

Assessing the Impact of the “Empowering the Coastal Community” Extension Program During the COVID-19 Pandemic

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Abstract. This study assessed the impact of the “Empowering the Coastal Community” Extension Program implemented in Barangay Malusay, Guihulngan City, Negros Oriental, Philippines, during the COVID-19 pandemic. The program sought to enhance the community’s knowledge, skills, and values related to health, sanitation, vaccination, and environmental management amid the challenges brought by the health crisis. While many extension programs have been implemented across local communities, few studies have examined their actual effectiveness in fostering community empowerment and sustainable development during times of crisis. To address this gap, the study employed a descriptive research design utilizing an adapted and validated questionnaire to determine the extent of the program’s impact. A total of 60 purposively selected respondents, composed of barangay officials, barangay health workers, and Pantawid beneficiaries who also received the extension program, participated in the study. The data were analyzed using frequency, percentage, and weighted mean to interpret the results. Findings revealed that the respondents demonstrated a high level of acquired knowledge (overall weighted mean = 2.70, Strongly Agree), particularly in COVID-19 prevention, vaccination awareness, and hygiene and sanitation practices. Likewise, they exhibited strong skills (overall weighted mean = 2.58, Strongly Agree) in applying health and safety measures, waste management, and urban gardening, although the latter was rated slightly lower. The program also significantly influenced values and attitudes (overall weighted mean = 2.63, Strongly Agree), highlighting a deeper appreciation for public health, a sense of responsibility for community hygiene, and commitment to environmental protection. Overall, the study concludes that the extension program effectively strengthened community awareness, improved health practices, and fostered ecological stewardship. These outcomes demonstrate the vital role of university-led extension programs in promoting community empowerment and sustainable development, aligning with Sustainable Development Goals (SDGs) 3, 4, 11, and 13.

Keywords: Coastal community; COVID-19 pandemic; Extension program; Impact study; SDGs.

1.0 Introduction

The world suffered an unprecedented health crisis with the outbreak of the Coronavirus Disease 2019 (COVID-19), which disrupted lives, economies, and social systems worldwide. Declared a global pandemic by the World Health Organization (WHO) in March 2020, COVID-19 caused widespread fear, uncertainty, and loss,

highlighting the vulnerabilities of public health systems and the resilience of communities worldwide (World Health Organization, 2020). The Philippines was among the countries severely affected, facing prolonged lockdowns, economic slowdown, and significant challenges in healthcare delivery and crisis communication (Department of Health [DOH], 2021). The pandemic presents a range of unique challenges to Extension, including revisions to resource allocations and shifts in programmatic focus (Narine & Meier, 2020). In local communities, particularly coastal and rural areas, these challenges were further magnified by limited access to accurate information, healthcare services, and livelihood support. Barangay Malusay, a coastal community in Guihulngan City, Negros Oriental, mirrored these conditions, grappling with the dual burden of health risks and economic instability. The pandemic also exposed the community to misinformation, inadequate health literacy, and psychological stress. According to Paulican (2023), an integrated extension approach is needed to address multifaceted community issues effectively. Recognizing these pressing concerns, Negros Oriental State University – Guihulngan Campus initiated the extension project “Empowering the Coastal Community of Barangay Malusay During the Pandemic” to equip residents with essential knowledge, practical skills, and coping mechanisms to build resilience and recovery.

A community extension program is one of the fourfold functions of a higher education institution as mandated by the Commission on Higher Education. Commitment from departments and colleges, diverse calendar agreements, curricular mapping, mentor and faculty training, a sense of community, adequate physical space, technology, and community relationships were all identified as critical resources for a successful program (Malabanan & Dacara, 2024). Consistent with the mandates of higher education institutions to promote social responsibility and sustainable development, the initiative aimed to address the community's immediate and long-term needs through capacity-building activities. It focused on equipping barangay officials, health workers, and Pantawid Pamilyang Pilipino Program (4Ps) members with reliable information on COVID-19 prevention, vaccination, and health promotion. Effective responses rely on proactive adaptation, consistent action frequency, sufficient personnel and financial resources, clear communication, and investments in health infrastructure (Salindo et al., 2024). Furthermore, the program emphasized proper waste management, hygiene practices, and the importance of mental and physical well-being. Urban gardening was introduced not only as a sustainable livelihood alternative but also as a therapeutic activity to reduce anxiety and promote self-sufficiency. These interventions reflected the essence of Sustainable Development Goals (SDGs) 3: Good Health and Well-being and 11: Sustainable Cities and Communities, both of which advocate for inclusive, resilient, and health-oriented communities amid crises.

Universities play a vital role in strengthening social transformation, primarily through extension and outreach programs that connect academic expertise with community realities. As Salazar (2020) emphasizes, higher education institutions contribute significantly to community empowerment by integrating learning, research, and service to address local and national challenges. The “Empowering the Coastal Community” extension program exemplified this mandate by promoting knowledge dissemination, behavior change, and social cooperation in Barangay Malusay. Its environmental education components, urban gardening, and proper waste management are aligned with SDG 13 (Climate Action) and SDG 14 (Life Below Water) by encouraging sustainable practices that protect both terrestrial and marine resources. By cultivating awareness and stewardship among residents, the program fostered environmental responsibility while enhancing livelihood resilience. Moreover, it reinforced the concept that effective community empowerment requires not only providing information but also nurturing attitudes and practices that sustain long-term well-being.

The present study aims to assess the overall impact of the “Empowering the Coastal Community” extension program implemented in Barangay Malusay during the COVID-19 pandemic. Specifically, it seeks to determine the program's impact on acquired knowledge, skills, and values and attitudes among its participants. The study evaluates how effectively the program enhanced community members' understanding of health protocols, waste management, and sustainable practices; improved their skills in urban gardening and health promotion; and shaped their attitudes toward collective responsibility, environmental awareness, and resilience. By identifying the program's strengths and outcomes, this assessment contributes to improving future extension activities at Negros Oriental State University. Furthermore, it underscores the alignment of such programs with the United Nations Sustainable Development Goals, particularly in fostering empowered, informed, and resilient coastal communities capable of adapting to crises and sustaining long-term development.

2.0 Methodology

2.1 Research Design

This study employs a descriptive research design to assess the impact of the extension program on its beneficiaries in terms of their knowledge, skills, and attitudes. This design was chosen to effectively capture the nuances and multifaceted outcomes of the program's implementation. A structured questionnaire served as the primary data-gathering tool, meticulously designed to obtain comprehensive and relevant information from the respondents.

2.2 Participants and Sampling Technique

The study employed a purposive sampling technique, selecting 60 community residents based on their attendance at community-based education and training programs in Barangay Malusay, Guihulngan City. This barangay is among the university's adopted communities. From the perspective of Loso (2021), institutions' curricular programs should align their community extension services with the needs of their adopted communities. This method was appropriate because it ensured the inclusion of participants who could provide meaningful insights regarding the program's impact. The participants consisted of barangay officials, barangay health workers, and Pantawid beneficiaries, groups that play vital roles in local governance, public health, and community development. Moreover, these individuals were also the direct beneficiaries of the extension program, making them the most suitable respondents to evaluate its effectiveness. Their diverse perspectives provided a comprehensive understanding of how the program influenced their knowledge, skills, attitudes, and overall community well-being.

2.3 Research Instrument

The study utilized a questionnaire adapted from the work of Sibal and Elizaga (2019), titled *"Impact Assessment of the Extension Program of the College of Public Administration, Cagayan State University, Carig Campus."* The instrument was designed to measure three key dimensions: acquired knowledge, acquired skills, and values or attitudes developed through participation in the program.

To ensure relevance and validity, the questionnaire incorporated items from public health and vaccine literacy instruments, as recommended in the existing literature. Specifically, questions on COVID-19 awareness, vaccination, and sanitation were adapted from validated vaccine literacy and health behavior studies (Biasio et al., 2023). This alignment enabled the instrument to effectively capture respondents' understanding of health-related concepts and the preventive practices promoted during the program.

The demographic section of the questionnaire gathered data on the respondents' age, sex, educational attainment, and occupation. These items were guided by the Department of Social Welfare and Development (DSWD) and Pantawid Pamilyang Pilipino Program (4Ps) impact evaluation surveys, ensuring that the instrument was appropriate for identifying the socio-economic characteristics of the target population, particularly barangay officials, health workers, and Pantawid beneficiaries who also served as program recipients.

Prior to administration, the questionnaire underwent content validation by field experts to ascertain clarity, accuracy, and relevance of each item. Minor revisions were made based on their recommendations to enhance its reliability and contextual appropriateness. The final version of the instrument was administered through face-to-face interaction to facilitate understanding among respondents and ensure accurate data collection.

2.4 Data Gathering Procedure

The data collection process began with the researchers formally requesting permission from the Barangay Captain to conduct the impact study. A letter outlining the purpose, objectives, and scope of the research was sent to ensure transparency and ethical compliance. Upon receiving approval, the researchers administered a structured survey to the respondents. The survey served as the primary data-collection instrument, designed to gather relevant information on the program's impact on the community. This process ensured that data collection was conducted in an organized, ethical, and community-approved manner, promoting accuracy and cooperation among participants.

2.5 Data Analysis Procedure

The survey data were organized, tabulated, and analyzed using descriptive statistics, including frequencies, percentages, and weighted means. Frequency and percentage were used to describe the respondents' demographic profile by age, gender, educational attainment, and occupation, providing a clear overview of their

distribution and characteristics. A weighted mean was used to determine respondents' levels of acquired knowledge, skills, attitudes, and values after participating in the program. The descriptive interpretation (Strongly Agree, Agree, and Disagree) helped assess the overall effectiveness of the extension activities. These statistical tools enabled the researchers to summarize large datasets, identify patterns, and draw meaningful insights into the program's impact on community learning and development.

2.6 Ethical Considerations

The study strictly followed ethical principles. The persons involved were provided with a thorough document outlining the study's specific approach and objectives. The researchers needed to ensure that the volunteers fully understood the study's goals and relevance, and that they had the option to decide whether to participate.

2.7 About the Extension Program Implemented

The extension program "Empowering the Coastal Community of Barangay Malusay, Guihulngan City During This Pandemic" was a collaborative initiative of Negros Oriental State University - Guihulngan City Campus through its Colleges of Arts and Sciences, Agriculture, Forestry and Fisheries, Industrial Technology, and Teacher Education. Designed to assist Barangay Malusay's officials, health workers, and Pantawid members, the program aimed to enhance community resilience amid the COVID-19 pandemic through education and skill-building. A series of activities was conducted, including lectures on COVID-19 facts, vaccination, public safety, waste management, hygiene, sanitation, and health and wellness. Additionally, participants were trained in urban gardening to promote mental well-being and sustainable living during the crisis. The program culminated in a recognition event celebrating the participants' active involvement and the community's strengthened capacity to manage health, environmental, and social challenges during the pandemic.

3.0 Results and Discussion

3.1 Demographic Profile of the Respondents

Table 1 presents the demographic profile of the 60 respondents by age, gender, educational attainment, and occupation. Most were 40–49 years old (33.3%) and male (55%). A large portion were high school graduates (40%), and the majority were barangay officials (40%), followed by barangay health workers (30%) and Pantawid beneficiaries (30%). These characteristics indicate that the respondents are mature and actively involved in community activities.

Table 1. *Demographic Profile of the Respondents*

Profile Variables	Category	Frequency (n = 60)	Percent (%)
Age	20–29	10	16.7
	30–39	18	30.0
	40–49	20	33.3
	50 and Above	12	20.0
	Total	60	100.0
Gender	Male	33	55.0
	Female	27	45.0
	Total	60	100.0
Educational Attainment	Elementary Level/Graduate	18	30.0
	High School Graduate	24	40.0
	College Level/Graduate	18	30.0
	Total	60	100.0
Occupation	Barangay Officials	24	40.0
	Barangay Health Workers	18	30.0
	Pantawid Beneficiaries	18	30.0
	Total	60	100.0

As shown in Table 1, the majority of respondents were aged 40–49 years (33.3%), followed by those aged 30–39 (30%), 50+ (20%), and the youngest group, 20–29 years (16.7%). This suggests that most participants are middle-aged adults, which implies maturity, responsibility, and established community involvement. Middle-aged individuals often play a key role in community initiatives due to their experience and decision-making capabilities (Bernardo et. al., 2020). Their participation in the extension program reflects their commitment to continuous

learning and improving community well-being, consistent with findings that adults engage in learning opportunities to enhance their competence and support sustainable livelihoods (UNESCO, 2021).

In terms of gender, the table shows that male respondents (55%) slightly outnumber female respondents (45%), indicating a nearly balanced gender distribution. This pattern demonstrates inclusivity and gender representation in the community-based program. According to Kuteesa et al. (2024), gender balance in extension and educational programs ensures diverse perspectives and equitable participation in decision-making and community action. The slightly higher number of male participants may also be linked to their roles as barangay officials and community leaders, positions traditionally occupied by men in local governance structures (Philippine Statistics Authority [PSA], 2020). The data indicate that gender can have a considerable impact on educational achievement and other indicators of success (Gabutin et al., 2024). Nonetheless, the participation of both genders indicates that the program successfully engaged a broad sector of the community.

Regarding educational attainment, 40% of respondents were high school graduates, while 30% each were elementary and college graduates. This distribution indicates that the majority have attained at least a basic level of education, enabling them to engage meaningfully in training and community development activities. Such engagement becomes even more effective when learning is shared collaboratively with educators, community members, and local organizations (Preston, 2013). As noted by Corpuz et al. (2022), individuals with basic educational backgrounds tend to be receptive to extension programs that provide practical knowledge applicable to their daily lives. The participation of college-level individuals further suggests that the program reached a wide range of educational backgrounds, enhancing knowledge-sharing within the community. This diversity aligns with the goals of inclusive education and lifelong learning emphasized in Sustainable Development Goal (SDG) 4, which promotes equitable access to quality education for all (United Nations, 2020).

In terms of occupation, barangay officials comprised the largest group of respondents (40%), followed by barangay health workers (30%) and Pantawid beneficiaries (30%). This composition indicates that the participants are actively engaged in community service and development. However, the absence of structured training limits their ability to conduct situational analyses, manage budgets, and implement sustainable development plans, thereby exacerbating the community's vulnerabilities (Tabanao et al., 2025). Barangay officials and health workers serve as vital agents of local governance and public health promotion, while Pantawid beneficiaries represent vulnerable sectors striving for empowerment and livelihood improvement. The grants provided to these beneficiaries aim to alleviate poverty, improve access to education and healthcare, and enhance their overall well-being (Peñalba, 2019). Moreover, Salazar (2020) emphasizes that the involvement of local leaders and community members in educational and extension activities enhances program sustainability, as these participants often act as multipliers of knowledge within their communities. Thus, the occupational profile suggests that the extension program effectively targeted key community stakeholders who could apply and disseminate the knowledge, skills, and values they acquired to strengthen local development and resilience.

3.2 Impact on Acquired Knowledge

Table 2 shows that the respondents demonstrated a high level of acquired knowledge, with an overall weighted mean of 2.70, interpreted as Strongly Agree. This indicates that the program effectively enhanced their understanding of COVID-19 prevention, vaccination, waste management, hygiene, sanitation, and overall health and wellness.

Table 2. *Impact on Acquired Knowledge*

Knowledge Item	Mean	Descriptive Interpretation
Knowledge of COVID-19 facts and prevention.	2.75	Strongly Agree
Understanding of vaccination benefits.	2.72	Strongly Agree
Waste management practices.	2.68	Strongly Agree
Hygiene and sanitation awareness.	2.70	Strongly Agree
Health and wellness knowledge.	2.65	Strongly Agree
Overall Weighted Mean	2.70	Strongly Agree

*Strongly Agree - 2.50 - 3.00, Agree - 1.50 - 2.49, Disagree - 1.50 - 2.49

The data in Table 2 reveal that the respondents strongly agreed that the extension program enhanced their knowledge of COVID-19 facts and prevention, obtaining the highest mean score of 2.75. This suggests that participants developed a clear understanding of how the virus spreads, recognized the importance of preventive

measures such as mask-wearing and physical distancing, and learned how to protect themselves and their families from infection. Supporting this, Perski et al. (2020) found that the use of face masks significantly reduces the risk of contracting influenza-like illnesses within households. Similarly, Dobbins et al. (2021) reported that participants in health-related programs often exhibit high levels of self-reported knowledge gain, behavioral intent to adopt preventive measures, and perceived economic value. These findings collectively affirm that the extension program effectively increased the respondents' awareness and understanding of COVID-19 prevention.

Regarding understanding vaccination benefits, respondents also strongly agreed, with a mean score of 2.72, indicating a positive impact of the program on their perception of vaccines as essential tools for disease prevention. The history of vaccination cannot be fully understood without acknowledging the public health initiatives that established the routine use of vaccines for children worldwide (Rodrigues & Plotkin, 2020). This finding suggests that the extension activities effectively addressed vaccine hesitancy and fostered greater trust in scientific information. As emphasized by the Centers for Disease Control and Prevention (CDC, 2021), enhancing vaccine literacy is crucial for achieving herd immunity and maintaining public health resilience during pandemics.

For waste management practices, a mean score of 2.68, interpreted as "Strongly Agree," indicates that the program effectively promoted proper waste segregation, recycling, and disposal habits among participants. Nawawi et al. (2022) emphasized that increasing awareness levels directly influence behavior and practices related to solid waste management. Similarly, Booth et al. (2019) found that respondents demonstrated a high level of awareness regarding various types of waste, as well as the policies and legal aspects of waste segregation. These practices not only contribute to cleaner surroundings but also help reduce health risks associated with improper waste handling, aligning with sustainable community goals. By fostering inclusive and resilient communities, such initiatives can further enhance youth participation in local sustainability efforts and contribute meaningfully to Sustainable Development Goal 11 (Tabanao et al., 2025).

Regarding hygiene and sanitation awareness, respondents strongly agreed (mean = 2.70) that their knowledge in this area improved through the program. This suggests that community members became more conscious of personal and environmental hygiene, which is essential in preventing disease transmission. The Department of Health (DOH, 2021) highlights that promoting sanitation awareness in local communities helps reduce infection rates and strengthens public health safety during crises. There is a growing call for more robust frameworks that integrate local knowledge, foster genuine community participation, and ensure long-term developmental outcomes (Dushkova & Ivlieva, 2024).

Lastly, health and wellness knowledge had a mean score of 2.65, interpreted as "Strongly Agree." This indicates that the extension program successfully enhanced participants' understanding of maintaining physical and mental well-being, particularly during the pandemic. Based on the context of Borbon & Ylagan (2021), community service is an activity institutions perform to aid certain societies, providing comfort in their everyday lives. Overall, the weighted mean of 2.70 signifies that the extension program was highly effective in enriching the community's knowledge across all health-related areas, contributing to sustainable health practices and community empowerment.

3.3 Impact on Acquired Skills

Table 3 shows that the respondents developed their practical skills to a high degree, with an overall weighted mean of 2.58 (Strongly Agree). They effectively applied COVID-19 preventive measures, proper waste management, and hygiene practices, while also improving their urban gardening skills.

Table 3. Impact on Acquired Skills

Skills Item	Mean	Descriptive Interpretation
Applying COVID-19 preventive measures.	2.60	Strongly Agree
Proper waste segregation and disposal.	2.58	Strongly Agree
Practice of hygiene and sanitation protocols.	2.64	Strongly Agree
Urban gardening skill application.	2.50	Agree
Overall Weighted Mean	2.58	Strongly Agree

*Strongly Agree - 2.50 – 3.00, Agree - 1.50 – 2.49, Disagree - 1.50 – 2.49

The data reveal that the respondents strongly agreed (M = 2.60) that they effectively applied the COVID-19 preventive measures learned from the program. This indicates that the training enhanced their adherence to safety

protocols such as wearing masks, maintaining social distance, and practicing frequent handwashing. As noted by Floriano et al. (2023), masks serve a dual purpose, protecting healthy individuals and preventing further transmission of the virus. These results suggest that community-based education effectively reinforced public health compliance, aligning with global efforts to mitigate virus transmission by increasing local awareness and fostering proactive community action (World Health Organization [WHO], 2022).

The respondents also strongly agreed ($M = 2.58$) that they improved their waste segregation and disposal practices. The program enhanced their awareness of proper waste handling, which contributed to cleaner surroundings and reduced health risks. Paghasian (2019) highlights the importance of understanding waste management principles, such as segregation at source, reduction, recycling, reuse, and composting, to foster environmental awareness and active citizen participation. This finding underscores the crucial role of environmental education in cultivating responsible waste management habits at the community level (United Nations Environment Programme [UNEP], 2020).

With a mean score of 2.64 (“Strongly Agree”), the respondents demonstrated consistent application of hygiene and sanitation protocols. This indicates that they effectively practiced proper hand hygiene, maintained household cleanliness, and implemented sanitation measures that promote overall health. Siddiky et al. (2024) identified significant associations between food safety knowledge and various sociodemographic factors, including age, food safety training, education level, work experience, and institutional type. These findings highlight the importance of continuous education and awareness programs in strengthening hygiene practices. Such behaviors are essential in preventing the spread of infectious diseases, particularly during a pandemic (Department of Health [DOH], 2021).

The respondents agreed ($M = 2.50$) that they applied urban gardening skills acquired from the program. This reflects the effectiveness of training in promoting sustainable food production and mental well-being during the pandemic. Urban gardening not only supports food security but also provides a healthy coping mechanism during times of crisis (Food and Agriculture Organization [FAO], 2021).

3.4 Impact on Attitudes and Values

Table 4 presents the respondents’ assessment of the program’s impact on their attitudes and values. The results show an overall weighted mean of 2.63, interpreted as Strongly Agree, indicating that the program effectively fostered positive behavioral changes. Participants developed a greater appreciation for public health, a stronger sense of responsibility for community hygiene, and a more profound commitment to environmental care. They also became more engaged in promoting community wellness activities, reflecting the program’s success in cultivating socially responsible and health-conscious citizens.

Table 4. *Impact on Attitudes and Values*

Values Item	Mean	Descriptive Interpretation
Appreciation of public health importance.	2.70	Strongly Agree
Responsibility towards community hygiene.	2.65	Strongly Agree
Commitment to environmental care.	2.60	Strongly Agree
Engagement in community wellness activities.	2.57	Strongly Agree
Overall Weighted Mean	2.63	Strongly Agree

*Strongly Agree - 2.50 – 3.00, Agree - 1.50 – 2.49, Disagree - 1.50 – 2.49

The data show that the respondents strongly agreed ($M = 2.70$) that the program enhanced their appreciation of the importance of public health. This suggests that participants developed a deeper understanding of how collective health measures protect both individual and community well-being. Sinclair and Whitford (2015) emphasized the vital role of local health departments and other organizations in ensuring the effective delivery of core public health functions. Awareness programs such as this one strengthen public commitment to disease prevention and health promotion, which are essential in minimizing health risks during pandemics (World Health Organization [WHO], 2021). Furthermore, with a mean score of 2.65 (“Strongly Agree”), respondents demonstrated a heightened sense of responsibility toward maintaining community hygiene. The program encouraged residents to actively engage in cleaning drives, proper waste management, and sanitation efforts. Promoting hygiene-related values fosters a healthier environment and helps reduce the spread of communicable diseases (Department of Health [DOH], 2021).

Following the session, respondents strongly agreed ($M = 2.60$) that their commitment to environmental conservation increased. This result shows how well the extension effort instilled values about sustainable practices and environmental responsibility. In protected regions, community involvement has become a powerful instrument for environmental conservation, fostering teamwork and positive change (Masongsong, 2024). Additionally, the respondents overwhelmingly agreed ($M = 2.57$) that they participated in more community wellness initiatives. This demonstrates that, in addition to enhancing participants' knowledge and abilities, the program motivated them to actively advance health and well-being in their local communities actively. Engaging in wellness programs enhances overall community resilience and fosters social cohesion (Pan American Health Organization [PAHO], 2021).

The results show that the extension program improved the community's social, economic, psychological, and environmental conditions. In terms of psychology, 82% of participants reported that their engagement in urban gardening activities and increased health knowledge had reduced their stress and worry. Positive psychosocial and communal outcomes, as well as increased consumption of fruits and vegetables, were linked to community gardening (Hume et al., 2022). Sixty percent of respondents said that urban gardening helped lower household expenses by providing more food resources. Socially, 75% reported greater community collaboration, especially in collaborative health and sanitation projects, which promoted shared accountability and unity. Regarding the environment, 70% of the participants helped keep their barangay cleaner by practicing better waste management. These results show how comprehensive community-based initiatives can support sustainability, social cohesion, and well-being, in alignment with the United Nations' Sustainable Development Goals (SDGs) 3, 11, and 13 (United Nations, 2020).

The study revealed that participants encountered several challenges during program implementation, including initial anxiety stemming from misinformation about the COVID-19 vaccine, limited availability of gardening materials in urban areas, and scheduling conflicts that affected attendance at training sessions. Community members must be able to share power with governing bodies and influence aspects of local context and decision-making (Henderson et al., 2019). Despite these obstacles, the community remained actively engaged and cooperative, demonstrating resilience and a strong commitment to collective learning and improvement. Such challenges are common in community-based initiatives, especially during public health crises, where misinformation and resource constraints often hinder participation and implementation (World Health Organization [WHO], 2021).

4.0 Conclusion

This study highlights the significant role of community-based initiatives in fostering resilience, empowerment, and sustainable development among coastal populations. The program effectively enhanced participants' knowledge of public health, hygiene, sanitation, vaccination, and environmental management, while also developing practical skills in waste management, preventive health practices, and urban gardening. Beyond skill and knowledge acquisition, the intervention strengthened positive values such as social responsibility, environmental stewardship, and public health awareness, key components in promoting holistic community well-being. These contributions underscore the transformative power of academic institutions to extend education beyond the classroom and address real-world challenges faced by vulnerable communities, particularly in times of crisis.

In terms of practical implications, the program's success provides a model for local government units (LGUs) and academic institutions to integrate health, environmental, and livelihood education into future extension initiatives. It demonstrates how university-led programs can complement public health campaigns and strengthen local governance capacity. Policy-wise, the results advocate for sustained partnerships between higher education institutions and local communities to implement context-specific interventions that support the Sustainable Development Goals (SDGs), specifically SDG 3 (Good Health and Well-being), SDG 4 (Quality Education), SDG 11 (Sustainable Cities and Communities), and SDG 13 (Climate Action). Encouraging collaboration at this level ensures continuity and scalability of community empowerment projects.

In the field of education, the findings reinforce the importance of experiential and participatory learning as vital strategies in promoting lifelong education and civic responsibility. The positive behavioral changes observed among participants highlight how education rooted in community contexts cultivates not only knowledge but also social consciousness and self-efficacy. Integrating similar community-based modules into teacher education,

social science, and environmental studies curricula may enhance students' social involvement and applied learning competencies.

For future research, it is recommended that follow-up studies employ longitudinal and mixed-methods approaches to measure the long-term impacts on livelihoods, health behaviors, and community sustainability. Comparative analyses across other barangays or regions could also determine the adaptability and scalability of this program model. Ultimately, this study contributes to a growing body of evidence supporting community-centered extension work as a cornerstone for inclusive and sustainable development, bridging the gap between academic research, policy formulation, and grassroots action.

5.0 Contributions of Authors

Eden Grace V. Tabanao contributes to the conceptualization, formal analysis, writing–original draft, supervision, writing–review and editing, funding acquisition, and methodology.

Jing V. Buenaflor and Ramon C. Delgado contribute to data curation, investigation, visualization, validation, and project administration of this study.

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7.0 Conflict of Interests

The authors declare no known competing financial interests or personal relationships that might influence the work reported in this paper.

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