

## FROM PREJUDICE TO APPRECIATION: INTERDISCIPLINARITY IN TECHNICAL EDUCATION IN FISHERIES RESOURCES

### DO PRECONCEITO À VALORIZAÇÃO: A INTERDISCIPLINARIDADE NO ENSINO TÉCNICO EM RECURSOS PESQUEIROS

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**Abstract** This article analyses interdisciplinarity in the technical course in Fisheries Resources, highlighting its role in training professionals capable of addressing social, environmental, and economic challenges. The study aims to understand how the integration of scientific and traditional knowledge contributes to sustainable development and to overcoming intolerance and the historical devaluation of the fisheries sector. The research adopted a qualitative, exploratory, and descriptive approach, applying semi-structured questionnaires to 169 participants, including students, teachers, and graduates. Data analysis was conducted using descriptive statistics and content analysis. The results show that the course fosters interdisciplinary practices, such as aquaponics projects and fishing area mapping, strengthening sustainability, local culture, and the economy. However, challenges remain, including social prejudice, lack of robust public policies, and the need for greater recognition of technical education. The study concludes that the course is an essential tool for sustainable development, social inclusion, and the fight against inequalities, fully aligned with the Sustainable Development Goals (SDGs).

**Keywords:** Fishing community; SDG; Professional devaluation; Interdisciplinary; Technical education.

**Resumo** Este artigo analisa a interdisciplinaridade no curso técnico em Recursos Pesqueiros, destacando seu papel na formação de profissionais capacitados para enfrentar desafios sociais, ambientais e econômicos. A pesquisa teve como objetivo compreender como a integração dos saberes científicos e tradicionais contribui para o desenvolvimento sustentável e para o enfrentamento da intolerância e da desvalorização histórica da atividade pesqueira. A metodologia adotada foi qualitativa, exploratória e descritiva, com aplicação de questionários semiestruturados a 169 participantes, entre estudantes, docentes e profissionais egressos. A análise dos dados foi realizada por meio de estatísticas descritivas e análise de conteúdo. Os resultados evidenciam que o curso promove práticas interdisciplinares, como projetos de aquaponia e mapeamento de áreas pesqueiras, fortalecendo a sustentabilidade, a cultura local e a economia. Contudo, persistem desafios como preconceitos sociais, ausência de políticas públicas mais robustas e necessidade de maior valorização do ensino técnico. Conclui-se que o curso é uma ferramenta essencial para o desenvolvimento sustentável, promoção da inclusão social e combate às desigualdades, alinhando-se aos Objetivos de Desenvolvimento Sustentável (ODS).

**Palavras-Chave:** Comunidade pesqueira; ODS; Educação técnica.  
Desvalorização profissional; Interdisciplinar;

## Introduction

The concept of interdisciplinarity refers to the integration of different fields of knowledge to solve complex problems, providing a broad and holistic view of the world. According to Klaassen (2020), interdisciplinarity in teaching and research fosters insightful, informative, and educational experiences that shape ways of thinking about knowledge construction and communication.

In the context of the technical course in Fisheries Resources, interdisciplinarity plays a central role, as the field requires a multifaceted understanding that encompasses biology, environmental management, economics, and culture. The dialogue between traditional knowledge and scientific knowledge is fundamental in the context of fisheries and sustainability. On the other hand, scientific knowledge brings a systematic approach, based on research and rigorous analysis, aiming to validate, complement, and enhance traditional knowledge.

Melo et al. (2024) state that traditional knowledge in fishing communities is valued for transmitting values, traditions, and ways of understanding the marine environment, contributing to the sustainable use of resources and cultural practices. De Sousa et al. (2022) highlight that fishers' traditional ecological knowledge contributes to environmental preservation by assisting in the management and conservation of natural resources in different environments.

Professions related to fishing often face prejudice due to their association with manual labour, low social prestige, and, frequently, marginalised populations. This prejudice is reinforced by a limited view that fishing is a rudimentary activity, disconnected from technological or academic advances. According to Dorceus (2024), perceived discrimination can influence career choices, leading to the elimination of career options and limiting perceptions of opportunities and career expectations.

Adolescents' self-esteem is positively influenced by the social capital of family, school, and peers, with family social capital playing the strongest role, and gender moderating the direct effect of adverse childhood experiences on self-esteem (Yan et al., 2024). Cultural capital can be a vector for preserving local identity and shaping the future of a community within an ethnic, religious, and cultural group (Fedor, 2020).

The pedagogy of the oppressed, developed by Paulo Freire, establishes connections between popular education and the emancipatory struggles of subaltern classes, transforming education into a tool for emancipation and combating prejudice (Néspoli, 2020). It advocates a "problem-posing" approach, in which individuals actively participate in knowledge development, linking knowledge to action to drive societal change (Williams, 2019).

Prejudice also reflects a historical devaluation of activities related to rural and coastal populations, often associated with poverty and lack of education. This perspective limits the recognition of fishing as an essential activity for food security, the economy, and environmental conservation. Singh et al. (2024) state that the fisheries sector contributes to global food security, employment, and economic development but faces environmental, economic, and social challenges.

This article aims to discuss the inherent interdisciplinarity of the technical course in Fisheries Resources, highlighting how it integrates distinct areas of knowledge to train professionals capable of addressing 21st-century challenges. Additionally, it seeks to analyse the challenges posed by educational and social prejudice, identifying its origins and impacts on students, fishing communities, and the fisheries sector in general.

## Materials and Methods

This study adopted a qualitative, exploratory and descriptive approach, with the aim of understanding the perceptions of students, teachers and professionals who have graduated from the Fisheries Resources technical course regarding interdisciplinarity and the challenges related to social and educational intolerance.

### Data Collection Procedures

Data collection was carried out through a semi-structured questionnaire administered via Google Forms, distributed via WhatsApp among participants. The instrument included open and closed questions, addressing the following axes:

- Perception of interdisciplinarity in the course;
- Experiences of prejudice or devaluation associated with the technical course;
- Impacts of the course on the professional and personal lives of participants.

### Sampling

The research included the participation of: 116 students in training; 5 teachers of the technical course; 48 professionals who had graduated.

The inclusion criteria were: being enrolled, being a teacher or having completed a technical course in Fisheries Resources at institutions in the state of Maranhão.

### Data Analysis

The responses were organized in spreadsheets in Microsoft Excel 365, with the application of content analysis for the open questions (Bardin, 2016) and simple descriptive statistics (frequency and percentage) for the closed questions, allowing a more objective reading of the data.

### Ethical Aspects

The study followed the guidelines of Resolution N°. 510/2016 of the National Health Council, as explained by Bendati & Zucolotto (2019), guaranteeing anonymity, data confidentiality and voluntary participation, in accordance with the ethical principles of research with human beings.

## Results and Discussion

Interdisciplinarity in the technical course in Fisheries Resources is evident in projects and activities that connect different fields of knowledge. A notable example is the development of sustainable cultivation systems, such as aquaponics, where students apply concepts from biology (nutrient cycle), environmental management (efficient use of water resources), and economics (financial viability of the system).

Another example includes projects for mapping fishing areas, in which students use geolocation tools and statistics to identify the best fishing spots, complementing fishers' empirical knowledge with scientific data. These activities demonstrate how the course prepares students to solve real-world problems in an integrated manner, bridging theoretical learning with the needs of fishing communities.

The technical course in Fisheries Resources has a significant impact on local and regional development. Beyond training qualified professionals, it strengthens the local economy by introducing sustainable management practices and social technologies that enhance productivity and profitability in fishing. Additionally, the course contributes to the appreciation of cultural identity, promoting the integration of traditional and scientific knowledge while combating the stigma associated with artisanal fishing.

In recent years, public policies and local initiatives led by professionals in the field have sought to integrate interdisciplinarity into technical education and combat prejudice. Moreover, awareness campaigns, such as the recognition of sustainable fishing within the framework of the Sustainable Development Goals (SDGs), have highlighted the importance of this activity for food security and environmental conservation.

Although progress is evident, gaps remain in the implementation of broader policies, including the creation of science fairs, partnerships with the private sector, and actions aimed at integrating traditional knowledge into the curriculum. These measures are essential to consolidating interdisciplinarity and overcoming the prejudices that persist in the field.

Table 1 illustrates how the technical course in Fisheries Resources can serve as a powerful tool for implementing an interdisciplinary approach while simultaneously addressing social demands and the SDGs. This integration not only enriches students' learning experiences but also has a positive impact on the communities where these practices are applied.

**Table 1.** Relationship between the interdisciplinarity of the technical course in fisheries resources, BNCC subjects, social aspects, and the Sustainable Development Goals (SDGs)

| BNCC Subject/Area  | Interdisciplinarity in the Technical Course                       | Social Connection   | Related SDGs     |
|--------------------|---|---|------------------|
| Natural Sciences   | Studies on aquatic ecosystems and sustainable management.         | Promotion of environmental sustainability and food security.        | SDG 12<br>SDG 14 |
| Geography          | Mapping fishing areas and analysing environmental impacts.        | Appreciation of local practices and applied geographic knowledge.   | SDG 13<br>SDG 15 |
| Mathematics        | Calculations of productivity and profitability in fishing.        | Financial planning skills for fishers.                              | SDG 8            |
| Languages          | Communication of knowledge and drafting of technical reports.     | Strengthening dialogue between science and local culture.           | SDG 4<br>SDG 10  |
| History            | Recovery of traditional practices and community histories.        | Appreciation of fishing culture and combating prejudice.            | SDG 11<br>SDG 16 |
| Physical Education | Occupational health and ergonomics for fishers.                   | Promotion of healthy practices and injury prevention at work.       | SDG 3            |
| Biology            | Management of species and aquatic biodiversity.                   | Conservation of species and environmental awareness in communities. | SDG 14<br>SDG 15 |
| Physics            | Application of principles in the automation of fishing equipment. | Technological development to facilitate manual labour.              | SDG 9            |
| Sociology          | Study of the social dynamics of fishing communities.              | Promotion of social inclusion and appreciation of artisanal work.   | SDG 1<br>SDG 10  |
| Chemistry          | Analysis of water quality and preservation of fishery products.   | Ensuring food safety and public health.                             | SDG 2<br>SDG 6   |

Source: Prepared by the authors.

The relationship between BNCC subjects and the technical course highlights that interdisciplinarity is not merely theoretical but also practical. Each area of knowledge serves as a

foundation for students to understand and address the challenges of sustainable fishing and environmental management.

The course fosters transformative education by focusing on topics that directly impact the reality of fishing communities. It not only prepares students for the job market but also empowers them as agents of change. Every subject and technical area covered in the course contributes directly to one or more SDGs. This reinforces the idea that technical education is a vital means of achieving global sustainability goals.

Table 1 illustrates how the technical course in Fisheries Resources has the potential to become a model of technical education aligned with the demands of the 21st century. By promoting interdisciplinarity and addressing historical prejudices, the course can play a key role in transforming the reality of fishing communities in Maranhão, the Northeast, and across Brazil, while directly contributing to the achievement of the SDGs.

Interviews with students and professionals in the course revealed challenges related to educational and social prejudice. Many reported that choosing a technical course is often perceived as inferior compared to traditional academic paths. These accounts (table 2) expose the historical devaluation of fishing and manual professions, reinforcing the need for educational and social initiatives that promote the recognition and appreciation of this field.

**Table 2.** Common prejudiced statements directed at technical courses in fisheries resources, along with explanations that highlight the misconceptions and underlying reality.

| Statements  | Why Is It Prejudiced?  | Reality  |
|---|--|--|
| <i>"This course is only for those who want to be fishermen."</i>  | Reduces the course to a single profession, ignoring the diversity of areas and opportunities it encompasses. | The course prepares professionals to work in research, natural resource management, aquaculture, sustainable tourism, environmental consultancy, and other sectors.                              |
| <i>"It's a low-skilled course with no future."</i>                | Underestimates the technical and scientific value of the training.   | The course offers training in aquatic biology, resource management, sustainability, and applied technology—fields with growing demand in the job market.   |
| <i>"Anyone who takes this course will never make money."</i>      | Associates the course with a low-income profession and no economic potential.                                | The fisheries sector moves billions globally. Qualified professionals can work in areas such as exports, new technology research, and community-based tourism, with excellent financial returns. |
| <i>"This isn't a real profession."</i>                            | Dismisses work in the fisheries sector as less relevant or serious.  | The course trains essential professionals for the sustainable management of aquatic resources, which are strategic for food security and environmental development.                              |
| <i>"Studying fisheries is for those who don't like studying."</i> | Devalues the complexity of the subjects covered in the course.   | Students learn subjects such as water chemistry, ecology, biotechnology, environmental management, entrepreneurship, and legislation, requiring dedication and                                   |



|   |  |  |
|---|--|--|
| <i>"Fisheries resources are only useful for those who live near the sea."</i> | Ignores the impact of fishing and aquaculture in inland and riverine regions.    | interdisciplinary knowledge.<br>Fishing and aquaculture play a crucial role in biomes such as the Pantanal and the Amazon and are relevant to both coastal and inland areas. |
| <i>"It's a course with no prestige; no one values it."</i>                    | Assumes that society does not recognise the importance of the field.             | Increasingly, global initiatives such as the Sustainable Development Goals (SDGs) highlight the significance of fisheries-related sectors for sustainable development.       |
| <i>"The best option is to leave the course and switch fields."</i>            | Assumes that the field does not offer satisfactory career opportunities.         | Besides direct employment, the course prepares students to become entrepreneurs and innovators, developing social technologies and sustainable businesses.                   |
| <i>"This course is just about catching fish."</i>                             | Oversimplifies the content and training offered.                                 | The course covers everything from sustainable management to advanced aquaculture techniques and fish processing technologies.  |
| <i>"Only those who didn't get into another course would take this one."</i>   | Reinforces the stigma that the course is a second-choice or low-prestige option. | Many students choose the course out of passion for the field, a desire to contribute to sustainability, and an interest in working with natural resources.                   |

Source: Prepared by the authors.

The analysis of these statements highlights how prejudiced discourse perpetuates the devaluation of technical education and fields of knowledge considered peripheral. However, by confronting these narratives with concrete data and practical applications, it is possible to demystify such views and emphasise the strategic relevance of fisheries resource courses for sustainable development, the global economy, and environmental conservation.

Inland fisheries are vital for poverty alleviation, food security, gender empowerment, cultural services, ecosystem functions, and biodiversity (Funge-Smith & Bennett, 2019).

The technical course in Fisheries Resources has the potential to transform realities in Maranhão, the Northeast, and Brazil. By training professionals who value sustainability and the integration of traditional and scientific knowledge, the course contributes to strengthening fishing communities, preserving natural resources, and tackling socio-economic inequalities.

In the long term, this training can serve as a pillar for the sustainable development of coastal regions, promoting not only economic gains but also greater cultural and environmental appreciation. However, recognising the course as a key element in building a fairer and more sustainable future depends on joint efforts from educators, governments, and society to overcome prejudices and expand opportunities in this strategic field.

## Final considerations

This study shows that interdisciplinarity in the technical course in Fisheries Resources is a training practice capable of integrating scientific and traditional knowledge, contributing to cultural appreciation, sustainable development and social inclusion of fishing communities.

The results indicate that, despite pedagogical advances, challenges related to the social and educational devaluation of technical training are still recurrent, as a result of historical prejudices, lack of institutional recognition and the absence of more effective public policies.

In view of this scenario, it is necessary to:

- Strengthen professional and technological education policies, increasing investments in infrastructure, teacher training and inter-institutional partnerships;
- Include traditional knowledge in curricula in a structured manner, valuing the knowledge of fishing communities;
- Encourage the holding of science fairs, technology exhibitions and extension projects, as strategies to disseminate the importance of the fishing sector;
- Promote the creation of collaboration networks between educational institutions, the productive sector and community organizations, generating innovation and sustainability.

Therefore, recognizing technical education in Fisheries Resources as a key element for sustainable development is not only an educational demand, but a social, environmental and economic urgency. Strengthening this training is essential to face contemporary challenges and build more just, inclusive and environmentally responsible societies.

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