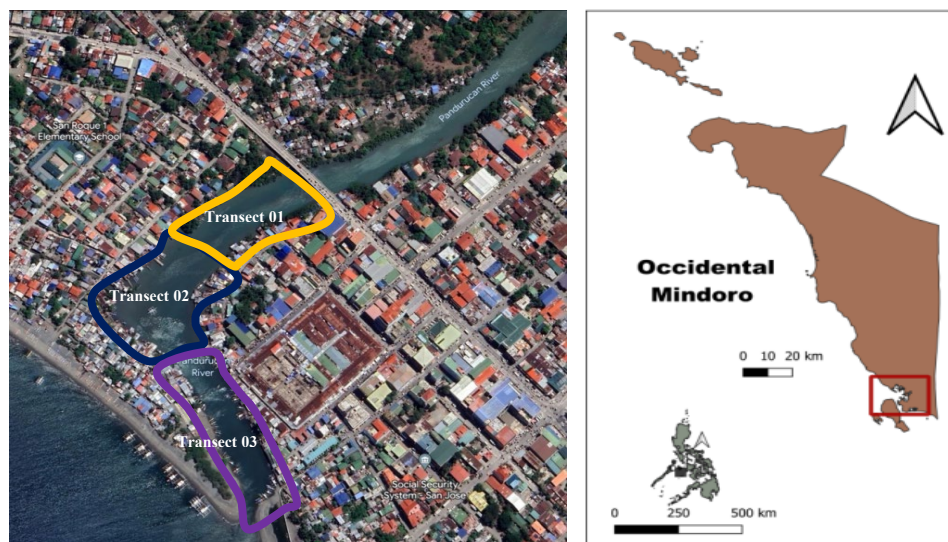
Image 1. Study area

2.3. Hydro Morphological Data

The hydro morphological assessment was carried out considering the Physical Habitat Survey, riparian habitat assessment, and morphological assessment. The physical habitat assessment includes the physical observation of the river to determine the in-stream habitats or microhabitats. A walk-through analysis and photograph were used to determine the land use in the study area and other channel features. The field/site investigation was carried out to validate the data gathered. The riparian habitat described the riverbed system, types of revetment/protection present/, riverbank profiles, and the type of vegetation. Lastly, the morphological assessment approach focused on the framework of river conditions and the assessment needed for the restoration design. The data to present the morphological conditions, such as the catchment area, slope, and length, were provided by the catchment delineation process in QGIS.

2.4. Habitat Quality Assessment (HQA) Score

HQA is an indicator of the global diversity of habitat, considering the natural characteristics of the study area, such as flow types, channel floor, and deposition features in the channel, and is presented with scores given to each characteristic. The HQA indices, where a score of 10 indicates a very small number of

features and a score of 80 represents a high degree of natural characteristics, were adopted in this study (Urošev et al., 2009; Ferreira et al., 2011).

2.5. Habitat Modification Score (HMS)

HMS quantifies the presence and influence of anthropogenic modifications, such as the presence of hydraulic /water structures in the river system: bank reinforcement, modified bank profile, dams, piers, culverts, and bridges. The modifications were scored according to the presence or absence (0-100 score) of HMS Rules version 2018 were adopted in the study [Table 2].

Table 2. HMS classification and description (Naura, 2014).

HM CLASSIFICATION	HMS DESCRIPTION	HMS SCORE
1	Pristine/semi-natural	0-16
2	Predominantly unmodified	17-199
3	Obviously modified	200-499
4	Significantly modified	500-1399
5	Severely modified	>1400

3.   RESULTS

3.1. Basic Morphometric Data of the River

To characterize the 500-meter length of the river, two stations were considered as the river site investigation area. The first site is located near the Pandurucan Bridge, and the second station is located near the outlet of the river. The basic morphometric data obtained in the identified stations [Table 3].

Table 3. Basic morphometric data of the river.

TRANSECT	RIVER'S SURROUNDING AREA	LOCATION	ELEVATION (MEAN SEA LEVEL, m)	MAXIMUM DEPTH OF THE WATER (m)	BANK WIDTH (m)
1	Highly densely populated area	12'21'01N 121'03'35'E	5.0	1.08	67.88
2	Highly densely populated area	12'21'08N 121'03'37'E	4.5	0.85	89.45
3	Highly densely populated area	12'21'14'N 121'03'40'E	3.0	0.65	46.57

3.2. Water Depth and Width of the Riverbank

The depth of the water was determined by the average values of depth measured using a range pole during the field survey. The exact spot-check coordinates were determined using a GPS device, while the elevations of the sites were measured from the mean sea level with the help of Google Earth and calibrated through the GPS device. The bank top width was measured on site [Image 2].

Image 2. Field survey for the depth and width of the river bank

3.3. Spot Check Survey

Using the spot-check systems recommended by the River Habitat survey, the river was transected into three sections as shown in Figure 1, selected based on the flow and physical attributes of the river. In general, all transects were surrounded by highly dense and populated areas. The spot checks used in the study considered the hydro-morphological elements of the river, including the channel substrate, flow type, bank features, riverbed, and land use present.

Considering the three (3) transects used in the analysis, the following general information was drawn: the sites were part of the river, and there were no adverse conditions affecting the survey. The survey was conducted on a sunny day, a cloudy day and a day after rain at 9:00am. During the survey, the riverbed is partially visible, and the water is generally clear. The bottom is considered flat since the 500-meter stretch of the river lies on the lowest elevation. The flow of the water was characterized by shallow and fast flow with a distinct disturbed surface over the unconsolidated gravel-pebble substrate at Transect 1. As water flows into Transect 2, a slower flow along the unconsolidated riverbed was observed, accompanied by sediments, while the flow in Transect 3 was characterized by a slow-to-fast flow as it approaches the outlet of the river. In terms of the physical attributes of the river [Table 4].

Table 3. Results of the spot check survey

PARAMETERS	RIVER HABITAT SURVEY SPOT-CHECK RESULTS	
Physical attributes	**Left bank**	**Right bank**
Bank materials	Gravel/sand	Gravel/sand
Bank modifications	Reinforced bank	Reinforced bank
Bank features	Unvegetated point bar	Unvegetated point bar
Channel substrate	Gravel/pebble	
	Sand	
	Silt clay	
Flow type	Smooth and rippled	
Chanel modifications	No obvious modification on channel bed	
Channel features	Unvegetated mid-channel bars	
Bank top land use and vegetation structure		
Land use within 5m of left bank top	Suburban/urban development	
Left bank top (structure within 1.0m)	Complex	
Left bank-face	Complex	
Right bank-face	Complex	
Land use within 5m of the right bank top	Complex	

3.4. Channel Substrate and Flow Type

The physical attributes of the river defined the existing environment, affecting the natural processes of the river. It was observed that the left and right banks of the river are covered with coarse gravel and pebbles, especially in Transect 1. Silt and sand substrates were observed along Transect 2, and Transect 3 was characterized by sand, as it is closely located near the mouth of the ocean. Some bank modifications observed in the river were the presence of concrete, riprap, and gabions, and piles of wood. While the bank features are described as an unvegetated point bar due to the unconsolidated riverbed material with distinguishing low flow and shallow slope into the water and characterized by sediment transported with the stream flow. Further, the channel substrate was determined by the collected fragments in the range pole and by analyzing the size. In general, the collected substrates were a combination of pebbles, sand, silt clay. No obvious modifications on the channel bed were observed, and the channel features were characterized by unconsolidated riverbed material [Image 3].
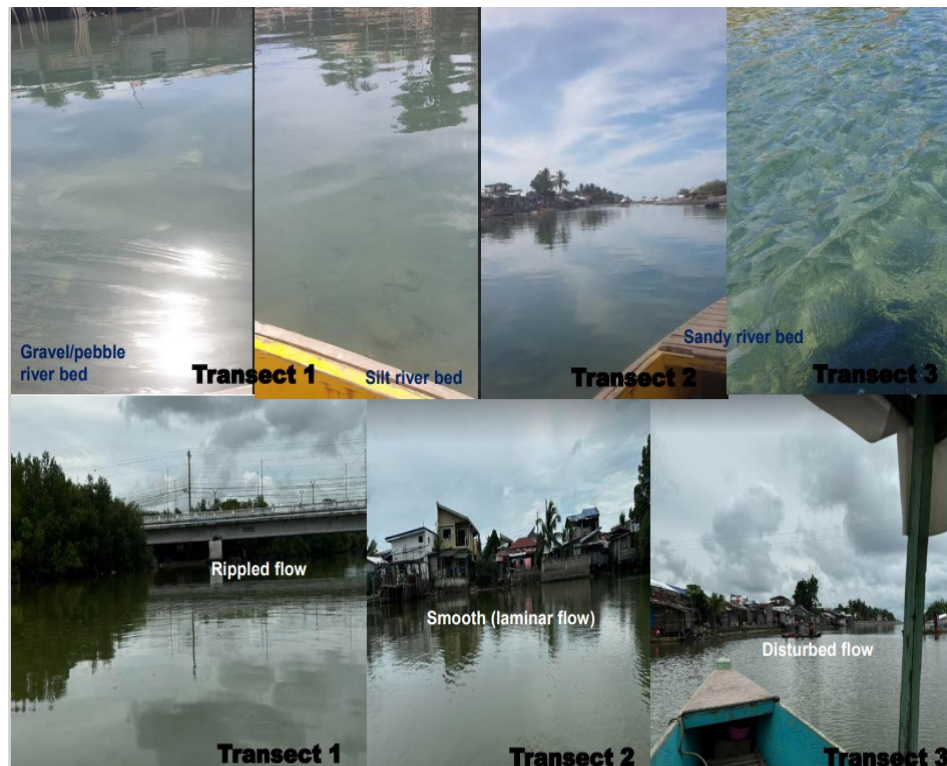
Image 3. Channel substrate and flow type

3.5. Land Use and Existing Structures Present on the Riverbank of the Pandurucan River

After characterizing the channel beds and substrate, the present land use and land cover surrounding the river were analyzed. The survey considered the land use and existing structures on the left and right banks of the river [Image 4].
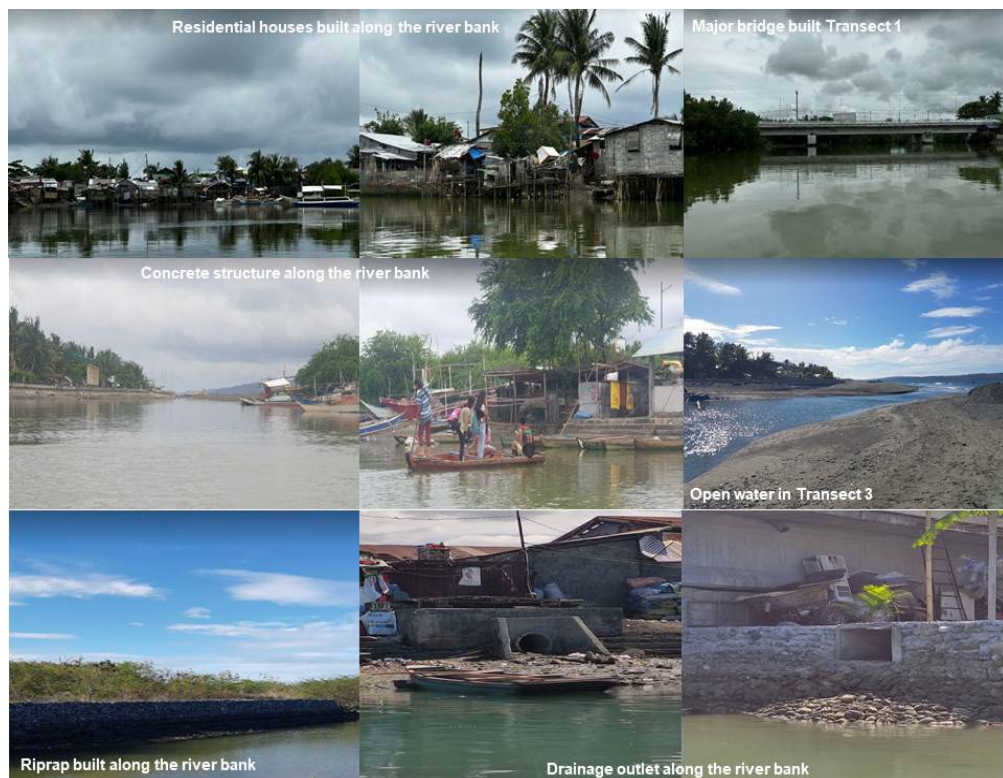
Image 4. Land use and existing structures present on the riverbank of the Pandurucan River

3.6. Type of Vegetation Present in the Study Area

Based on the collected information, within the 1.0-meter to 5.0-meter left and right banks, the presence of residential houses and commercial structures was present. The residential houses are usually made up of light materials with columns submerged in the river water. The presence of the Pandurucan Bridge is considered a major structure affecting the hydro morphological activities. The San Jose Public Market and a seawall structure were situated along the riverside. There were drainage outlets directly facing the river. The presence of natural open water in Transect 3 makes the area useful for the docking of boats from the nearby island. In conclusion, the congested houses and structures present described the complexity of the riverbank, as many activities were concentrated on the existing land-use.

Further, the channel vegetation type described the functional habitat provided for other living organisms in the river. Some of the features were categorized as free-floating from the presence of fallen leaves in Transect 1; amphibious from the mangrove trees arranged along the riverbank; submerged fine leaves from the long leafy plants observed; and the filamentous algae stacked on the stones and boulders along the riverbank [Image 5].

Image 5. Types of vegetation present in the study area.

The field observation conducted in this study provided an in-depth description of the existing vegetation along the selected stretch of the Pandurucan River. The results showed varying vegetation features classified as bare, uniform, simple, and complex. Bare features were observed along portions of the riverbank lacking any type of vegetation. The uniform features were characterized by the presence of mangrove and aroma trees arranged in linear formations. The simple features referred to sections of the riverbank with a single type of tree, while complex features represented areas containing a diversity of vegetation types.

3.7. Habitat Quality Score

Considering all the results of the field observation and analysis of the present features of the Pandurucan River, all data were placed in the Habitat Survey application, and a corresponding value for the HQA was generated. Result shows the scores obtained from each category of the River Habitat Survey considered in the study [Table 4].

Table 4. Habitat Quality Score

CATEGORIES	TRANSECT 1	TRANSECT 2	TRANSECT 3
Flow type	6	1	10
Channel substrates	10	10	5
Channel features	1	0	0
Bank features	4	2	3
Point bars	2	2	
In-stream channels	1	0	0
Land use within 50m	4	4	4
Trees and associated features	2	1	1
Object of special importance	1	1	2
HQA Score	**39**	**29**	**35**

The results of the table showed the hydro morphological features of the study area with HQA scores of 39, 29, and 35 for Transect 1, 2, and 3, respectively. Notably, the scores are lower than 80, indicating the river transects have low diversity and naturalness. The condition can be attributed to the high population density and extensive infrastructure development that may have influenced the ecological quality of the selected stretch of the river. The lowest HQA score was observed in Transect 2, where a public market and residential houses, and other concrete structures were built. The next lowest score was observed in Transect 3, characterized by the presence of a seawall and residential houses. The presence of aroma trees along the riverbanks helped improve the natural water quality. The highest HQA score was obtained by Transect 1, despite being surrounded by residential houses; the presence of mangrove trees and other types of vegetation provided an opportunity for living organisms to survive.

3.8. Habitat Modification Score

During the field observation, all types of modifications present in the study area were recorded and documented. The HMS was carried out by assessing the presence and absence of artificial objects such as pipeline weirs, bridges, dams, and others. The assessment also included the investigation of any type of modification implemented in the bank profile, bank reinforcement, embankment, and other. As the number of modifications increases, the HMS also increases, describing the hydro morphological transformations affecting the natural processes of the river.

Result reflects the HMS Score obtained by the transects of the river used in the analysis, considering all types of modifications present in the study area. The overall score of 2,290 indicates that the river is severely modified. The presence of concrete structures such as the Pandurucan Bridge and seawall, gabions and riprap, and other bank modifications contributed to the high value of HMS. The presence of extensive modifications clearly demonstrated that the natural habitat of living organisms in the river is greatly affected [Table 5].

Table 5. Results of the habitat modification score

CATEGORIES	SPOT-CHECK	HMS SCORE	NUMBER OF OCCURRENCES	SCORE
Channel modifications	Culverts	200	6	1,200
Bank material	Concrete	40	2	80
	Gabions	40	2	80
	Riprap	40	1	40
Bank modification	Reinforced concrete	40	4	160
	Channel substrate	200	2	400
	Embankment	20	4	80
	Bridge	250	1	250
			Total Score	**2,290**

4. DISCUSSION

This study presented technical information on how to assess the habitat in the river system, taking into consideration the ecological conditions for river restoration and rehabilitation. As river management becomes a pressing issue for many water managers, the need for a substantial evaluation of the ecological system must be carried out to understand how the natural characteristics and processes in the river are affected by natural and human-induced activities.

The hydro morphological assessment conducted in the Pandurucan River considered the key physical attributes such as the riverbed, channels, riverbanks, and all other types of modifications existing in the study area that collectively influence the river flow, channel bed, and slope. The use of the RHS and the HMS, and HQA provided values derived from the field investigation and reconnaissance survey. The results revealed that the Pandurucan River demonstrated low habitat diversity and was heavily modified. The HQA of 39, 25, and 35 specifically shows the poor ecological diversity that requires attention for restoration and rehabilitation (Kiraga, 2020). Similar studies, such as Olveira et al. (2004) and Urošev et al. (2009), showed the ability of the HQA and HMS in providing valuable inputs in the conservation project and river basin management plan by evaluating the ecological conditions of the rivers.

The RHS, originally used in European countries, has gained popularity in many countries in the world. The approach provided an opportunity for this study to conduct an in-depth analysis of the ecological condition of the Pandurucan River. However, the limitations of the study were concentrated only on a 500-meter stretch of the river that might not capture the variability of the entire river such as the seasonal variation and changes in the hydraulic conductivity, substrate type and composition, and other depositional features in the riverine (Ferreira, et.al, 2001; Raven, et.al, 2009a; Raven, et.al, 2009b).

The study showed that as the degree of modification increases, HMS also increases, indicating the substantial changes in the natural anthropology of the river system. The HMS score summarizes the structural changes present in the river (Costa and Vieria, 2021) and can present the consequences of alterations on the bed and margins of the river. In general, higher HQA and lower HMS signify a healthy river system (Urošev et al., 2009; Raven et al., 1997). Therefore, the HQA and HMS indices become a powerful tool in review restoration efforts, quantifying and prioritizing interventions to improve the naturalness of the river habitat (Kiraga, 2020; Kiraga, 2014).

5. CONCLUSION

This study successfully used the River Habitat Survey in presenting the hydro morphological characteristics of the Pandurucan River. The use of the survey categories allowed a detailed assessment of the river's channel, bed, banks, substrate, flow type, land use, and the vegetation of the river system. The field investigation and ocular inspection provided substantial information to carry out the objective of the study

The HQA scores obtained in the analysis showed that the river exhibits poor diversity and has less opportunity for living organisms to thrive. While the listing of all types of modification provided an HMS score of 2, 290 described that the river is severely modified due to the extensive impacts of human activities and land development. The results of the evaluation provided essential information for the local government authorities to make sound decisions and develop a framework for river restoration and rehabilitation efforts.

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Seas of opportunity: Development of an innovative capacity building program for thriving seaweed producers

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Article Info	ABSTRACT

Seaweed aquaculture supports several coastal communities in the Philippines, but aquaculture farmers experience declining production, stagnant markets, and lack of access to innovation. In Occidental Mindoro, these restrictions pose risks to livelihood sustainability while at the same time providing prospects for product development and capacity building. This study evaluated the knowledge, skills and training needs among 30 purposively sampled seaweed farmers in Magsaysay through a descriptive research design and structured questionnaire. Data was analyzed by using descriptive statistics. Findings indicated that most farmers were of prime working age (30 - 39), were predominantly male, married, and high school educated. Community-based knowledge exchange was confirmed through their primary information sources, which included meetings and seminars (56.7%). Farmers showed a strong interest in entrepreneurship, more specifically the topic "Your Seaweed, Your Business: Learning the Entrepreneur's Mindset." Face-to-face training was the preferred modality (M=4.8) and 16 hours was considered the optimal duration. Although individual Local Authorities provide support, there are currently no formal programs. The study concludes that seaweed entrepreneurs can and are willing to respond to participatory, community-based training programs which can combine entrepreneurship, sustainability practices, and innovation. Such efforts will assist seaweed aquaculture to shift from a subsistence-oriented activity to a resilient and market-oriented activity.

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1. INTRODUCTION

Seaweed farming has long been recognized by many communities on the coast as a livelihood - a tradition handed down through generations. Nevertheless, despite its enormous potential, most seaweed farmers still suffer from the same problems: low market prices, access to modern technology, knowledge of value-added processes, and environmental threats that threaten their harvests. Similarly, it was found out that there is a decreasing level of production due to environmental problems, and a stagnant market condition as a threat for growth and sustainability, but with potential product development and (Durrani et al., 2024).

Sometimes, it's not a lack of effort, but a lack of access to the proper tools, modern techniques, value-adding opportunities and knowledge of markets and business. Farmers know how to grow their seaweed, but they might not have had a chance to learn how to turn their produce into higher value products, how to sell it well, or in essence, how to use a simple piece of technology that can save time, cut waste and increase profit (Sultana et al., 2022).

This has led to an initiative to undertake a formative evaluation which is ostensibly to make an attempt to know what they already know and want to know and what kind of support the seaweed growers require to be able to constantly adapt to a changing environment. This suggests that sustainable environmental practices can be embedded into business operations to help adapt to shifting market conditions, to reduce potential disruptions, and to ensure long-term viability or otherwise develop long-term resiliency (Wolniak et al., 2023).

Finally, the results of this assessment will guide the development of a capacity building program, a bottom-up process to develop the capacity of seaweed farmers as producers, but also as innovators, entrepreneurs, and stewards of the sea. And in doing so, several factors must be taken into account, such as support from the government in the form of training for the adoption of advanced manufacturing technology, increasing food quality standards, conducting research, and food innovation (Busthanul et al., 2023). It isn't just a program - it is a movement by the community, for the community. Seaweed farmers are more than just workers of the sea, they are dreamers, innovators and protectors of their coastal heritage.

By identifying real needs and tailoring training to meet them, this research hopes to create learning opportunities that are practical, empowering, and life-changing because every seaweed farmer deserves the chance to grow, not just their crops, but their future (Hurtado et al., 2017). This project breathes life into the belief that progress is not only about increasing harvest but also about strengthening dignity, building confidence, and fostering unity among communities. This aims to make the seaweed farms stand tall – not only for their families – but also as leaders who contribute to the sustainable growth of their community.

Although several studies have been done on seaweed farming in the Philippines, there remains a clear research gap when it comes to understanding the needs of seaweed farmers in enhancing their capacity in Occidental Mindoro. While other research has mainly concentrated on farming practices, environmental concerns, and economic impacts of this sector in the country, there is still a limited understanding of their needs for capacity building programs conducted for them particularly within the local context of the province. With this, the study aims to identify the current understanding of essential skills for sustainable farming practices, innovation, product development, financial management, and entrepreneurship among Seaweed Farmers; determine the existing information needs regarding the importance of innovation, technology, financial management, and entrepreneurship; and assess the training modalities and time duration preferred by the training participants.

2.   METHODOLOGY
2.1. Design
This study employed descriptive research which aimed to determine the status and needs of the seaweed farmers that are necessary in the development of innovative capacity building program. Specifically, the study focused on identifying the socio demographic profile, Source of Information accessed by Seaweed Farmers; topic to farmers as to the challenges and opportunities in seaweed production; Training Modalities; preferred length of training; and list of partners and programs.

2.2. Sample
The target population of this research is the seaweed farmers located in Magsaysay, Occidental Mindoro. For sampling techniques, a purposive sampling was used to ensure the representation of the population in this sector. The following were set as the criteria for selection:
1.   farmers who have been engaged in seaweed farming for 3 or more years.
2.   those who are actively engaged in seaweed farming.
3.   farmers who are willing to participate during the data collection process.

2.3. Data Source
The data were collected from the respondents using a survey instrument for socio-demographic characteristics, source of information, and topic to farmers as to the challenges and opportunities in seaweed production. While, a 4-point Likert scale survey instrument was used for gathering the data about training modalities, preferred length of training, and list of partners and programs.

2.4. Data Collection Procedure and Analysis
The following sequence of activities was done in order to come up with the results and findings of the study.

Conceptualization, Review Literatures and Theoretical Basis. Defined objectives of the study, select and review related literatures and studies that would support the research objectives.

Respondents and participants identification. Determined the people who will be responsible in answering the questionnaires and those who will play significant part in data collection procedure.

Instrument preparation. Instruments were prepared and constructed based on available related literatures and studies. And, validated by the experts in the field.

Data collection, management, and analysis. In the process of data collection, the approval of respondents was assured before the data gathering commenced. Specifically, the researchers collected data from respondents in Occidental Mindoro. Also, collected data were encoded systematically using Microsoft excel and treated using SPSS version 21. After the data were encoded, it was analyzed using different statistical tools such as mean, frequency distribution, and percentages.

2.5. Ethical Considerations

This research strictly adheres to Data Privacy Act of 2012, where all the information provided by the respondents of the study will be kept confidential. Permission from the respondents and other authorities were obtained before proceeding to gather necessary data and assured the anonymity of all details about their identity.

3. RESULTS
3.1. Socio-demographic characteristics of Seaweed Farmers

Majority or 36.7% of seaweed farmers are within the age range of 30-39 years old, which means that this sector is largely driven by individuals in their prime working years, bringing with them both energy and experience. Their active participation indicates a promising future for seaweed farming, as this age group is often open to innovation and committed to sustaining their livelihoods through hard work and adaptability. While the production of seaweed is still dominated by male farmers, both of which reflects the nature of the work (because more male muscles are required) and the opportunity to encourage more inclusive involvement (especially by women) in the future of seaweed farming or other livelihood activities. Moreover, majority or 53.3% of farmers are already married, which has contributed further to their dedication to seaweed farming as primary source of income in the family. Lastly, 50% or 15 of the seaweed farmers have earned high school diplomas, which implies that a considerable portion of the farming community has attained a basic level of formal education, which can contribute positively to their ability to adopt new techniques, understand market trends, and engage in sustainable farming practices. It also highlights the potential for further training and capacity-building programs that can build on their existing knowledge to improve productivity and livelihoods [Table 1].

Table 1. Socio-demographic characteristics (n=30).

SOCIO-DEMOGRAPHIC CHARACTERISTICS	FREQUENCY	PERCENTAGE (%)
Age		
20-29	5	16.7
30--39	11	36.7
50-59	7	23.3
60-69	7	23.3
Sex		
Male	18	60.0
Female	12	40.0
Civil status		
Single	10	33.3
Married	16	53.3
Separated	4	13.3
Educational attainment		
Elementary	11	36.7
High School	15	50.0
College	4	13.3

3.2. Source of Information accessed by Seaweed Farmers

The seaweeds farmers provided that their source of information are meetings or seminars (n=17; %=56.7); LGU Training Providers (n=9, %=30); social media (n=3, %=10); and print media (n=1, %=3.3), respectively. This implies that the farmers gather data or information from each other in their community as compared to their online access [Table 2].

Table 2. Sources of information (n=30).

SOURCES OF INFORMATION	FREQUENCY	PERCENT (%)
print media	1	3.3
social media	3	10.0
Meetings/seminar	17	56.7
LGU training providers	9	30.0

3.3. Topic to Farmers as to the Challenges and Opportunities in Seaweed Production

Majority or 26.7% found the topic "Your Seaweed, Your Business: Learning the Entrepreneur's Mindset" the most relevant topic. While all topics were found to be relevant as well to their sector. This implies the open interest of the farmers in seaweed innovation and entrepreneurship which could help them with additional sources of income and livelihood [Table 3].

Table 3. Relevance of the topic (n=30).

INFORMATION NEEDED	FREQUENCY	PERCENT (%)
Sustainable seaweed production	4	13.3
Importance of technology in enhancing seaweed productivity	1	3.3
Innovative business approaches that change lives	1	3.3
From shore to store: understanding the true value of seaweed	3	10.0
Marketing seaweed value-added products: strategies for the 4Ps	3	10.0
Your seaweed, your business: learning the entrepreneur's mindset	8	26.7
All topics	4	6.7
Topic 2 and 5	3	3.3
Topic 5 and 6	3	10.0

3.4. Training Modalities

Further, farmers always prefer face to face training (mean=4.8). This is because of their access to internet and other modalities since they are in a coastal rural area where internet connectivity still their primary concern. And with their increasing challenges and opportunities in their sector, the farmers found all the 7 topics relevant to enhance their knowledge and skills and improve their economic condition [Table 4].

Table 4. Preferred training modalities.

TRAINING MODALITIES	MEAN
Online (Zoom, Google, Teams etc.)	3.60
Online (Facebook live)	2.50
Face to face	4.80
Modular (printed modules)	1.30
Small group meetings	3.40
ICT-based Tools (SMS, Apps)	2.00
Print media (leaflets/posters/brochures/comic)	1.50
Educational video program	3.00

Interpretation: 0.50–1.50 = Never; 1.51–2.50 = Rarely; 2.51–3.50 = Sometimes; 3.51–4.50 = Often; 4.51–5.50 = Always

3.5. Preferred Length of Trainings

Based on the initial assessment conducted, the seaweed farmers always prefer 16 hours as training duration. While, eight (8) hours was often chosen, followed by four (4) hours, and lastly, 24 hours, respectively [Table 5].

Table 5. Preferred training duration.

TRAINING DURATION	MEAN
4 hours	2.40
8 hours	4.40
16 hours	4.70
24 hours	1.70

Interpretation: 0.50–1.50 = Never; 1.51–2.50 = Rarely; 2.51–3.50 = Sometimes; 3.51–4.50 = Often; 4.51–5.50 = Always

3.6. Partners and Programs in the community

The Provincial Government Office and Local Government Unit of Magsaysay are helping hand in hand to improve the farmer's quality of life and their seaweed production annually. However, the agencies have openly stated their interest and support in this project for seaweed farmers since they have no existing project for them, but they provide resources to their community regularly.

4. DISCUSSION

The results of the study show that an important demographic group, in full prime of their working life, able to combine physical demands of cultivating seaweed and responsibilities in their own family. The respondents' age composition reveals that most of them are at the stage where they are excited to have stable livelihoods, take care of their households and invest in any opportunity that comes their way. Most farmers being male and married indicates the traditional nature of the coastal communities with men always being in the forefront to undertake hard labor especially fishing and other related fishing related activities, whereas women are always left back at home to support them by doing domestic work or other livelihood activities at home. This also means that most of the decisions made for seaweed production are family-based, as they work towards the needs and well-being of their family. In terms of educational attainment, most of the seaweed farmers are high school graduates that indicates that although they have educational foundation, most of them could not have had access to higher education due to geographical and financial constraints (Mengo et al., 2023). This condition does not mean of their limitations but rather the need for the training programs to be practicable, accessible and relating to their capacity. And this program would provide them with technical expertise, entrepreneurial skills and environmental awareness, without bombarding them with too much theory or an academic approach. Rajpurohit et al. (2023) in their study highlighted that capacity building should be recognized as a vital input in the knowledge, skills, and resources of agriculture sector for enhancing the productivity and as an important element in the process of sustainable development.

Moreover, the study indicates that most of the seaweed farmers get to know more information on meetings or seminars in their association. This result points to the relevant role of the local associations as centers of knowledge and support of the community. For many farmers, these not only act as a platform to collect technical updates and practical advice, but also a safe space to share experiences, raise concerns and learn from one another. Meetings and seminars provide the seaweed farmers with a more comfortable and relatable experience than that which they would get from information from faraway agencies or through digital means. It illustrates that farmers prefer more collective learning, in which information is not simply transferred, but discussed, clarified and adapted to farmers' actual situations (Juan et al., 2024). Kigatiira et al. (2018) reported that the farmers had an enhanced interpretation of the information transmitted through face-to-face meetings and conferences because they provided an enabling environment for the interaction of information. This has been substantiated by the results that the farmers would rather opt for a face-to-face training modality which reflects on their high dependency on personal interaction as well as hands-on training, which they perceived to be more effective and reproducible than the distance mode or digital mode. This is also their preferred modality because of constraints in internet connectivity. Findings suggest that most seaweed farmers still choose face-to-face training and seminars, which entails that this option is what works best for them right now. While it is good that the study looks toward the opportunity of improving online literacy, the capacity and available resources of the respondents shall be considered. The findings indicate that any capacity-building program should not rush to replace traditional learning methods. Instead, it should slowly introduce digital literacy while continuing to support the face-to-face approach that the farmers are currently relying on and comfortable to use with.

The results in this research about the seaweed farmers' inclination to a topic entitled "Your Seaweed, Your Business: Learning the Entrepreneur's Mindset" indicate a steadily increasing interest in the innovation and sustainability of their economic activity beyond the traditional production. This creates an interest in them to see their seaweed as more than a harvest crop but a business to expand. Under a range of economic

and environmental pressures, farmers and agro-food producers must build on their existing knowledge and experience, while at the same time, embedding innovation, sustainability, and efficient management as the central tasks of food production and land management (Gadanakis, 2024). This means taking stock of the fact that seaweed farming is not a mere production but a business which needs proper planning and leadership. Where this topic will address elements of financial management whose only zeal for judicious management of their income and their commitment to the stability of livelihoods, while their learning for organizational management suggests the appreciation they have for collective development and stable and sustainable community cooperation.

Lastly, the Local Government Unit and Provincial Government Office do not have any current projects or formal programs for the seaweed farmers; however, support and assistance in terms of financial assistance and provision of materials needed in farming is still being provided to them. This demonstrates an awareness on the part of the government regarding the importance of seaweed farming to the community's livelihood and economic development. Interestingly, farmers believe that government should support them by providing necessary resources to take their entrepreneurship to the next level (Phiri, 2021). However, the infrastructural lack of structured programs also indicates a lack of long-term development programs. While the above forms of intervention are required to maintain their functioning, farmers may benefit more from a holistic and ongoing capacity-building that goes beyond financial intervention, and focuses on skills, organization and sustainability.

The findings of the study are a strong foundation for development and implementing a capacity-building program, as the seaweed farmers are most likely capable, motivated, and open to learning. Tailoring the project to their educational level and building on their existing skills can enhance their productivity, promote sustainable seaweed farming practices, and entrepreneurship. At the same time, the result emphasized that even though some farmers are open to learning new things, they still prefer face-to-face learning due to their location and accessibility to resources needed for online learning. This suggests that online training should be gradually introduced with proper guidance and support, so that they would feel comfortable and confident in using it.

5. CONCLUSION

The results presented show the readiness of farmers to embrace growth and the need for structured, community-driven programs that will help them strengthen their skills, organizations, and long-term sustainability. Majority of the seaweed farmers are within the age range of 30-39 years old which means that this sector is largely driven by individuals in their prime working years, bringing with them both energy and experience. While male farmers dominantly contribute to the seaweed production as this work requires more of strong manly presence and also point to opportunities for encouraging more inclusive participation, especially among women, in the future of seaweed farming or other livelihood activities. Moreover, majority of farmers are already married, which has contributed further to their dedication to seaweed farming as primary source of income in the family. Lastly, most of the seaweed farmers have earned high school diplomas, which implies that a considerable portion of the farming community has attained a basic level of formal education. Seemingly, the farmers gather data or information from each other in their community as compared to their online access. Majority also found the topic "Your Seaweed, Your Business: Learning the Entrepreneur's Mindset" the most relevant topic. Therefore, there is an open interest for seaweed innovation and entrepreneurship which could help them with additional sources of income and livelihood. Further, farmers always prefer face to face training because of their access to internet and other modalities since they are in a coastal rural area where internet connectivity is still their primary concern. Lastly, the Provincial Government Office and Local Government Unit of Magsaysay are helping hand in hand to improve the farmer's quality of life and their seaweed production annually.

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Organizational justice, work resilience, and teacher affective attitudes of public elementary school teachers in a District in Occidental Mindoro

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Article Info	ABSTRACT
	This study investigated the intricate relationships between organizational justice, work resilience, and teacher affective attitudes among public elementary school educators in a district in Occidental Mindoro. Employing quantitative research with descriptive-correlational design, data was collected from 100 elementary school teachers using a closed questionnaire featuring a 5-point Likert scale. Stratified random sampling was utilized to ensure representation across the district. Analysis of the data revealed high levels of perceived procedural, distributive, interpersonal, and informational justice among teachers, suggesting a culture of fairness and transparency within the organizational framework. Furthermore, teachers demonstrated high levels of work resilience, particularly in aspects related to authentic living, vocational alignment, and networking, though areas for growth were identified in stress management, collaborative interaction, and well-being maintenance. Notably, public elementary school teachers in a district in Occidental Mindoro exhibited positive affective attitudes, manifesting in constructive interactions, conflict resolution skills, nurturing relationships, and the cultivation of student-centric classroom environments characterized by high expectations and supportive guidance. The study establishes significant associations between perceived organizational justice and both work resilience and teacher affective attitudes, indicating that perceptions of fairness and transparency impact educators' adaptability and perseverance. Additionally, a notable correlation was observed between work resilience and teacher affective attitudes, emphasizing the role of resilience in fostering positive emotional responses and attitudes among teachers. This research underscores the interconnectedness of organizational justice, work resilience, and teacher affective attitudes, highlighting the importance of cultivating supportive organizational environments to enhance educators' well-being and effectiveness in the public elementary schools.

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1. INTRODUCTION

Teaching is an endeavor that requires dedication and enthusiasm in teaching the learners with the necessary knowledge and competencies for life's survival and understanding of the world (Santiago, 2019). However, the kind of work that the teachers engage daily is complex and demanding that they are also expected to work to achieve the goals of their organization (Alev, 2021). Since the country is composed of more than 800,000 public professional teachers (Pacaol, 2021), there are many problems that are being

incorporated into this such as organizational justice. Aprilia et al. (2024) stated that to maintain satisfied, committed, and loyal employees, organizations must pay attention to systems related to employee perceptions of fairness. In educational contexts, lack of organizational justice can demotivate teachers and affect their physical and mental health, which eventually affects their ability to perform (Veletić & Scherer, 2025). Aside from the organizational justice, work resilience is also another critical factor that can lead to greater teacher engagement in their careers (Wang et al., 2022). Mansfield et al. (2016) defined resilience as a characteristic that allows teachers to effectively cope with the challenges and difficulties of teaching.

As part of the educational institutions in the Division of Occidental Mindoro, public elementary schools are also mandated to carry on the vision and mission of the Department of Education. One of these is that teachers should facilitate learning and constantly nurture every learner. However, some of public elementary schools are not all located in the mainland area but there are those which are in the far-flung areas or the Indigenous People (IP) Schools. The differences in teaching location and learners served as a gap as to how this can affect the teachers' organizational justice, work resilience and affective attitudes in the classroom.

With this, the findings of this study have significant association for the enhancement of organizational and professional support to the public elementary school teachers in a district in Occidental Mindoro. Through the recognition of the relationship between and among the organizational justice, work resilience and teacher affective attitudes, the educational authorities can plan and craft strategies and programs for the improvement of the teachers' work and learning environment.

Taking into consideration the above-mentioned issues, the study investigated the relationship between and among the organizational justice, work resilience, and teacher affective attitudes of the public elementary school educators in a district in Occidental Mindoro. Specifically, the study aimed to identify the level of organizational justice as perceived by the teachers in terms of procedural justice, distributive justice, interpersonal justice, and informational justice. It also sought to determine the level of work resilience of the teachers, focusing on dimensions such as living authentically, finding one's calling, maintaining perspective, managing stress, interacting cooperatively, staying healthy, and building networks. Additionally, the study aimed to ascertain the teacher affective attitudes of the educators in terms of positive relationships and classroom environment. Furthermore, the study tested whether there is a significant relationship between the perceived level of organizational justice and work resilience, analyzed the relationship between organizational justice and teacher affective attitudes, and examined the relationship between work resilience and teacher affective attitudes among the public elementary school teachers.

2. METHODOLOGY

2.1. Design

In this study, quantitative research which is descriptive-correlational in nature was employed to address the research questions at hand. This design was deemed suitable for the study due to its capacity to examine the relationships between various variables, including organizational justice, work resilience, and teacher affective attitudes.

2.2. Study Site

This research was conducted among 22 elementary schools situated in a specific district of Occidental Mindoro, Philippines, providing a comprehensive representation of the district's basic education context.

2.3. Sample

The study focused on 100 elementary school teachers from a public elementary district in Occidental Mindoro. The selection of participants was carried out using a method called stratified random sampling. This approach involved dividing the population into distinct groups, or strata, based on certain characteristics that are relevant to the research. In this case, the cluster schools within the district served as the strata.

2.4. Research Instrument

For the collection of data required in this study, the following research instruments were utilized. All instruments underwent content validation by experts in educational research and psychology. Reliability testing was also conducted, and all scales demonstrated acceptable to excellent internal consistency based on Cronbach's alpha coefficients.

2.4.1. Organizational Justice Scale (Colquitt, 2001)

This translated and adapted version of the Organizational Justice (OJ) Scale was used to assess the level of organizational justice in the respondents' work environment. The instrument consists of 20 items covering four dimensions: procedural, distributive, interpersonal, and informational justice. The validated instrument yielded a Cronbach's alpha of 0.89, indicating high reliability.

2.4.2. Resilience at Work Scale (Winwood, 2013)

This 25-item questionnaire measured the respondents' level of work resilience. It includes indicators such as living authentically, finding one's calling, maintaining perspective, managing stress, interacting cooperatively, staying healthy, and building networks. After validation, the instrument produced a Cronbach's alpha of 0.92, demonstrating excellent reliability.

2.4.3. Teacher Affective Attitudes Survey (King, 2017)

This instrument assessed the respondents' affective attitudes and consists of 25 items divided into two major scales: Positive Relationships (positive interactions, managing conflict, and caring relationships) and Classroom Environment (student-centered practices, high expectations, and positive guidance). Reliability testing showed a Cronbach's alpha of 0.88, confirming strong internal consistency.

2.5. Data Collection

To collect the necessary data for this study, the researcher followed a structured process beginning with obtaining permission from the Public Schools District Supervisor and school heads of various schools within a public elementary district in Occidental Mindoro through a formal letter outlining the objectives, methodology, and significance of the research. Upon receiving approval from the relevant authorities, questionnaires were distributed to the selected respondents. This distribution was carried out through face-to-face interactions, ensuring direct engagement with the teachers and addressing any queries or concerns raised by the respondents. By following this systematic process of obtaining permission, informing stakeholders, and distributing questionnaires directly to the respondents, the researcher ensured transparency, compliance with ethical guidelines, and the active involvement of the elementary school teachers in the study.

2.6. Ethical Consideration

The privacy and confidentiality of the participants' responses were strictly followed throughout the research process. Any queries or clarifications regarding the research instruments were addressed by the researcher to ensure participants' understanding. To ensure confidentiality of the data, the participants' responses were anonymized and the access to the collected data was restricted to the researcher alone.

2.7. Data Analysis

Various statistical tools were employed to analyze the gathered data. The mean was utilized to determine the average level of preparedness, extent of problems encountered, and perceived teaching effectiveness among non-education professionals. Additionally, the Pearson Product Moment Correlation was employed to assess the significant relationships between preparedness, encountered challenges, and teaching effectiveness.

3. RESULTS
3.1. Level of Organizational Justice

The results shows that the level of organizational justice as perceived by the elementary school teachers with an overall grand mean score of 3.55. Among the individual factors, interpersonal justice garnered the highest mean score of 3.65, closely followed by distributive justice at 3.57 and informational justice at 3.55. Procedural justice had the lowest mean score among the factors but still reflected a relatively high level at 3.44 [Table 1].

Table 1. Perceived level of organizational justice by the elementary school teachers.

FACTORS	OVERALL MEAN	SD
Procedural justice	3.44	.454
Distributive justice	3.57	.421
Interpersonal justice	3.65	.430
Informational justice	3.55	.464
Grand Mean	**3.55**	**.379**

Scale: 1.00-2.00 Low;2.01-3.00 Moderate; 3.01-4.00 High

3.2. Level of Work Resilience

The result shows that the level of work resilience among elementary school teachers across various indicators with an overall grand mean of 3.61. Among the specific indicators, the highest mean scores are observed in "Living Authentically" (3.81), "Building Networks" (3.73), and "Finding Your Calling" (3.70). While the means for "Maintaining Perspective" (3.18) and "Staying Healthy" (3.57) are relatively lower compared to other indicators [Table 2].

Table 2. The level of work resilience of the elementary school teachers.

INDICATORS		MEAN	SD
Living authentically		3.81	.298
Finding your calling		3.70	.384
Maintaining perspective		3.18	.523
Managing stress		3.58	.412
Interacting cooperatively		3.69	.401
Staying healthy		3.57	.440
Building networks		3.73	.377
	Grand Mean	**3.61**	**.289**

Scale:1.00-2.00 Low; 2.01-3.00 Moderate; 3.01-4.00 High

3.3. Summary of the Affective Attitudes

The assessment of the affective attitudes exhibited by elementary school teachers show an encompassing various indicators with an overall grand mean of 3.69. Specifically, teachers exhibit high mean scores in areas such as "positive interactions" (3.84) and "caring relationships" (3.85). Additionally, indicators related to classroom environment, including "Classroom Environment" (3.70), "student-centered" (3.71), and "positive guidance" (3.75), reflect a focus on creating supportive and conducive learning atmospheres, with teachers emphasizing high expectations for student achievement. While the mean for "managing conflicts" (3.35) is comparatively lower, it still falls within the "good" interpretation range [Table 3].

Table 3. Summary of the affective attitudes of the elementary school teachers.

INDICATORS		MEAN	SD
Positive relationship			
Positive interactions		3.84	.289
Managing conflicts		3.35	.487
Caring relationships		3.85	.292
	Mean	**3.68**	**.281**
Classroom environment			
Student-centered		3.71	.390
High expectations		3.64	.425
Positive guidance		3.75	.388
	Mean	**3.70**	**.347**
	Grand Mean	**3.69**	**.282**

Scale: 1.00-2.00 Poor; 2.01-3.00 Fair; 3.01-4.00 Good

3.4. Relationship Between the Perceived Level of Organizational Justice and Work Resilience

The result shows that across all dimensions of organizational justice, there is a consistent positive correlation with various aspects of work resilience, albeit with varying degrees of strength. Procedural justice shows weak but significant correlations with all aspects of work resilience except for staying healthy, which exhibits a negligible correlation ($r = .116$, $p = .137$). Similarly, distributive justice displays weak to moderate correlations with different aspects of work resilience, with finding your calling showing a moderate correlation ($r = .453$, $p < .001$). Interpersonal justice demonstrates weak to moderate correlations with work resilience dimensions, with interacting cooperatively showing a moderate correlation ($r = .428$, $p < .001$). Informational justice also exhibits weak to moderate correlations, with interacting cooperatively and building networks showing the strongest associations ($r = .462$ and $.443$, respectively, both with $p < .001$) [Table 4].

Table 4. The relationship between the perceived level of organizational justice and work resilience.

ORGANIZATIONAL JUSTICE	RESILIENCE AT WORK	R	P-VALUE
Procedural Justice	Living authentically	.286**	<.001
	Finding your calling	.341**	<.001
	Maintaining perspective	.394**	<.001
	Managing stress	.329**	<.001
	Interacting cooperatively	.338**	<.001
	Staying healthy	.116	.137
	Building networks	275**	.001
Distributive Justice	Living authentically	.395**	<.001
	Finding your calling	.453**	<.001
	Maintaining perspective	.287**	<.001
	Managing stress	.398**	<.001
	Interacting cooperatively	.396**	<.001
	Staying healthy	.165*	.038
	Building networks	.344**	<.001
Interpersonal Justice	Living authentically	.222**	.009
	Finding your calling	.338**	<.001
	Maintaining perspective	.189*	.017
	Managing stress	.291**	<.001
	Interacting cooperatively	.428**	<.001
	Staying healthy	.167*	.040
	Building networks	.380**	<.001
Informational Justice	Living authentically	.234**	.005
	Finding your calling	.388**	<.001
	Maintaining perspective	.250**	.001
	Managing stress	.382**	<.001
	Interacting cooperatively	.462**	<.001
	Staying healthy	.217**	.007
	Building networks	.443**	<.001
Overall	**Overall**	**.501****	**<.001**

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).*

3.5. Relationship Between the Perceived Level of Organizational Justice and Affective Attitudes

The study reveals a moderate overall correlation between organizational justice and teachers' affective attitudes (r=.408, p<.001), indicating that perceptions of justice within the organization are moderately associated with teachers' emotional responses and attitudes [Table 5].

Table 5. The relationship between the perceived level of organizational justice and teacher affective attitudes of the elementary school teachers.

ORGANIZATIONAL JUSTICE	AFFECTIVE ATTITUDE	R	P-VALUE
Procedural Justice	Positive interactions	.368**	<.001
	Managing conflicts	.151*	.045
	Caring relationships	.299**	<.001
	Student environment	.289**	<.001
	High expectations	.299**	<.001
	Positive guidance	.265**	.001
Distributive Justice	Positive interactions	.402**	<.001
	Managing conflicts	.108	.160
	Caring relationships	.377**	<.001
	Student environment	.419**	<.001
	High expectations	.403**	<.001
	Positive guidance	.326**	<.001
Interpersonal Justice	Positive interactions	.351**	<.001
	Managing conflicts	.072	.356
	Caring relationships	. .372**	<.001
	Student environment	.448**	<.001
	High expectations	.489**	<.001
	Positive guidance	.402**	<.001
Informational Justice	Positive interactions	.301**	<.001
	Managing conflicts	.078	.312
	Caring relationships	.351**	<.001
	Student environment	.421**	<.001
	High expectations	.390**	<.001
	Positive guidance	.297**	<.001
Overall	**Overall**	**.408****	**<.001**

*Correlation is significant at the 0.05 level (2-tailed). **Correlation is significant at the 0.01 level (2-tailed).*

3.6. Relationship Between the Level of Work Resilience and Teacher Affective Attitudes

The study reveals a moderate overall correlation between work resilience and teachers' affective attitudes (r=.544, p<.001), suggesting that higher levels of work resilience are moderately associated with more positive emotional responses and attitudes among teachers [Table 6].

Table 6. Relationship between the level of work resilience and teacher affective attitudes

RESILIENCE AT WORK	TEACHERS' AFFECTIVE ATTITUDE	R	P-VALUE
Living Authentically	Positive interactions	.300**	.001
	Managing conflicts	.130	.110
	Caring relationships	.203*	.018
	Student environment	.272**	.002
	High expectations	.203*	.018
	Positive guidance	.250**	.004
Finding Your Calling	Positive interactions	.331**	.000
	Managing conflicts	.144	.069
	Caring relationships	.350**	<0.001
	Student environment	.383**	<0.001
	High expectations	.350**	<0.001
	Positive guidance	.282**	.001
Maintaining Perspective	Positive interactions	.187*	.023
	Managing conflicts	.410**	<0.001
	Caring relationships	.239**	.003
	Student environment	.201*	.013
	High expectations	.239**	.003
	Positive guidance	.218**	.008
Managing Stress	Building networks	.368**	<0.001
	Managing conflicts	.221**	.005
	Caring relationships	421**	<0.001
	Student environment	.484**	<0.001
	High expectations	.421**	<0.001
	Positive guidance	.360**	<0.001
Interacting Cooperatively	Positive interactions	.423**	<0.001
	Managing conflicts	.196*	.014
	Caring relationships	.416**	<0.001
	Student environment	.545**	<0.001
	High expectations	.416**	<0.001
	Positive guidance	.437**	<0.001
Staying Healthy	Positive interactions	.311**	<0.001
	Managing conflicts	.322**	<0.001
	Caring relationships	.263**	.001
	Student environment	.284**	.001
	High expectations	.263**	.001
	Positive guidance	.239**	.005
Building Networks	Positive interactions	.309**	<0.001
	Managing conflicts	171*	.032
	Caring relationships	.522**	<0.001
	Student environment	.535**	<0.001
	High expectations	.522**	<0.001
	Positive guidance	.405**	<0.001
Overall	**Overall**	**.544****	**<0.001**

*Correlation is significant at the 0.05 level (2-tailed).   **Correlation is significant at the 0.01 level (2-tailed).*

4.   DISCUSSION

As frontline educators shaping young minds, understanding how the perception of teachers about their work environment is vital to their resilience, performance, and satisfaction in their profession. Artatanaya and Widhari (2023) state that employees who have positive perceptions regarding organizational justice behave positively and contribute to organizational development and pay attention to the work they have. Based on the results of the study, the elementary school teachers perceive their organizational environment as fair and just across various dimensions. This perception likely fosters a positive work environment, promoting trust and satisfaction among teachers. However, despite the generally high scores, attention may need to be paid to procedural justice, which scored slightly lower than the other factors. This could signify areas where improvements or clarifications may be necessary in the procedural aspects of decision-making and implementation within the school's organizational structure. Overall, the findings

underscore the importance of maintaining and enhancing perceptions of justice within educational institutions to support teacher well-being and productivity.

Ainsworth and Oldfield (2019) cited that support by the school management, reasonable workload, a positive school culture characterized by collaboration between teachers, and positive social relationships at the workplace have a big role to play in improving the quality of their work environment and developing resilience among the teachers. Additionally, resilient workers ensure adaptable advantages that promote organizational success. Therefore, by encouraging a respectable work environment, organizational leaders can foster resilience at work as a quality that benefits the entire company. (Duffy et al., 2016). The findings of the study indicate that the teachers demonstrated high levels of work resilience across various dimensions. Moreover, it underscores the importance of supporting teachers in maintaining a balanced perspective while navigating the demands of their profession, ultimately contributing to their overall well-being and effectiveness in the classroom.

Based on the study of Gregory and Lori (2018), teachers need to be effective in more than content knowledge and instructional strategies. The characteristics of a differentiated classroom require that educators will: teach students where each student is developmentally and academically as opposed to where the curriculum says they should be; provide deep learning opportunities that hold all students to high standards; use a variety of teaching strategies and materials to reach all students; and become educational partners with students who are expected to take ownership and advocacy over their own learning. In line with this, the results indicate that the teachers have a positive affective climate within elementary school settings, characterized by supportive relationships, student-centered approaches, and positive guidance.

Overall, the study indicates that perceptions of justice within the organization are moderately associated with teachers' emotional responses and attitudes. The findings underscore the importance of organizational justice in shaping teachers' affective experiences in various aspects of their professional lives. Improving perceptions of justice within educational institutions could potentially lead to more positive affective attitudes among teachers, contributing to a healthier and more productive work environment. Additionally, the study also suggests that higher levels of work resilience are moderately associated with more positive emotional responses and attitudes among teachers. The findings reveal the importance of promoting resilience-building strategies in elementary school settings to foster a positive work environment and enhance teacher well-being.

5. CONCLUSION

The study indicates high level of perceptions of procedural, distributive, interpersonal, and informational justice among public elementary school teachers in a district in Occidental Mindoro, highlighting potential fairness and transparency within the organizational structure. Public elementary school teachers in a district in Occidental Mindoro also exhibit high levels of work resilience, with strengths in areas such as living authentically and finding their calling and building networks but potential areas for improvement in managing stress, interacting cooperatively, and staying healthy. Moreover, good attitudes are also evident among public elementary school teachers in a district in Occidental Mindoro, including positive interactions, managing conflict, fostering caring relationships, and creating a positive classroom environment characterized by student-centered approaches, high expectations, and positive guidance. Furthermore, the study establishes a significant relationship between the perceived level of organizational justice and work resilience among public elementary school teachers in a district in Occidental Mindoro, suggesting that perceptions of fairness and transparency within the organization influence teachers' ability to adapt and persevere in their roles. Significant associations were also identified between the perceived level of organizational justice and teacher affective attitudes in the public elementary school teachers in a district in Occidental Mindoro, indicating that teachers' perceptions of fairness and transparency within the organization impact their emotional responses and attitudes towards their work. A significant relationship is also observed between the level of work resilience and teacher affective attitudes among public elementary school teachers in a district in Occidental Mindoro, underscoring the importance of resilience-building strategies in fostering positive emotional responses and attitudes among teachers.

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Examining the predictive role of breastfeeding knowledge on self-efficacy among second-time nursing mothers in Angeles City, Pampanga

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Article Info	ABSTRACT
	Despite the well-documented health benefits of breastfeeding for both mother and infant, exclusive breastfeeding rates remain suboptimal globally, with barriers including knowledge gaps and poor maternal confidence. Understanding how breastfeeding knowledge influences self-efficacy is critical to improving breastfeeding outcomes and achieving public health targets. This study examined the extent to which breastfeeding knowledge is associated with breastfeeding self-efficacy among second-time nursing mothers in Angeles City, Pampanga. A cross-sectional descriptive-correlational design was employed using snowball sampling to recruit 104 second-time nursing mothers. Data were collected using the Gender-Friendly Breastfeeding Knowledge Scale (GFBFKS) and the Breastfeeding Self-Efficacy Scale–Short Form (BSES-SF). Descriptive statistics, Pearson's correlation, and linear regression analyses were conducted using IBM SPSS at a significance level of 0.05. Respondents demonstrated high breastfeeding knowledge (3.98 ± 1.29) and high breastfeeding self-efficacy (3.85 ± 1.27). Pearson's correlation revealed a strong positive relationship between breastfeeding knowledge and self-efficacy ($r = 0.872^*$, p-value 0.001). Linear regression analysis showed that breastfeeding knowledge predicts self-efficacy ($\beta = 0.677$, $t = 18.034$, $p = 0.001$), explaining 76.1% of the variance ($R^2 = 0.761$). Breastfeeding knowledge significantly predicts maternal confidence in breastfeeding ability. These findings support the integration of knowledge-based assessments and targeted educational interventions into prenatal and postnatal care, reinforcing initiatives such as the Philippine Plan of Action for Nutrition's 5.8% annual increase target and the WHO's exclusive breastfeeding goals, ultimately strengthening maternal and child health outcomes in Central Luzon. *This is an open access article under the CC BY-NC license.*

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1. INTRODUCTION

The health of mothers and their babies depend on breastfeeding (Kehinde et al., 2022), yet exclusive breastfeeding (EBF) rates remain low across the world. EBF rates fall below 33% in high-income countries and below 60% in upper-middle-income countries, contributing to preventable infant deaths in low- and middle-income nations where diarrhea and pneumonia remain leading causes (North et al., 2021). The United Nations' SDG 3 initiative (United Nations, 2015), along with WHO recommendations (World Health Organization, 2023) and the Philippine PPAN targets (Candelario, 2023), aims to improve these outcomes. However, breastfeeding progress continues to be constrained by barriers such as insufficient counseling,

workplace challenges, weak Milk Code enforcement, persistent myths, and maternal doubts about breastfeeding (Samaniego et al., 2022). These obstacles highlight the importance of strengthening mothers' breastfeeding knowledge, as adequate understanding helps build the confidence needed to initiate and sustain breastfeeding.

Breastfeeding knowledge (BK) is a key determinant of breastfeeding success, shaping mothers' understanding, practical skills, and ability to manage challenges (Manjapallikkunnel et al., 2023). Higher levels of BK are more common among older and more educated mothers (Manjapallikkunnel et al., 2023). Although research on breastfeeding self-efficacy (BSE) has identified various influences, including personal characteristics, cultural factors, and social environments (Değer et al., 2023). Many studies overlook the cognitive mechanisms that link knowledge to confidence (Brani et al., 2024; Naja et al., 2022). Guided by Bandura's Social Cognitive Theory, this study conceptualizes BK as a cognitive foundation that strengthens BSE by shaping how mothers interpret breastfeeding challenges, draw from prior experiences, regulate anxiety, and build confidence in their ability to breastfeed.

Scholars in the Philippines have begun investigating the relationship between mothers' breastfeeding knowledge (BK) and their confidence in their ability to breastfeed. Gonzales (2020) and Rubenecia et al. (2024) emphasize knowledge as a key factor influencing maternal confidence, while Ngo et al. (2021) and Bayaga (2020) highlight how social norms, work-related barriers, and limited postpartum support continue to constrain breastfeeding practices. Research findings indicate that Filipino mothers experience postpartum changes because of traditional beliefs that have evolved through time, while being supported by their family members, especially their mothers and mothers-in-law. The cultural environment of mothers determines their choices regarding infant care and recovery, as well as postpartum healthcare service utilization, according to Siregar et al. (2021). Although scholars have begun exploring these dynamics, existing Philippine research remains primarily descriptive and seldom tests cause-and-effect relationships. Empirical studies examining the statistical association between BK and breastfeeding self-efficacy (BSE) remain scarce, particularly in Central Luzon, underscoring the need for localized evidence that reflects the cultural environments in which Filipino mothers develop confidence.

Expanding on this gap, this study examines the extent to which breastfeeding knowledge (BK) influences breastfeeding self-efficacy (BSE) among second-time nursing mothers in Angeles City, Pampanga. Second-time mothers are of particular interest because, although they possess knowledge gained from prior breastfeeding experiences, they may continue to face uncertainties that undermine their confidence. Understanding how these mothers draw upon and interpret their previous experiences offers insight into the process of maternal learning and adaptation. Grounded in Bandura's Social Cognitive Theory, the study applies this framework by proposing that breastfeeding knowledge shapes how second-time mothers evaluate and make meaning of their earlier breastfeeding experiences, which in turn contributes to their sense of efficacy (Figure 1).
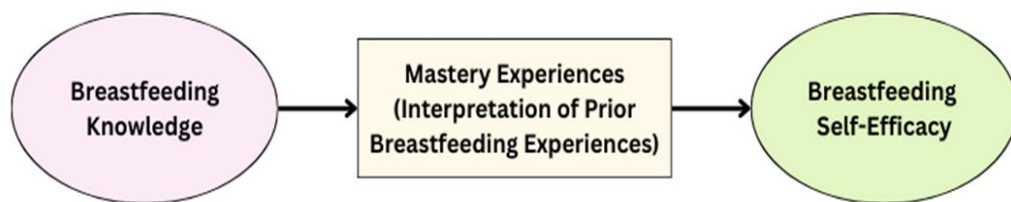

Figure 1. Conceptual Framework

In Angeles City, Pampanga, generating such evidence is essential, as it can inform nursing curricula, community health initiatives, and barangay-based maternal programs across Central Luzon. Specifically, this study aims to: (1) describe the demographic profiles of the respondents in terms of age, educational background, and socio-economic status (employment and annual household income); (2) determine the level of BK among second-time nursing mothers; (3) determine the level of BSE among second-time nursing mothers; (4) examine the significant relationship between BK and BSE; and (5) assess whether BK predicts BSE. The study is guided by the following hypotheses: H₁—there is a significant correlation between a mother's knowledge of breastfeeding and her self-efficacy in successfully breastfeeding her baby; and H₂— BK predicts BSE of second-time nursing mothers in Angeles City, Pampanga. The findings are expected to inform targeted interventions that strengthen maternal confidence, support exclusive breastfeeding, and align with national initiatives such as the Department of Health's "Breastfeeding TSEK" campaign and the World Health Organization's global breastfeeding targets.

2. METHODOLOGY

2.1. Study Design

The cross-sectional descriptive-correlational design was applied to investigate how BK BSE in second-time nursing mothers. As previously outlined, breastfeeding is the best way to feed a baby and has many important health benefits for the mother and her child. Although knowledge and self-efficacy are known to be positively correlated from prior research, the predictive role is unclear. To control this, the research design was used to allow determining the prediction of BK on BSE over other competing covariates in the study. The researchers elicited the data by using survey questionnaires to mothers, in Angeles City Pampanga. This local context was helpful in providing specific insights in relation to BK and BSE for second-time nursing mothers.

2.2. Sample

Based on a G*Power analysis, the required sample size for the study was determined to be a minimum of 43 respondents. However, for the purpose of improving statistical validity and enriching representation, a total of 104 second-time nursing mothers were surveyed.

Respondents were selected through snowball sampling, a non-probability sampling method where initial participants referred other eligible mothers to participate. Five initial seeds were selected from barangay health centers in Angeles City, Pampanga, specifically chosen because they met the inclusion criteria and were known to have connections with other nursing mothers in their communities. These seeds were identified through coordination with barangay health workers who facilitated the initial contact. Each seed was asked to refer 2-3 eligible mothers from their personal networks, including contacts from community groups, social media groups for mothers, and neighborhood associations. This approach was effective for identifying individuals with particular shared characteristics relevant to the study, especially in populations often difficult to access through random sampling methods. To reduce sampling bias inherent in snowball sampling, several measures were implemented: (1) seeds were selected from different barangays to ensure geographic diversity across Angeles City; (2) referral chains were monitored to prevent over-representation from any single network, with a maximum of three referral waves per seed; (3) demographic characteristics of participants were tracked throughout recruitment to identify and address any emerging homogeneity; and (4) the research team actively sought referrals from diverse socioeconomic backgrounds by engaging with health centers serving different communities within the city.

The inclusion criteria were: (1) currently breastfeeding their second child; (2) residing in Angeles City, Pampanga; and (3) voluntarily participating in this study. Exclusion criteria were: (1) first-time mothers; (2) mothers who had stopped breastfeeding; or (3) mothers with medical contraindications to breastfeeding. All subjects were recruited voluntarily and provided informed consent following introduction to the study's purpose.

2.3. Research Instrument

2.3.1. Breastfeeding Knowledge

The Gender-Friendly Breastfeeding Knowledge Scale (GFBFKS), developed by Gupta et al. (2021), is a concise 18-item instrument designed to assess breastfeeding knowledge. It has demonstrated strong reliability, with a Cronbach's alpha coefficient exceeding 0.70. The GFBFKS employs a 5-point Likert-type scale, where positively worded items (1, 4, 5, 6, 8, 9, 10, 13, 14, 18) are rated from 1 ("False") to 5 ("True"), while negatively worded items (2, 3, 7, 11, 12, 15, 16, 17) are reverse scored. The total score ranges from 18 to 90, with higher scores indicating greater BK. Scores of 80 and above represent good knowledge, 65 to 79 indicate average knowledge, 50 to 64 reflect poor knowledge, and scores below 49 suggest no BK.

The reliability of the instrument was supported by principal component analysis (PCA) and intraclass correlation coefficients (ICCs) ranging from 0.693 to 0.736, confirming its stability across populations. The researchers formally requested and received permission from the authors to use and adapt the scale for this study.

2.3.2. Breastfeeding Self-efficacy

The Breastfeeding Self-Efficacy Scale–Short Form (BSES-SF), developed by Dennis (2003), was used to measure the level of breastfeeding confidence among second-time nursing mothers. The BSES-SF is a 14-item version of the original 33-item scale and uses a 5-point Likert-type scale ranging from 1 ("Not at all confident") to 5 ("Always confident"). Total scores range from 14 to 70, with higher scores indicating greater self-efficacy.

The BSES-SF is grounded in Albert Bandura's Social Cognitive Theory, emphasizing self-belief as a determinant of behavior. The scale has consistently shown high reliability (Cronbach's α = 0.90–0.94) and strong validity through content, construct, and cause-and-effect testing. In this study, the BSES-SF achieved

a Cronbach's alpha of 0.92, confirming excellent internal consistency. Permission to use and adapt the instrument was obtained from the original author.

Both instruments have demonstrated strong validity and reliability in previous research and in this study. Operationally, BK refers to mothers' understanding of breastfeeding principles and practices, while BSE refers to their perceived confidence in performing breastfeeding behaviors effectively.

2.4. Data Collection Procedure

A quantitative approach was used to gather data from second-time nursing mothers over one month from mid-January to mid-February 2025. Formal approval was obtained from barangay officials for adherence to local protocol and community cooperation. Data were collected by four student researchers who ensured respondent safety and comfort throughout the data collection process. While the student researchers did not undergo formal training, they provided clear instructions, maintained confidentiality, and remained available to address any concerns or questions from participants. All respondents were given a detailed explanation of the study, its procedures, and expected duration. Written consent was sought prior to administering the questionnaire and respondents were assured about their confidentiality, voluntariness of participation, and right to withdraw at any time.

A printed survey questionnaire, including both instruments on 32 items was completed by each respondent. The survey was self-administered, with respondents completing the questionnaire independently. However, the four data collectors remained present throughout the process to provide guidance, clarify any unclear items, and ensure complete responses. All surveys were conducted face-to-face in various barangays of Angeles City, Pampanga, with data collection taking place in two primary locations: barangay health centers and respondents' homes. Each survey took approximately 10 minutes to complete. Since four student researchers conducted the surveys simultaneously, up to four respondents could complete the questionnaire at the same time, with each session lasting approximately 10 minutes. All completed survey questionnaires were kept confidential and stored in secure filing cabinets to which the research team had access.

2.5. Ethical Considerations

Ethical guidelines were followed religiously in the study on BK and BSE second time nursing mothers, Angeles City, Pampanga. The respondents had a full understanding of the procedure, as well as their rights regarding participation. Harm to respondents was minimized by exclusion of emotional or psychological harm through the nature of a study involving breastfeeding. Anonymization was performed and data were stored to ensure privacy and confidentiality of the study respondents by the researchers. The selection of respondents was appropriate and consistent with the study purpose, while violations such as fabrication of data, data falsehood and plagiarism were not carried out to ensure validity and integrity. The study was granted approval by the Holy Angel University Institutional Review Board (2024-136-AGLLANETA-BreastFeedingKnowledgePREDBSE) for its ethical considerations. Cultural appropriateness was achieved by obeying the local customs of breastfeeding and parenting. Conduct and reporting of the findings were reported transparently with honesty to fairly represent results and disclose limitations in addition to potential conflicts of interests.

2.6. Data Analysis

The data were analyzed using the IBM Statistical Package for the Social Sciences (IBM SPSS), following a structured approach that included descriptive, correlational, and regression analyses, with a significance level of 0.05. Descriptive statistics addressed the first three research questions by presenting respondents' demographic profiles and subscale scores for BK and BSE. Frequencies and percentages described categorical data, while means and standard deviations determined the levels and variability of BK and BSE among respondents.

For the interpretation of breastfeeding knowledge using the GFBFKS, mean scores were categorized as follows: 1.00 to 1.80 indicated no breastfeeding knowledge, 1.81 to 2.60 reflected low breastfeeding knowledge, 2.61 to 3.40 represented moderate breastfeeding knowledge, 3.41 to 4.20 indicated high breastfeeding knowledge, and 4.21 to 5.00 signified very high breastfeeding knowledge. Higher mean scores indicated greater breastfeeding knowledge, with categories classifying respondents' understanding from minimal (no knowledge) to extensive (very high knowledge).

Similarly, for breastfeeding self-efficacy as measured by the BSES-SF, mean scores were interpreted using the following ranges: 1.00 to 1.80 indicated no breastfeeding self-efficacy, 1.81 to 2.60 reflected low breastfeeding self-efficacy, 2.61 to 3.40 represented moderate breastfeeding self-efficacy, 3.41 to 4.20 indicated high breastfeeding self-efficacy, and 4.21 to 5.00 signified very high breastfeeding self-efficacy. Higher mean scores represented stronger breastfeeding confidence and self-efficacy among respondents.

Pearson's correlation coefficient was then used to assess the relationship between BK and BSE, addressing the fourth research question and testing H1. Finally, linear regression analysis examined the predictive role of BK on BSE, addressing the fifth research question and testing H2.

3.   RESULTS
3.1. Demographic Profile of the Respondents

The result shows that out of 104 respondents, the majority of them (61.5%) were aged 25–31 years. Most of the respondents completed high school education (47.1%), and working (50%%), and reported an annual household income between ₱200,001 and ₱400,000 (56.7%) [Table 1].

Table 1. Demographic profile of the respondents (n=104).

VARIABLE	CATEGORY	*FREQUENCY*	PERCENTAGE
Age	18-24	33	31.7
	25-31	64	61.5
	32-38	7	6.7
Education	Elementary	11	10.6
	High school	49	47.1
	College	44	42.3
Occcupation	Working	50	1.9
	Housewife	41	39.4
	No response	17	16.3
Income (annual in peso)	100,000 - 200,000	39	37.5
	200,001 - 400,000	59	56.7
	400,001 - 600,000	3	2.9
	No response	3	2.9

3.2. Breastfeeding Knowledge Among Second-Time Nursing Mothers in Angeles City

Mean scores and interpretations are presented below for the GFBFKS [Table 2]. The overall average (3.98 ± 1.29) indicates that mothers who are on their second birth have high knowledge about breastfeeding. Respondents demonstrated highest overall knowledge of the benefits of breastfeeding for importance of breastmilk (Item 1), early initiation (Item 4) and bonding (Item 9). Yet, misconceptions about the impact of breastfeeding on cancer, productivity, and family planning remained (Items 3, 7, 12).

Table 2. Mean score of breastfeeding knowledge among second-time nursing mothers in Angeles City.

ITEM	DESCRIPTION	MEAN ± SD
1	Mother milk is best for the baby	4.52 ± 1.24
2	Mother milk is not easily digested by the child	3.26 ± 1.51
3	Breastfeeding causes breast and ovarian cancer to mother	3.77 ± 1.26
4	Child should be breastfed as early as possible soon after birth	4.13 ± 1.29
5	Colostrum (breast milk secreted immediately after delivery) should not be discarded	4.04 ± 1.37
6	Breastfeeding improves immunity of the child	4.17 ± 1.25
7	Breastfeeding has no role in lactational amenorrhea/ family planning/ avoiding immediate pregnancy for 6 months after delivery	3.57 ± 1.12
8	Mother milk improves the intelligence (IQ) of child	4.12 ± 1.22
9	Breastfeeding promotes bonding between mother and baby	4.27 ± 1.31
10	Breastfeeding reduces sickness in mother and baby	4.16 ± 1.26
11	Father should not support the mother in breastfeeding	4.18 ± 1.28
12	Breastfeeding decreases work productivity/ earnings/ working days of family	3.46 ± 1.37
13	Exclusive breastfeeding is giving only breast milk for first 6 months of life/child/ baby/ age	3.50 ± 1.35
14	Child can be breastfed up to 2 years	4.08 ± 1.19
15	Mother cannot continue breastfeeding after starting the supportive/complementary feeding from 6 months of life	3.75 ± 1.20
16	Breastfeeding increases health related expenses of the family	4.15 ± 1.36
17	Breastfeeding should be given only when child cries	4.19 ± 1.26
18	As a future parent you are decision maker in facilitating breastfeeding	4.23 ± 1.37
	Overall	**3.98 ± 1.29**

Legend: No Breastfeeding Knowledge (1.00 to 1.80); Low Breastfeeding Knowledge (1.81 to 2.60); Moderate Breastfeeding Knowledge (2.61 to 3.40); High Breastfeeding Knowledge (3.41 to 4.20); Very High Breastfeeding Knowledge (4.21 to 5.00)

3.3. Breastfeeding Self-Efficacy Scores Among Second-Time Nursing Mothers in Angeles City

Results shows that the Breastfeeding Self-Efficacy Scale–Short Form (BSES-SF) scores produced an overall mean of 3.85 (SD = 1.27), reflecting high BSE. Respondents were most confident in ensuring proper latching (Item 4), mother's own satisfaction (Item 5) and continuing to breastfeed for every feeding (Item 12). Lower scores were seen for managing time-consuming aspects (Item 10) and feeding while the baby is crying (Item 6). [Table 3].

Table 3. Mean score of breastfeeding self-efficacy among second-time nursing mothers in Angeles City.

ITEM	DESCRIPTION	MEAN ± SD
1	I can always determine that my baby is getting enough milk	3.71 ± 1.43
2	I can always successfully cope with breastfeeding like I have with other challenging tasks	3.78 ± 1.30
3	I can always breastfeed my baby without using formula as a supplement	3.78 ± 1.36
4	I can always ensure that my baby is properly latched on for the whole feeding	4.03 ± 1.24
5	I can always manage the breastfeeding situation to my satisfaction	4.00 ± 1.25
6	I can always manage to breastfeed even if my baby is crying	3.77 ± 1.22
7	I can always keep wanting to breastfeed	3.71 ± 1.17
8	I can always comfortably breastfeed my family members present	3.93 ± 1.21
9	I can always be satisfied with my breastfeeding experience	3.92 ± 1.25
10	I can always deal with the fact that breastfeeding can be time consuming	3.41 ± 1.38
11	I can always finish feeding my baby on one breast before switching to the other breast	3.97 ± 1.17
12	I can always continue to breastfeed my baby for every feeding	4.04 ± 1.28
13	I can always manage to keep up with my baby's breastfeeding demands	3.97 ± 1.21
14	I can always tell when my baby is finished breastfeeding	3.81 ± 1.27
	Overall	**3.85 ± 1.27**

Legend: Very Low Breastfeeding Self-Efficacy (1.00 to 1.80); Low Breastfeeding Self-Efficacy (1.81 to 2.60); Moderate Breastfeeding Self Efficacy (2.61 to 3.40); High Breastfeeding Self-Efficacy (3.41 to 4.20); Very High Breastfeeding Self-Efficacy (4.21 to 5.00)

3.4. Correlation Between Breastfeeding Knowledge and Breastfeeding Self-Efficacy

The result shows that there is a strong, positive and statistically significant relationship between BK and BSE (Table 6; r = 0.872*, p-value 0.001). This implies that mothers who are more aware of the in-turn have higher confidence in their breastfeeding ability [Table 4].

Table 4. Preferred training modalities.

VARIABLES	r	p-value	STRENGTH
BK ↔ BSE	0.872*	0.001	Strong Positive

*Significant at p=0.01

3.5. Regression Analysis Between Breastfeeding Knowledge and Breastfeeding Self-Efficacy

Linear regression analysis tested whether BK could predict BSE. Results showed a standardized regression coefficient of $\beta = 0.677$ (t = 18.034, p = 0.001) and $R^2 = 0.761$, indicating that 76.1% of the variance in self-efficacy is explained by BK [Table 5].

Table 5. Results of the Regression Analysis Between Breastfeeding Knowledge and Breastfeeding Self-Efficacy

BK	β	t	p	R²
	0.677	18.034	0.001	0.761

The effect size (β = 0.677) represents a large effect, confirming that higher BK significantly contributes to increased self-efficacy.

4.   DISCUSSION

4.1. Demographic Profile of the Respondents

Most respondents were young adults between the ages of 25 and 31 who had completed high school, belonged to the lower middle class, were housewives, and did not have formal employment. These profiles suggest potential factors influencing their confidence and decision-making. Younger mothers may still be establishing their maternal roles, and women with only a high school education may not have as much access

to evidence-based BK. Additionally, the high percentage of housewives and limited financial resources may lead to a greater reliance on informal networks, which is consistent with Si and Mao's (2024) claim that BSE can be directly impacted by socioeconomic circumstances and educational background. These demographic factors likely shaped the participants' breastfeeding experiences, highlighting the importance of studies that look at the interactions between self-efficacy and age, education, and economic status.

4.2. Level of Breastfeeding Knowledge

The respondents' high level of BK reflects the strong flow of information within social and community networks, implying that essential breastfeeding concepts are effectively shared through healthcare interactions, peer conversations, and family practices, all of which significantly influence BK (Manjapallikkunnel et al., 2023). This broad access to basic breastfeeding knowledge suggests that mothers are generally well-equipped to understand the benefits of breastfeeding and its fundamental principles (Morse & Brown, 2022). However, minor gaps in technicalities, such as physiological mechanisms and long-term health advantages, suggest that not all areas of breastfeeding education are given equal weight. This shows that deeper biological and technical understanding may necessitate more tailored interventions from healthcare providers.

4.3. Level of Breastfeeding Self-Efficacy

BSE was also high, indicating that many mothers believe they can cope with common breastfeeding challenges. Repeated exposure helps build mastery, which may explain why confidence is linked to prior breastfeeding experience (Al-Thubaity et al., 2023). Cultural norms further shape this confidence (Değer et al., 2023), as breastfeeding is widely regarded as the expected practice in many Filipino households. Shared parental experiences, observable breastfeeding habits at home, and encouragement from family help a mother believe she can breastfeed effectively. However, lower confidence in time management highlights that practical barriers such as work demands and domestic responsibilities can undermine breastfeeding continuity despite strong cultural and peer support (Bednarek et al., 2023). This highlights the need for support strategies that extend beyond education by addressing the time-related and structural constraints mothers frequently confront.

4.4. Relationship Between Breastfeeding Knowledge and Self-Efficacy

The relationship between BK and BSE was notably strong, showing that a mother's understanding of breastfeeding coexists with her confidence in doing it. This link can be attributed to the combined effects of community learning, cultural reinforcements, and previous maternal experience. Mothers in many Filipino households that practice breastfeeding observe these behaviors regularly, which makes it simpler for them to transform knowledge into self-assured action. In contrast, first-time mothers frequently rely on outside guidance and may require more formal schooling to achieve comparable levels of confidence.

Studies from Saudi Arabia, Lebanon, Qatar, and Northwest Ethiopia have shown similar results, suggesting that BK and BSE are intrinsically related and mutually supportive (Naja et al., 2022; Abebe et al., 2022; Al-Thubaity et al., 2023). These studies highlight that mothers with sufficient knowledge are better able to manage problems, sustain exclusive breastfeeding, and make educated decisions. Conversely, a lack of information makes it more difficult to commence and maintain breastfeeding. When prior experience is combined with proper information, mothers gain stronger skills and confidence, which helps explain the study's unusually high correlation.

4.5. Predictive Relationship Between BK and BSE

BK was a strong predictor of BSE, suggesting that learning does not merely coexist with confidence but actively shapes it. When mothers understand effective techniques, benefits, and solutions to common difficulties, they develop a clearer sense of control in managing breastfeeding. This predictive strength may also reflect cultural expectations that encourage mothers, particularly experienced ones, to rely on previously gained skills and collective family guidance. For second-time mothers, combining experiential mastery with formal and informal knowledge makes the path from learning to confidence even more direct. This highlights the importance of comprehensive, practical breastfeeding education, especially for first-time mothers who may benefit most from confidence-building interventions.

Similar patterns have been observed in Hong Kong, the United States, and Southwest Ethiopia, where mothers with greater breastfeeding education and knowledge demonstrate higher confidence and stronger commitment to exclusive breastfeeding (Wong et al., 2021; Aderibigbe et al., 2023; Gizaw et al., 2022). These findings align with Bandura's self-efficacy theory, which explains that confidence develops through mastering experiences, observing others, receiving support, and recognizing one's own mental and physical states (Bandura, 2001). For second-time mothers, prior breastfeeding experience combined with knowledge enhances both confidence and effectiveness in breastfeeding.

4.6. Implications for Practice

The results highlight the key role of well-established BK in achieving BSE. The findings support global health priorities such as the WHO's goal of increasing EBF rates, as well as national initiatives, like PPAN's goal for 2023 to 2028 to increase EBF to 5.8% annually and the DOH's "Breastfeeding TSEK" initiative, which stresses Tama, Sapat, Eksklusibo, at Kontinuado breastfeeding practices. Emphasizing BK as a foundation for building self-efficacy may therefore serve as a key strategy in addressing breastfeeding disparities and improving maternal and child health.

Healthcare providers, especially nurses, midwives, and obstetricians, can integrate BK and BSE assessments into routine prenatal and postnatal care. By identifying mothers with low self-efficacy, they can deliver tailored education and support to help ensure successful breastfeeding outcomes. Moreover, because peer and family support play important roles in shaping BK, partners and family members should also be involved in education and counseling to create a more supportive environment. At the community level, local initiatives such as mother-to-mother support groups, peer counseling programs, and breastfeeding clubs can provide spaces for sharing knowledge and experiences, fostering both understanding and confidence.

4.7. Limitations

This study used a non-probability snowball sampling method, which, while practical for accessing mothers within close community networks, may have introduced selection bias by overrepresenting individuals with similar backgrounds, beliefs, or breastfeeding experiences. This may partially explain the unusually high correlation observed between BK and BSE, as culturally homogeneous groups tend to share knowledge and practices more consistently. The focus on second-time breastfeeding mothers in Angeles City provided specificity but limited diversity, excluding first-time mothers, multiparous mothers beyond the second child, adoptive mothers, and those from different socioeconomic or cultural contexts. Additionally, data were collected at a single point in time, with no analysis of long-term breastfeeding behaviors or changes in self-efficacy throughout the postpartum period.

The moderate standard deviations observed across survey items (ranging from 1.12 to 1.51) reflect natural heterogeneity within the sample, attributed to differences in educational attainment, socioeconomic status, and varied first-time breastfeeding experiences. While this variability strengthens statistical analyses by providing adequate variance, it suggests that second-time mothers in Angeles City are not a homogeneous group. Future research could explore subgroup analyses to better understand how specific demographic or experiential factors contribute to this variability in knowledge and self-efficacy.

4.8. Recommendations for Future Research

Future studies may address these limitations by including a more diverse and representative sample. Expanding the scope to include first-time, multiparous, and adoptive mothers could provide a deeper understanding of how BK influences BSE in various situations. Longitudinal research could also determine whether BK has lasting effects on BSE and breastfeeding duration, offering a clearer view of the long-term impact of maternal education.

Additionally, studying factors such as age, mental health, and financial status may reveal how these influence BSE. Comparing different communities or groups may help understand the impact of economic and cultural backgrounds to breastfeeding practices. Evaluating breastfeeding education programs, especially those designed for second-time mothers, and exploring the role of family and healthcare support would also be beneficial.

Moreover, future research could examine the influence of family, relatives, and healthcare professionals in strengthening a mother's efficacy in breastfeeding. Lastly, developing and assessing technology-based breastfeeding education programs could expand access to information and reduce barriers to learning and support.

5. CONCLUSION

This study examined the role of BK to BSE among second-time mothers in Angeles City, Pampanga. The quantitative data indicated a strong positive correlation between BK and BSE, suggesting that as mothers gain more knowledge about breastfeeding, they also gain confidence and competence. This supports the idea that BK is a strong, independent factor that motivates mothers' behaviors and contributes to their BSE.

As PPAN sets a goal of 5.8% annual increase in EBF for 2023 to 2028, it becomes highly important to understand the factors that may help improve and sustain the practice. The objectives on BSE are also closely aligned with the DOH's "Breastfeeding TSEK" (Tama, Sapat, Ekslusibo) campaign that promotes the practice of correct, adequate, and exclusive breastfeeding. However, the momentum is still impeded by

barriers such as inconsistent programming, limited access to counselling services, and entrenched beliefs about breastfeeding. Thus, it becomes pivotal to revisit and accentuate the importance of providing sufficient information on breastfeeding to nursing mothers to implement local and national breastfeeding initiatives successfully.

To achieve this, healthcare providers should implement prenatal and postpartum assessments to identify mothers with low self-efficacy and provide targeted education and support systems. Collaborations between local government and health organizations should also promote the sustainability of community-based programs like peer counseling, partner-inclusive education, and breastfeeding support groups. These initiatives can help provide essential avenues for knowledge sharing, empowerment, and the normalization of exclusive breastfeeding in the community. Ultimately, empowering mothers through continuous breastfeeding education is key to sustaining national and global efforts toward improved child health and development.

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