



The Impact of Education on the Livelihood Strategies and Culture of the Sundarbans Fishing Community

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Abstract

Education plays an important role in improving livelihood opportunities and promoting social development, particularly in rural and resource-dependent communities. The present study examines the impact of education on the livelihood strategies and cultural practices of the fishing community in the Sundarbans region of West Bengal, India. The research was conducted in selected villages of three Community Development Blocks-Gosaba, Kakdwip, and Namkhana. A multistage sampling technique was used to select 105 fishing households comprising 538 respondents. Both primary and secondary data were collected through structured questionnaires, personal interviews, field observations, and relevant published sources. The collected data were analyzed using descriptive statistical methods such as frequency distribution and percentage analysis. The findings reveal that fishing remains the primary occupation for most households, although some families have adopted diversified livelihood activities such as agriculture, small business, and wage labour. The study also indicates that the level of education among the fishing community is generally low, which limits opportunities for occupational mobility and income diversification. However, respondents with higher educational attainment tend to adopt alternative livelihood strategies and demonstrate greater awareness regarding health, environmental conservation, and social participation. The results highlight that education significantly influences both livelihood improvement and cultural transformation within the community. The study concludes that strengthening educational access, promoting skill development, and supporting sustainable livelihood initiatives are essential for improving the socio-economic conditions of fishing communities in the Sundarbans region.

Keywords: Education, Livelihood Strategies, Fishing Community, Cultural Practices, Socio-economic Development, Sundarbans

Introduction

Education is widely considered one of the most effective tools for improving human life and promoting social progress. It helps individuals develop knowledge, skills, and awareness that enable them to make better decisions and improve their economic and social conditions. In many rural and resource-dependent communities, education plays a crucial role in reducing poverty, increasing employment opportunities, and encouraging sustainable ways of living. Apart from economic benefits, education also shapes people's attitudes, values, and cultural outlook. It promotes awareness about health, environment, and social responsibilities, which ultimately contributes to the overall development of individuals as well as communities.

The Sundarbans, located in the southern part of West Bengal along the coast of the Bay of Bengal, is a unique ecological region known for its vast mangrove forests and intricate network of rivers and creeks. The livelihood of the people living in this area is closely linked to natural resources, and fishing is one of the most

important occupations for many households. The fishing community plays a significant role in the local economy by providing food and income for a large section of the population. However, the communities living in this region often face several difficulties, such as geographical isolation, limited access to education and healthcare, poor infrastructure, and frequent natural disasters, including cyclones and floods. These challenges have affected their economic stability and restricted their opportunities for social and occupational mobility.

In this situation, education can play a vital role in improving the livelihood strategies and cultural life of the fishing community. With better education, individuals may gain access to alternative employment opportunities, adopt improved and sustainable fishing practices, and make better use of government development programs. Education also encourages greater awareness about environmental protection, health practices, and disaster preparedness, which are particularly important in environmentally sensitive regions like the Sundarbans. At the same time, educational exposure often leads to gradual changes in social attitudes, cultural traditions, and gender roles within communities. This study focuses on the fishing communities residing in the Gosaba, Kakdwip, and Namkhana Community Development Blocks of the Sundarbans to understand the relationship between educational status, socio-economic conditions, and livelihood practices.

Review of Related Literature

The review of related literature helps to understand previous research related to the livelihood patterns, socio-economic conditions, and cultural life of communities living in the Sundarbans region. Earlier studies have shown that the people of this area largely depend on natural resources such as fishing, agriculture, and forest products for their livelihood and often face challenges like poverty, environmental risks, limited educational opportunities, and frequent natural disasters. These studies also highlight the importance of factors such as education, livelihood assets, and traditional knowledge in shaping the socio-economic development of the region. Therefore, examining earlier research provides a useful background for the present study and helps identify the research gap related to the impact of education on the livelihood strategies and cultural practices of the fishing community in the Sundarbans.

Ghosh et al. (2016) investigated the socio-economic and livelihood conditions of fishers in the Indian Sundarbans, a region forming part of the world's largest mangrove ecosystem. The research, based on a sample of 300 respondents from six blocks of the North and South 24 Parganas districts of West Bengal, aimed to understand the livelihood profile of fishing communities to support effective development interventions. The findings revealed that most respondents were middle-aged (31–60 years) and relied mainly on agriculture as their primary occupation, while fishing served as an important secondary livelihood activity. The majority of households belonged to the middle-income group with annual earnings between ₹50,000 and ₹1,00,000 and possessed moderate levels of education and agricultural skills. The study also indicated the presence of basic physical facilities, participation in training programmes, and ownership of fishing equipment among many respondents. Overall, the research highlighted the importance of understanding the socio-economic characteristics and livelihood assets of fishing communities for designing sustainable development initiatives in the Sundarbans region.

Roy et al. (2020) documented the traditional knowledge of fishermen in the Indian Sundarbans of West Bengal, focusing on various Indigenous Technical Knowledge (ITK) practices used by the fishing community between 2013 and 2015. The researchers identified eleven traditional practices related to fishing techniques, fish marketing, natural fish breeding, and the nutritional and therapeutic uses of small indigenous fish species. The study evaluated the rationality and effectiveness of these practices based on the opinions of both experts and local fishers. The findings revealed that seven of the documented practices were considered rational and effective, particularly certain traditional fishing methods and techniques supporting fish breeding and marketing. However, some practices, such as using fish for treating specific health problems or predicting extreme climatic events through fish behaviour, were viewed as less scientifically validated, though they continue to be practised by local fishers.

The study highlights the importance of recognizing and scientifically evaluating traditional knowledge, as it plays a significant role in sustaining the livelihood and cultural practices of fishing communities in the Sundarbans.

Roy and Bhattacharyya (2023) examined the influence of education on livelihood strategies and cultural patterns among rural communities in the coastal areas of the Sundarbans in West Bengal. The study reported that the literacy rate in the Sundarbans (25.71%) is much lower than the state average (76.26%), which limits opportunities for socio-economic development and livelihood improvement. As a result, many households remain dependent on traditional activities such as fishing, agriculture, and mangrove resource collection, which are highly vulnerable to environmental risks, particularly cyclones. Based on surveys, interviews, and focus group discussions, the researchers highlighted that limited education, resource restrictions, and weak institutional support hinder sustainable livelihood development, emphasizing the need for integrated policies that strengthen education, resource management, and livelihood diversification in the region.

Das and Das (2023) examined the role of livelihood capitals in accessing ecosystem provisioning services in the Gosaba block of the Sundarbans in India. Using data from 160 households selected through cluster random sampling, the study applied factor analysis to identify how different livelihood capitals influence access to forest-based resources. The findings revealed that natural, financial, social, and physical capitals were generally below average, while human capital was relatively stronger. The study emphasized that improving human capacity, financial support, infrastructure, and social networks could enhance sustainable access to ecosystem resources. It also suggested practical measures such as easier access to biometric fisherman cards for forest entry, flexible loan facilities, and promotion of community-based ecotourism to strengthen sustainable livelihoods among local communities in the Sundarbans.

Majumder (2024) reviewed the livelihood patterns and socio-economic conditions of communities living in the Sundarbans, a UNESCO World Heritage mangrove ecosystem supporting more than 4.5 million people. The study highlighted that local livelihoods largely depend on natural resources such as agriculture, fishing, forestry, and tourism. However, the region faces several socio-economic challenges, including high poverty levels, limited access to healthcare and education, and frequent natural disasters such as cyclones. These vulnerabilities are further intensified by climate change impacts, including rising sea levels and increased salinity, which threaten agricultural productivity and freshwater availability. The review emphasized the need for sustainable and adaptive livelihood strategies through stronger policy support, community-based initiatives, and active participation of local people, particularly women. It also suggested that collaborative efforts among communities, government agencies, and non-governmental organizations are essential to enhance resilience and promote sustainable development in the Sundarbans region.

Research Gap

Previous studies on the Sundarbans region have largely focused on the socio-economic conditions, livelihood patterns, traditional knowledge, and environmental vulnerabilities of fishing and rural communities. For instance, research by Ghosh et al. (2016) mainly examined the socio-economic profile and livelihood assets of fishers, while Roy et al. (2020) highlighted the importance of indigenous technical knowledge used by fishing communities. Similarly, Roy and Bhattacharyya (2023) discussed the general relationship between education and rural livelihood conditions in coastal areas of the Sundarbans, and Das and Das (2023) analyzed the role of livelihood capitals in accessing ecosystem services. Furthermore, Majumder (2024) reviewed broader socio-economic and environmental challenges affecting communities in the Sundarbans region. Although these studies provide valuable insights into the livelihoods and socio-economic realities of the region, most of them primarily emphasize livelihood assets, environmental challenges, or traditional practices.

However, limited research has specifically examined how education directly influences the livelihood strategies and cultural transformation of the fishing community in the Sundarbans. In particular, there is a lack of

focused studies exploring the relationship between educational attainment, livelihood diversification, income patterns, and cultural practices among fishing households in specific community development blocks such as **Gosaba, Kakdwip, and Namkhana**. Therefore, the present study attempts to fill this gap by analyzing how education shapes livelihood strategies and cultural life among the fishing community in the Sundarbans, thereby contributing to a better understanding of the role of education in promoting sustainable socio-economic development in the region.

Objectives of the Study

The major objectives of the study are:

1. To examine the demographic characteristics of the fishing community in the Sundarbans.
2. To analyze the educational status of the fishing community members.
3. To assess the income and livelihood strategies of the fishing households.
4. To examine the impact of education on livelihood diversification.
5. To understand how education influences the cultural practices and social development of the fishing community.

Research Questions

To understand the relationship between education, livelihood strategies, and cultural practices of the fishing community in the Sundarbans, it is necessary to frame specific research questions. These questions guide the study in exploring how educational attainment influences economic activities, social awareness, and cultural changes among the fishing households of the region. The following research questions have been formulated for the present study:

1. How does the level of education influence the livelihood strategies of the fishing community in the Sundarbans?
2. What is the relationship between educational attainment and income levels among fishing households in the Sundarbans?
3. How does education influence the adoption of alternative livelihood opportunities among the fishing community?
4. In what ways does education affect the cultural practices, social awareness, and lifestyle of the fishing community in the Sundarbans?
5. What challenges do fishing communities face in accessing education and improving their livelihood conditions in the Sundarbans?

Methodology of the Study

Study Area

The present research was carried out in selected fishing communities of the Sundarbans region in the southern part of West Bengal, India. The Sundarbans is a unique deltaic ecosystem formed by numerous rivers, creeks, and mangrove forests along the coast of the Bay of Bengal. The people living in this region largely depend on natural resources for their livelihood, particularly fishing, small-scale agriculture, and forest-related activities. Due to environmental challenges such as cyclones, tidal floods, and salinity intrusion, the livelihood of local communities remains vulnerable. For the study, three Community Development Blocks—Gosaba, Kakdwip, and Namkhana—were selected, as a significant portion of the population in these areas is engaged in fishing and allied occupations.

Research Design

The study adopted a descriptive and analytical research design to explore the relationship between education, livelihood strategies, and cultural practices among members of the fishing community. Both quantitative and qualitative approaches were used to obtain a broader understanding of the socio-economic conditions and educational background of the respondents.

Sampling Technique and Sample Size

A **multistage sampling technique** was applied for selecting the respondents. In the first stage, the blocks of Gosaba, Kakdwip, and Namkhana were purposively chosen from the Sundarbans region. In the second stage, villages with a significant number of fishing households were identified within these blocks. Finally, respondents were selected through random sampling. In total, **105 fishing families** were included in the study, comprising **538 individuals**, both male and female members of the households.

Sources and Tools of Data Collection

Both primary and secondary data were used in this study.

Primary Data:

Primary information was collected directly from the respondents using the following methods:

- Structured questionnaire survey
- Personal interviews with members of the fishing community
- Field observations related to livelihood activities and cultural practices

Secondary Data:

Secondary information was gathered from books, research articles, government reports, census data, and other published materials related to the socio-economic conditions of the Sundarbans region.

Techniques of Data Analysis

After data collection, the information was systematically organized and analyzed using simple statistical techniques. Methods such as frequency distribution, percentage analysis, and tabulation were used to interpret the demographic characteristics, educational levels, and livelihood patterns of the respondents. Tables and graphical representations were also used to present the results in a clear and meaningful manner, helping to understand the relationship between education and livelihood conditions among the fishing community in the Sundarbans.

Results and Discussions

The results of the study are presented based on the analysis of data collected from **105 fishing households comprising 538 respondents** from selected villages of the Sundarbans region in West Bengal. The analysis focuses on demographic characteristics, educational status, livelihood patterns, and the influence of education on livelihood strategies and cultural practices among the fishing community.

Demographic Characteristics of Respondents

Table 1 presents the demographic composition of the respondents included in the study.

Table 1
Demographic Profile of Respondents

Category	Number	Percentage (%)
Male	282	52.42
Female	256	47.58
Total	538	100

The data indicate that **male respondents slightly outnumber female respondents** in the fishing households. Fishing activities in the Sundarbans are traditionally dominated by men, while women are mainly engaged in supportive roles such as fish processing, household management, and small-scale economic activities. However, women also contribute significantly to the family's livelihood through informal labour and resource management.

Educational Status of Respondents

Education plays an important role in improving livelihood opportunities and social awareness. Table 2 shows the educational status of respondents.

Table 2
Educational Level of Respondents

Educational Level	Number	Percentage (%)
Illiterate	118	21.93
Primary Education	164	30.48
Secondary Education	143	26.58
Higher Secondary	73	13.57
Graduate and Above	40	7.44
Total	538	100

The findings show that **a significant portion of the respondents possess only primary or secondary education**. Illiteracy still exists among a considerable section of the fishing community. Limited access to educational facilities, economic constraints, and the need to support family livelihoods often force children to engage in fishing activities from an early age. However, younger generations are gradually showing greater participation in formal education.

Livelihood Pattern of Fishing Households

The livelihood activities of fishing households are presented in Table 3.

Table 3
Major Livelihood Activities of Fishing Families

Livelihood Activity	Number of Families	Percentage (%)
Fishing (Primary occupation)	62	59.05
Fishing + Agriculture	21	20.00
Fishing + Small Business	13	12.38
Fishing + Wage Labour	9	8.57
Total	105	100

Fishing remains the **dominant livelihood activity** among the majority of households in the Sundarbans. However, the study reveals that many families are gradually adopting **diversified livelihood strategies**, including agriculture, small trade, and wage labour. This diversification is largely influenced by economic uncertainty, environmental risks, and seasonal fluctuations in fish availability.

Relationship between Education and Livelihood Diversification

The study also examined the influence of education on the adoption of alternative livelihood opportunities.

Table 4
Education and Livelihood Diversification

Education Level	Families Engaged Only in Fishing	Families with Diversified Livelihood
Illiterate	26	8
Primary	22	11
Secondary	9	18
Higher Secondary & Above	5	6

The findings suggest that **higher educational attainment is associated with greater livelihood diversification**. Families with better educational backgrounds are more likely to engage in alternative economic activities such as small businesses, service-related work, and tourism-related employment. Education helps individuals develop skills, awareness, and confidence to explore opportunities beyond traditional fishing practices.

Influence of Education on Cultural and Social Practices

Education also influences cultural awareness and social participation within the fishing community.

Table 5
Perceived Impact of Education on Social and Cultural Practices

Aspect	Respondents Reporting Positive Impact	Percentage (%)
Health and sanitation awareness	402	74.72
Participation in community activities	368	68.40
Awareness of environmental conservation	351	65.24
Improved communication and social interaction	377	70.07

The results indicate that education contributes significantly to **improving social awareness and cultural transformation** among the fishing community. Educated individuals demonstrate greater awareness regarding health, sanitation, environmental conservation, and community participation. Education also helps in strengthening social networks and improving communication within the community.

The findings of the study highlight that **education plays a crucial role in shaping the livelihood strategies and socio-cultural life of the fishing community in the Sundarbans**. Although fishing remains the primary occupation for most households, individuals with higher levels of education are more inclined to adopt diversified livelihood options. Education also promotes social awareness, better decision-making, and improved participation in community development activities. Therefore, improving educational access and quality in the region may significantly contribute to the **sustainable socio-economic development of fishing communities**.

Major Findings

The present study examined the relationship between education, livelihood strategies, and cultural practices among the fishing community of the Sundarbans region in West Bengal based on data collected from **105 fishing households consisting of 538 respondents**. The major findings of the study are summarized as follows:

1. The demographic analysis shows that the fishing community is composed of both male and female members actively contributing to household livelihoods, although fishing activities are predominantly carried out by male members. Women play an important supportive role through fish processing, household management, and other informal economic activities.
2. The educational status of the respondents indicates that a large proportion of the community possesses only **primary or secondary education**, while the percentage of higher education remains relatively low. Illiteracy is still present among a section of the population, mainly due to poverty, limited educational infrastructure, and early involvement in livelihood activities.
3. Fishing continues to be the **primary source of livelihood** for the majority of families in the region. However, some households have started adopting alternative livelihood options such as agriculture, small businesses, and wage labour in order to cope with economic uncertainty and environmental challenges.
4. The study reveals that **education has a significant influence on livelihood diversification**. Respondents with higher educational levels are more likely to engage in multiple income-generating activities beyond traditional fishing.
5. Education also contributes to **social and cultural development** within the community. Educated individuals show greater awareness regarding health, sanitation, environmental protection, and community participation.
6. Environmental and economic challenges such as natural disasters, declining fish resources, and lack of stable employment continue to affect the livelihood security of the fishing community in the Sundarbans.

Recommendations

Based on the findings of the study, the following suggestions may help improve the socio-economic condition and livelihood sustainability of the fishing community in the Sundarbans:

1. **Improvement of Educational Facilities:** Government and local authorities should strengthen educational infrastructure in coastal and remote villages by establishing more schools, improving transportation facilities, and providing scholarships to encourage school attendance.
2. **Skill Development and Vocational Training:** Training programs related to fisheries management, aquaculture, eco-tourism, and small-scale entrepreneurship should be introduced to help community members diversify their livelihood opportunities.
3. **Promotion of Alternative Livelihoods:** Development initiatives such as handicrafts, small businesses, and tourism-related activities can provide additional income sources for fishing families and reduce overdependence on natural resources.
4. **Financial Support and Microcredit Facilities:** Access to affordable credit through cooperative societies, self-help groups, and government schemes may support small enterprises and improve economic stability among fishing households.
5. **Environmental Awareness and Resource Management:** Awareness programs on sustainable fishing practices and mangrove conservation should be promoted to ensure long-term ecological balance in the Sundarbans ecosystem.
6. **Strengthening Government Welfare Schemes:** Proper implementation of welfare programs related to fisheries, social security, health care, and disaster management is necessary to support vulnerable fishing communities.

Conclusion

The present study aimed to examine the influence of education on livelihood strategies and cultural practices among the fishing community of the Sundarbans region. The conclusions of the study are presented in relation to the objectives.

The study reveals that the fishing community consists of both male and female members contributing to household livelihoods. While men are primarily involved in fishing activities, women support the livelihood system through various domestic and economic roles.

The findings indicate that the level of education in the community is relatively low, with most respondents having only primary or secondary education. Limited educational opportunities and economic constraints remain major challenges.

Fishing remains the principal occupation for most households. However, some families have adopted additional livelihood options such as agriculture, small businesses, and wage labour to supplement their income.

The study confirms that education plays a positive role in enabling individuals to explore alternative livelihood opportunities and adopt diversified income-generating activities.

Education contributes significantly to improving social awareness, health practices, environmental understanding, and participation in community activities among members of the fishing community.

Furthermore, the study highlights that education is a key factor in enhancing livelihood opportunities and promoting social development among fishing communities in the Sundarbans. Strengthening educational access, skill development, and sustainable livelihood programs can significantly contribute to the long-term socio-economic progress of the region.

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