

RESEARCH ARTICLE

Analysis on career aspirations and expectations of fishery-oriented learners on post-academic career directions

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ABSTRACT

The fisheries industry holds significant value, both economically and ecologically, contributing to food security, employment, and sustainable resource management. By advocating for responsible consumption and supporting local fishers who prioritize sustainable methods, young people can help ensure the health of fish populations and aquatic ecosystems. This exploratory study analyzed the career aspirations of fishery-oriented students from Zamboanga City, Sulu, and Tawi-Tawi. Fisheries students (n=30) were purposively sampled to be interviewed. They were asked about how they perceived their career aspirations and how the program influenced their perceptions. The study revealed that the quality of experience in the fisheries education program significantly influences students' career aspirations. Effective program implementation leads to increased student engagement in the fisheries industry. Students with extensive laboratory experience were more likely to pursue laboratory-based careers, while exposure to global issues like overfishing and climate change motivated them toward sustainable fisheries management. Hands-on training and practical experiences, including fieldwork and laboratory projects, enhance students' competencies and confidence, preparing them for real-world challenges. Essentially, a positive learning environment fosters both skill development and professional aspirations among students, ultimately shaping their career paths in the fisheries sector.

Keywords: career aspirations; experiential learning; fisheries education

1. Introduction

An aspiration is something one hopes to achieve. Having a clear aspiration provides a student with a clear vision of the future, which often determines their level of preparedness to face various challenges. Career aspiration, specifically, can be defined as the selection of a job or profession for which one undergoes specific education and training over time, enhancing their competencies in terms of the knowledge and skills required for that particular job^[1].

The Philippines, known for its extensive archipelago, holds abundant aquatic and marine resources

ARTICLE INFO

Received: 3 September 2024 | Accepted: 7 November 2024 | Available online: 6 February 2025

CITATION

Gervacio EM, Reyes EFD, Hayudini MAA, et al. Analysis on career aspirations and expectations of fishery-oriented learners on post-academic career directions. *Environment and Social Psychology* 2025; 10(1): 3071. doi:10.59429/esp.v10i1.3071

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crucial to its economy and culture. Despite this richness, the fishing industry faces significant challenges like ineffective management, inadequate monitoring, and insufficient regulation. These issues are exacerbated by unclear responsibilities among government bodies, communities, industry, and private sectors^[2]. Effective governance is vital, but conflicting roles hinder cohesive policy development. A more coordinated approach is needed to clarify each stakeholder's role in conserving resources and ensuring sustainable fishing practices. Without such coordination, the industry's long-term viability is at stake, risking both ecological balance and economic stability.

Fisheries science, as an interdisciplinary research field, has made substantial intellectual contributions to some of the most complex environmental and societal challenges faced by the world today^[3]. The discipline's importance lies in its ability to integrate knowledge from various scientific domains to address multifaceted issues. Fisheries are not just biological systems but are deeply intertwined with social and economic factors, making them highly complex social-ecological systems. These systems often present 'wicked' problems, such as those stemming from unsustainable resource management and the far-reaching effects of climate change^[3]. Addressing these problems requires innovative, transdisciplinary approaches that can bridge the gap between different scientific fields and knowledge systems, ensuring that solutions are both holistic and sustainable.

The study and management of fisheries are characterized by significant uncertainty due to the rapid and widespread changes occurring in global aquatic ecosystems. These changes disrupt social-ecological relationships and have profound effects on the livelihoods and lifestyles of local communities that depend on these resources^[4]. For instance, shifts in fish populations and migration patterns due to climate change can lead to economic instability for fishing communities, altering their traditional practices and economic structures. This dynamic environment necessitates adaptive management strategies that are flexible and responsive to new information and changing conditions. Such strategies must be capable of anticipating and mitigating adverse effects on both ecosystems and human communities, ensuring that fisheries remain resilient and sustainable amidst uncertainty.

In the context of socio-economic development, understanding the difference between aspirations and expectations is crucial. Aspirations represent what individuals hope for in the future, characterized by ambition and ultimate goals, while expectations are more grounded in realistic beliefs about what is achievable^[5]. This distinction is vital for policymakers and stakeholders in the fishing industry, as it affects how goals and strategies are formulated and implemented. By aligning policies with both the aspirations and realistic expectations of communities, it is possible to create more effective and meaningful interventions that foster genuine development and progress.

Despite fisheries' substantial economic role in the Philippines, there exists a notable deficiency in specialized education within this field. According to the Commission on Higher Education, a mere two percent of graduates from the agricultural, forestry, and fisheries disciplines are dedicated to fisheries^[6]. This educational gap presents a significant challenge in cultivating a skilled workforce capable of addressing contemporary issues within the fishing industry. Strengthening academic programs and professional training in fisheries is imperative to foster the expertise required for implementing sustainable management practices and driving sectorial innovation. A well-educated workforce is better equipped to navigate the complexities of fisheries management, thereby enhancing the industry's resilience and sustainability.

To sum it up, the Philippine fishing industry is at a critical juncture, facing a multitude of challenges that require comprehensive and coordinated efforts to address. The contributions of fisheries science are indispensable in understanding and navigating these complexities, providing the intellectual foundation for

sustainable management practices. Additionally, a clear understanding of aspirations and expectations can guide the formulation of policies that are both ambitious and realistic, fostering genuine development. Addressing the educational gap in fisheries is crucial for developing the expertise needed to implement effective management strategies and ensure the long-term sustainability of the fishing industry and the communities that depend on it.

2. Literature review

Sustainable production practices in fisheries play a crucial role in achieving economic, social, and environmental goals. Various sustainability strategies are employed to meet these objectives, ensuring that fish and seafood production can continue without depleting resources or causing significant ecological harm^[7]. These strategies often include sustainable fishing methods, habitat conservation, and the promotion of aquaculture practices that minimize environmental impact. By balancing economic viability with ecological responsibility, sustainable production practices support the long-term health of both marine ecosystems and human communities dependent on these resources.

Fish is a vital source of protein and essential micronutrients for approximately 3.3 billion people worldwide, especially in low and middle-income countries^[8]. The nutritional importance of fish cannot be overstated, as it provides key nutrients that are often lacking in other food sources. In many developing nations, fish serves as a primary protein source, contributing significantly to dietary needs and overall health. The reliance on fish underscores the need for sustainable fisheries management to ensure that fish stocks remain robust and capable of meeting the nutritional demands of growing populations. Recent advancements in supply chain management have introduced digital technologies such as blockchain, sensors, QR codes, and digital tokens to enhance transparency and traceability in seafood products^[9,10].

The role of fisheries in food and nutrition security (FNS) varies across different socio-economic contexts, with each sector contributing uniquely to global food needs^[11]. In the marine sector alone, projected increases in aquaculture and capture fisheries could provide between 12% and 25% of all flesh food required to feed an estimated 9.8 billion people by 2050^[12]. This highlights the importance of developing and maintaining sustainable fisheries and aquaculture practices to meet future food demands. Effective management and technological innovation will be essential in scaling up production while ensuring environmental and economic sustainability.

Aquatic foods are recognized for their rich micronutrient content, which is essential for human health. Fisheries and aquaculture are increasingly valued for their potential to address global micronutrient deficiencies and reduce diet-based health risks^[13]. The nutritional benefits of fish and seafood are particularly important in regions where dietary diversity is limited. Promoting the consumption of aquatic foods can help improve public health outcomes by providing essential vitamins and minerals that may be lacking in other food sources. This recognition underscores the importance of sustainable fisheries in contributing to global health and nutrition goals. Fisheries scientists are increasingly turning to adaptive loci to identify biologically relevant stock structures, which are crucial for effective management and conservation^[14,15]. This genetic approach represents a significant advancement in fisheries science, offering more precise tools for sustainable management.

In the context of fisheries management, research has shown that local support for conservation efforts is influenced by various individual and site-level factors^[16]. Key individual factors include the level of attachment to fishing, resource dependency, and employability. People's perceptions of ecosystem health and the impacts of local human behaviors also play a critical role. Individuals are more likely to support

conservation if they perceive the ecosystem as impaired, recognize human activities as contributing to ecological degradation, and view management actions as beneficial to ecosystem health. Understanding these factors is crucial for designing effective conservation strategies that garner local support and participation.

Young professionals in fisheries have noted that their experiences outside the classroom significantly contribute to their early career success^[17]. Fieldwork and hands-on experiences are essential for developing problem-solving, critical thinking, and personnel management skills. These practical experiences provide invaluable insights into fisheries and ecological procedures, bridging the gap between theoretical knowledge and real-world application. Encouraging and facilitating such experiences can help prepare the next generation of fisheries scientists and managers to address the complex challenges facing the industry.

Fisheries science is an important discipline that can generate substantial employment opportunities. For example, in India, the fisheries sector employs around nine million people, yet less than 0.01% are professionally qualified^[18]. This field encompasses the study of oceanography, ecology, biology, economics, and fisheries management, reflecting its interdisciplinary nature. By investing in education and professional training, countries can develop a skilled workforce capable of driving innovation and sustainability in the fisheries sector. The potential for job creation in fisheries science highlights the need for enhanced academic programs and career development opportunities.

3. Methods

3.1. Research design

This exploratory paper analyzed the career aspirations and expectations of fishery-oriented learners from fishery-oriented schools. This approach is meant to provide answers or shed light on a poorly understood phenomenon^[19,20], like the emergence of fishery industry in the Philippines. The openness and flexibility of exploratory research enable researchers to adapt to incoming data evidence, resulting in a deeper recognition of the subject^[21]. Researchers participate in *exploration* when they have limited or insufficient scientific knowledge relevant to the group, method, activity, or scenario they aim to research that contains significant aspects in need of further investigation^[22,23]. Chavez et al.^[24] emphasize that qualitative exploratory designs allow participants to actively contribute to new knowledge, which aligns with our approach of allowing learners to voice their expectations. Moreover, Swedberg^[25] acknowledges that exploratory research lays the groundwork for future detailed studies, making it a valuable tool despite criticisms of its scientific rigor. Exploration, in this study, was characterized as a process of *gathering preliminary data* on the perceptions and aspirations of fisheries students in their post-academic careers. This study answered one key question: *how fisheries students perceived their career path after graduating college?*

3.2. Population and sampling

Exploratory studies typically employ small sample sizes due to their focus on collecting in-depth qualitative data and gradually narrowing broad concepts into specific themes^[21,26]. For single case-study designs, *i.e.*, an examination of a single event or phenomenon, Marshall et al.^[27] suggested to have at least 15 participants to have clear picture of the context. Hence, having only 30 participants in this study was justified given its exploratory nature, which prioritizes depth of insight over sample size. Consequently, students were purposively sampled to be interviewed in this study. The rationale for using purposive sampling is rooted in its *flexibility* and *adaptability* to the evolving nature of exploratory research^[28,29]. In our study, purposive sampling ensures that the fishery-oriented learners chosen for the interviews possess key characteristics—such as relevant academic backgrounds and specific interests in fisheries—that contribute to a deeper understanding of their career expectations. This approach mirrors the case studies discussed, where small but

targeted samples provide rich narrative data that can later be categorized into themes^[30]. For example, fishery-oriented learners were likely selected based on their enrolment in relevant programs and their engagement with fishery-related activities, providing focused insights into their career pathways. This careful selection of participants increases the reliability and trustworthiness of our findings^[31], just as it does in other exploratory studies.

3.3. Research instrument

In exploratory studies, such as this research on the career aspirations of fishery-oriented learners in Zamboanga City, Sulu, and Tawi-Tawi, the use of a well-designed interview protocol is essential for ensuring the reliability and quality of the data collected^[32]. Like purposive sampling, semi-structured interviews are flexible and adaptable, which correspond with the exploratory nature of this study, allowing to look into participants' thoughts and viewpoints while keeping a structured approach^[21]. By formulating questions based on existing knowledge and piloting them before finalizing the guide, this paper ensured that the questions are relevant and elicit meaningful responses from the learners^[29,33]. This structured yet flexible approach also allowed for follow-up questions that can clarify participants' answers and encourage deeper exploration of their career expectations^[34]. This dynamic interaction between the interviewer and participants is necessary for understanding the learners' extensive views on their career aspirations in the fisheries sector^[23]. Interview guides not only shape the quality of the interviews but also influences the overall outcomes of the study^[35,36]. In this research, the guide's role is to help organize and facilitate discussions while allowing for probing questions that can lead to richer, more detailed data. **Table 1** presents the final interview guide questions used in the interview process.

Table 1. Interview guide questions.

Objectives	Interview Questions
To explore the specific roles or positions that fishery-oriented learners are most interested in pursuing within the fishery sector, based on their academic course.	<ul style="list-style-type: none"> a. What specific roles or positions are you most interested in pursuing within the fishery sector, based on your fishery-oriented course? b. From the program that you are pursuing, how did this influence your career aspirations in the fishery industry? c. What skills or knowledge are you looking forward to gain in your academic program to better prepare yourself for a career in the fishery sector?
To determine the academic experiences of fishery-oriented learners in relation to their expectations for future career options in the fishery industry.	<ul style="list-style-type: none"> a. Discuss how your academic experiences in the fishery program have prepared you for potential career options in the industry. Are there specific practical experiences that have been particularly useful? b. How do you perceive the alignment between the skills and knowledge gained from your academic program and the career requirements within the fishery sector? c. Have you identified gaps in your academic training that may affect your future career in the fishery industry? Elaborate.

3.4. Data gathering procedure

In this study, narrative data collected from one-on-one interviews served as the primary source of information. Qualitative research often involves gathering participants' perspectives, which are then transcribed and analyzed to uncover significant themes or ideas^[37]. Interviews, as a method for listening to and interpreting personal narratives, offer participants a way to express the meaning of their experiences^[35]. Particularly in phenomenology, interviews are used to explore individual lived experiences, distinguishing this method from other approaches like grounded theory or ethnography^[38].

Several steps are essential for conducting effective qualitative interviews, including developing research questions, identifying participants, discussing confidentiality, and using an interview guide with thematic questions and follow-up probes^[39]. In this study, the interviewer initiated each session by explaining the

research objectives, ensuring participants of confidentiality, and outlining the voluntary nature of their involvement. A structured interview guide was used to ask thematic questions, with follow-up questions designed to prompt participants to elaborate on their responses.

Interviews, widely recognized in social science research, are valuable for collecting qualitative data, particularly when conducted as informal conversations that encourage participants to freely express their perceptions and experiences^[40,41]. To preserve the quality of the interviews, Schensul et al.^[42] emphasized three key principles: maintaining the flow of the interviewee’s narrative, fostering a positive relationship, and avoiding interviewer bias. Throughout the process, the interviewer created a comfortable environment by asking introductory questions and allowing participants to speak in their native languages. The interview was conducted in a neutral tone, with empathy and careful listening, ensuring trust and a natural flow of conversation^[43]. The entire interview was recorded, using the Microsoft Excel (version 2407), with the participant’s consent to ensure accurate data collection.

3.5. Data analysis

Reflexive thematic analysis was carried out to analyze the narratives from one-on-one interviews. In this method, themes are not only surface-level patterns—they reveal underlying shared meanings arranged around a primary concept^[44]. The coding process in reflexive thematic analysis is dynamic and flexible, allowing the codes to evolve as the researcher's understanding of the subject matter deepens. It stresses the subjective character of coding, prompting researchers to consider how their own viewpoints may influence the study^[45]. The subjective nature of this method does not hamper its methodological integrity, instead it strengthens the ideas that emerged from the data set^[46]. Reflexivity is a crucial aspect of qualitative research because it allows researchers to reflect on how their own perspectives and actions may influence data collection and analysis^[47]. To emphasize the reliability of the findings, an inductive approach was employed wherein codes and themes were derived directly from the data, rather than being influenced by pre-existing theoretical frameworks. This bottom-up technique ensured that the analysis remained closely aligned with the participants' actual experiences and perspectives^[48]. This method helps to minimize researcher bias, as the process focuses on letting the data speak for itself, ensuring that the participants’ voices are prioritized in the interpretation of the results. This contributed to a more grounded and valid representation of the phenomenon under investigation. Following the six phases of reflexive thematic analysis (see **Figure 1**) outlined by Braun and Clarke^[49], the researchers systematically developed themes that reflected the participants’ experiences, with inductive method.

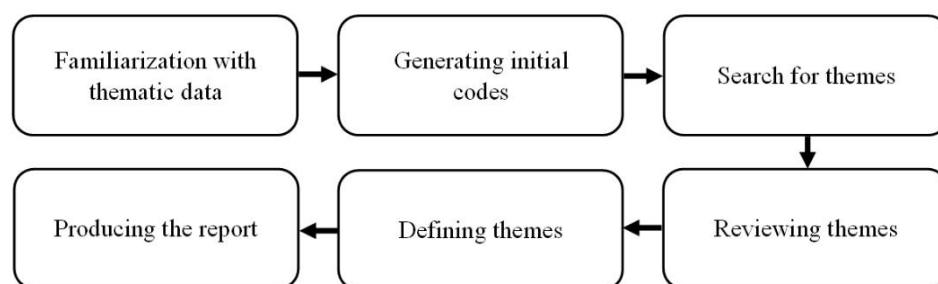


Figure 1. Reflexive thematic analysis.

4. Results

Objective 1: To explore the specific roles or positions that fishery-oriented learners are most interested in pursuing within the fishery sector, based on their academic course.

Theme 1: Management Roles

Fisheries students expressed a strong interest in pursuing various *management roles* within the fishery sector, particularly in positions that focus on *supervising operations for sustainability*. Participants mentioned specific roles such as *fisheries manager*, where they can oversee *sustainable harvesting* and ensure compliance with *conservation goals*. Others showed interest in becoming *aquaculture managers*, with responsibilities including *overseeing fish farms* to ensure optimal conditions for growth and productivity. Positions like *farm manager*, *hatchery manager*, and *fisheries inspector* were also highlighted, aligning with their passion for *sustainable aquaculture* and resource management. Across these responses, there was a clear emphasis on the importance of *conservation* and *sustainable practices* in their desired careers.

“I might pursue a role as fisheries manager wherein I will be able to supervise sustainable harvesting of fish stocks, with a strict principle of ensuring compliance with regulations and conservation goals.”

“The role of an aquaculture manager is highly appealing. This position involves overseeing the daily operations of fish farms, ensuring optimal conditions for fish growth, health, and productivity.”

“I am primarily interested in pursuing roles such as Farm Manager, Hatchery Manager, or Fisheries Inspector within the fishery sector. These positions align with my passion for sustainable aquaculture and fisheries management.”

“Finally, it prepares us to contribute meaningfully to sustainable fisheries management, conservation, and aquatic resource management.”

Theme 2: Quality Control

Fisheries students showed a strong interest in roles related to *quality control* and *health management* within the fishery sector. Participants expressed a desire to become *fish health specialists*, focusing on the *diagnosis, treatment, and prevention of fish diseases*. Others were drawn to roles like *environmental consultant*, where they could work with clients to *assess and mitigate environmental impacts* on marine life. There was also an interest in becoming a *microbiologist*, driven by a fascination with *microscopic organisms* that influence *fish health and quality*. They highlighted their focus on *fish physiology* and *pathology*, which aligns with their aspiration to develop *health management strategies* in collaboration with veterinarians, researchers, and fish farmers.

“Another one that interests me is that of a Fish Health Specialist. This position focuses on the diagnosis, treatment, and prevention of diseases in fish populations.”

“I see myself pursuing a career as an environmental consultant specializing in fisheries. I would like to work with public or private sector clients to assess and mitigate environmental impacts associated with development projects or activities affecting marine life.”

“My interest in becoming a microbiologist within the fishery sector is driven by a deep fascination with the microscopic organisms that significantly impact fish health and quality.”

“Throughout my aquaculture program, I have developed a keen interest in fish physiology and pathology. As a Fish Health Specialist, I would have the opportunity to work closely with veterinarians, researchers, and fish farmers to develop effective health management strategies.”

Theme 3: Seek Training

Fisheries students highlighted *specific gaps* in their skills and knowledge, emphasizing the need for *additional training* and *hands-on experience* to improve their career prospects. Some noted the need to focus on *fish genetics* and *biotechnology*, planning to pursue *certifications* to enhance expertise in these specialized areas. Others recognized the importance of *technological skills* due to modern advancements, especially in equipment for *monitoring marine health*.

“I have identified a potential gap in specialized areas such as fish genetics and biotechnology. To address this, I plan to pursue additional training or certifications to enhance my expertise in these specific areas and further advance my career prospects in the fishery industry.”

“I have to improve my technological skills due to the advancements in today’s modern equipment. I look forward to being exposed in such technologies present in monitoring the health and habitat of our marine life.”

There was also a call for *more hands-on training in microbiological techniques and quality control applications*. Learners expressed the need for *advanced data management skills* and exposure to *software applications* to handle larger datasets, aligning with modern fishery practices. They stressed the importance of *fieldwork*, *lab experiences*, and *internships* to better prepare for professional roles, aiming to meet *industry standards* through *workshops* and *additional coursework*.

“One gap I have noticed is the need for more hands-on training in advanced microbiological techniques and real-world applications of quality control measures.”

“Conducting more specific training in advanced data management techniques and software applications can greatly enhance our ability to handle larger data and perform thorough analysis which upholds modern fishery practices.”

“Enhancing my preparation for a professional job might be possible with more thorough fieldwork, lab experiences, and internships.”

“Addressing these gaps through internships, workshops, and additional coursework will better prepare me to meet industry standards and contribute effectively to the fishery sector.”

Objective 2: To determine the academic experiences of fishery-oriented learners in relation to their expectations for future career options in the fishery industry.

Theme 1: Theoretical Learning

Fisheries students emphasized the value of their *theoretical learning* in forming a solid foundation for real-world applications. They highlighted how their *curriculum* connects academic knowledge with the *demands of the fishing industry*, equipping them with the tools for a *prosperous career*. Many students pointed to the *hands-on approach* of their program, where *theoretical concepts* were applied in *practical settings*, such as learning *fish preservation techniques*, *post-harvest handling*, and *quality control*.

“During my academic career, I have noticed a strong relationship between the curriculum and the real-world demands of the fishing industry, which lays a strong basis for a prosperous career in this field.”

“This program made sure that we learn by doing, thus feeding us with theoretical knowledge and having it applied to the real world.”

“Through my studies, I have gained practical knowledge on fish preservation techniques, such as proper handling and storage methods. These insights have made me more aware of the importance of maintaining fish quality from the point of capture to the market.”

“My fishery-oriented course has given me a great academic foundation making us more knowledgeable when it comes to biology, ecology, marine sciences, and resource management. We become more equipped to fully understand the complexities of aquatic resources.”

Their studies also expanded their understanding of *aquatic resources*, *biology*, *marine sciences*, and *resource management*, giving them the ability to address challenges in *sustainable fisheries management*. The integration of *technical knowledge* with practical scenarios, such as applying *food safety standards* and *preservation techniques*, ensured that their skills align with industry standards.

“It provides us with technical knowledge which serves as foundational concepts applicable to a wide range of roles within the fishery sector. This technical knowledge allows me to explore fish populations, assess habitat health, and contribute to sustainable fisheries management practices.”

“The program’s emphasis on post-harvest handling, preservation methods, and quality control is directly relevant to industry needs. By applying the theoretical knowledge gained in the classroom to practical situations, I can ensure that my skills meet the demands of the fishery sector.”

“For example, coursework on food safety standards and preservation techniques prepares me to address real-world challenges in maintaining fish quality from harvest to consumer.”

Finally, the *interdisciplinary nature* of the course, blending *biological sciences* with *economics*, *policy*, and *environmental studies*, provided a broad perspective on fisheries management, enriching their preparation for diverse roles within the sector.

“The interdisciplinary perspective of the course, which integrates biological sciences with economics, policy, and environmental studies, broadened my perspective on fisheries management.

Theme 2: Hands-on Trainings

Fisheries students emphasized the significance of *hands-on training* as a critical component of their education. They noted how *specialized knowledge in aquaculture techniques*, such as *fish breeding*, *nutrition*, *disease management*, and *water quality management*, was reinforced through *practical experiences*. This combination of *hands-on training* and *theoretical grounding* has deepened their understanding of the complexities in maintaining *healthy aquatic environments* while enhancing *production efficiency*.

“The program has equipped me with specialized knowledge in aquaculture techniques, including fish breeding, nutrition, disease management, and water quality management. This hands-on training and theoretical grounding have instilled in me a deep appreciation for the complexities of maintaining healthy aquatic environments while maximizing production efficiency.”

Students highlighted the value of *research projects* and *fieldwork* in providing *practical insights* into the challenges and opportunities in the fishery sector. These *hands-on experiences* have shaped their career goals, particularly in promoting *environmental stewardship* and *responsible fishing practices*. The course has equipped them with *practical skills* through *laboratory experiments*, *fieldwork*, and *research projects*, ensuring that their education is well-rounded and applicable to real-world scenarios.

“Through hands-on experiences and research projects, I have gained practical insights into the challenges and opportunities within the fishery sector, shaping my career goals towards promoting environmental stewardship and responsible fishing practices.”

“The course also equipped me with practical skills through fieldwork, laboratory experiments, and research projects.”

“We are also able to experience hands-on activities through conducting fieldworks, and lab studies.”

Theme 3: Social Awareness

Students expressed a strong commitment to *sustainable fisheries management* and *conservation*, driven by the awareness gained through their academic coursework. The program raised their consciousness about *global issues* such as *overfishing*, *habitat degradation*, *climate change impacts*, and *governance challenges*. This awareness has *motivated* them to pursue careers that contribute to the *conservation* and *sustainable management of aquatic resources*, reflecting a clear alignment of their academic learning with their future professional aspirations.

“The course raised awareness of global issues like overfishing, habitat degradation, climate change impacts, and governance issues, motivating me to pursue careers in sustainable fisheries management and conservation.”

“This knowledge has fueled my interest in contributing to the conservation and sustainable management of aquatic resources.”

Theme 4: Internship

Internships have offered *valuable insights* into *industry practices*, including *regulatory frameworks* and *stakeholder interactions*. This experience has given students a *holistic view* of the *career opportunities* available within the fishery sector, helping them better understand the various professional paths they can pursue based on their academic training and practical exposure.

“Internships have provided valuable insights into industry practices, regulatory frameworks, and stakeholder interactions, giving me a holistic view of the diverse career opportunities available in the fishery sector.”

5. Discussion

This study believed that the career aspirations of a student can be influenced by the quality of experience they have in the program. That is, students are more likely to engage in the industry when the program is implemented effectively.

Experience is fundamental in the processes of learning from feedback and making decisions^[50]. McCoy and Lynam^[51] explored the enablers and barriers within school contexts that affect pre-service teachers' ability to use technology, such as digital cameras, for self-reflection and professional development. The

study highlighted that the success of such innovations is shaped by multiple individual and contextual factors within the school environment, aligning with a sociocultural framework. How pre-service teachers felt about utilizing digital cameras for reflective practice varied according to several factors related to the school setting. In theory, whether it is selecting on a good or unhealthy restaurant meal or whether to trust or distrust a possible business partner, people inevitably rely on information from their stored memories^[52]. In this paper, it was evident that the fisheries program helped shape the aspirations of college students towards pursuing a career in the fisheries industry. For example, one student believed that “[the program] provides us with technical knowledge which serves as foundational concepts applicable to a wide range of roles within the fishery sector.” One student had similar view saying, “coursework on food safety standards and preservation techniques prepares me to address real-world challenges in maintaining fish quality from harvest to consumer.” The narratives highlighted how experiences can influence the likelihood of a student pursuing a particular career after graduating.

In natural resource management, Gaus et al.^[53] realized that the extent and quality of previous experiences in water management, engagement, and political contexts exhibit varying correlations with individuals’ knowledge, cognitive frameworks, and convictions regarding contemporary issues. Typically, individuals with more experience exhibit wider viewpoints, whereas those with less experience demonstrate increased inquisitiveness regarding water management strategies. A similar phenomenon was observed in the context of the career aspirations of fisheries students. Students who have extensive experience with laboratory work are more likely to pursue laboratory-based careers in fisheries, such as microbiology and pathology. Moreover, the individual roles, behaviors, actions, and statements related to issues that require resolution are influenced by prior experiences^[54]. In learning when students are exposed to social problems like overfishing, habitat degradation, climate change impacts, and governance issues, as one student reported, “[it’s] motivating me to pursue careers in sustainable fisheries management and conservation.” Connecting academic experiences to significant global issues enables students to cultivate a sense of agency and purpose, which in turn motivates them to advocate for sustainable practices in the fisheries sector.

Entrepreneurship education encourages a desire among students to pursue entrepreneurship as a career path and equips them with the essential skills for entrepreneurial endeavors^[55]. Fayolle and Gailly^[56] argued that entrepreneurs possess distinct values and attributes that render them unsuitable for traditional classroom training. This perspective, however, stands in stark contrast to extensive research emphasizing that learning is fundamentally a shared experience among individuals within an organization. Such studies highlight the importance of collaborative learning environments^[57,58], where knowledge is co-created and shared, encouraging innovative thinking and adaptability. This paper believed that a positive environment could shape the aspirations of students to pursue a career even if they have less skills necessary at first. The quality of experience in fisheries education, driven by positive learning environment, significantly contributed to the development of students’ competencies and professional aspirations within the field. Students reported that engaging in hands-on training and practical experiences, such as *fieldwork*, *laboratory experiments*, and *research projects*, allowed them to apply theoretical knowledge in real-world contexts. This integration of theoretical learning and practical application they believed equipped them with specialized skills essential for addressing issues in fisheries management, including *sustainable practices*, *quality control*, and *environmental stewardship*. Research indicates that high-quality learning environment are associated with positive outcomes, including enhanced career satisfaction, improved job competencies, and increased retention^[59], as well as reduced levels of stress and burnout^[60].

This paper emphasized that the learning experience itself can potentially motivate students to pursue a career they are training in for years in college. Engaging students in practical, hands-on experiences related

to their field of study, such as internships, fieldwork, and laboratory projects, the educational process becomes more than just an academic endeavor—it transforms into a compelling journey of discovery and growth.

6. Conclusion

This study realized that the quality of experiences within the fisheries education program significantly influenced students' career aspirations. The program effectively employed practical training with real-world applications, enhancing students' understanding of the industry and encouraging them to consider careers in sustainable fisheries management. The results corresponded with the idea that experiential learning contributed to the improvement of technical skills while simultaneously promoting a sense of agency and purpose in students. Consequently, students were more likely to engage with the fisheries sector, driven by their acquired knowledge and experiences.

These findings are significant for educational policymakers and program developers within the fisheries sector and associated fields. Highlighting the importance of experiential learning opportunities, including internships and fieldwork, may contribute to the development of a more motivated and skilled workforce within the fisheries sector. Establishing supportive learning environments that link theoretical concepts to practical challenges, educators have the potential to improve students' career preparedness and cultivate a dedication to sustainable practices. This process has the potential to guide curriculum development, making certain that it aligns with the evolving demands of industry as well as the preferences of the student body.

Despite its contributions, this study has limitations that warrant consideration. The findings are primarily based on a specific cohort of fisheries students, which may limit the generalizability of the results to other educational contexts or disciplines. While the study highlights the positive influence of experiential learning, it does not extensively explore potential barriers that students may face in accessing these opportunities. Future research could benefit from a broader sample size and the covering different educational institutions to gain extensive information of how various factors impact students' career aspirations in fisheries education. Longitudinal studies could provide reliable findings about how students' experiences evolve over time and their lasting effects on career trajectories.

Conflict of interests

The authors declare no conflict of interest.

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