

Indigenous Knowledge for Environmental Sustainability: A Case Study on the Santhal Community

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ABSTRACT

By nature, Indigenous Knowledge is known as the traditional cum situational knowledge. It is considered traditional because it is passed down from generation to generation through various means, such as verbal instruction, trial and error, and hands-on experience, achieved by being deeply involved in the natural atmosphere or situation. Indigenous knowledge is grown and nurtured in a setting that is based on informal learning that flows spontaneously from community life in which people are not outsiders or impartial observers but a teaching which is deeply embedded and embodied in the sense where emotion, intuition, and understanding of place and nature play the most vital role in imparting unique strategies which assist in maintaining and sustaining the lives of the community. Therefore, through this study, the researchers would like to explore, explain and different aspects cum operation and coordination of the system of indigenous knowledge within Santhal community and its sustainability about the environmental sustainability, that is whether these indigenous knowledge practices have authentic implications at the present juncture of ecological crisis or not? Many argue in favour of incorporating indigenous knowledge practices in formal education. So now the question arises, can Indigenous Knowledge practices strengthen our education process, and how does it aid empowerment? Looking at the developmental strategies, we were find mainly two types of developmental strategies, i.e., the global strategy and the Indigenous way or local ways of developmental tactics. Both development process has their distinct orientation and implications. Through this paper, the researchers identify the indigenous knowledge practised by the Santhal community in the Purulia District of West Bengal. The Santhal community has an indigenous knowledge pattern deeply associated with environmental perspectives in sync with the three pillar of sustainability. Social, economic, and ecological sustainability. Santhal civilization firmly believes in the '3J' Model, i.e., JAL, JANGAL, AND JAMIN (WATER, FOREST, AND LAND), that is, a man cannot sustain without these three natural gifts.

Keywords: Knowledge, Indigenous Knowledge, Environment, Sustainability, Environmental Sustainability.

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I. INTRODUCTION TO THE PROBLEM

By nature, Indigenous Knowledge is known as the traditional cum situational education & place-based knowledge, it is considered traditional because it can be transferred from generation to generation through verbal, trail error, doing of content and practical ways such as learning by doing, learning by experiencing and learning by performing by deeply involved in the natural atmosphere. This knowledge is also considered as poor people's knowledge because it is linked to the survival strategies of the poor people, who live in very remote, rural, and hilly areas where modern facilities are not often available. So they grow and nurture in a specific kind of knowledge pattern commonly known as indigenous knowledge. Through the study, *Das Gupta (2012)* argued that indigenous knowledge is crucial because it is viable, accessible, and affordable to the respective tribal communities of West Bengal. In another study conducted by *Prof Roy (2014)* on *indigenous technical knowledge*, the author has explored that the indigenous technical knowledge is based on modern scientific technical knowledge. Another pioneer work was conducted by *Prof Roy (2008)*. The title of this study was *Ethno-Pedagogy: Education of Tribes, Teacher's Training*. Through this study, he identified the *Ethno-Pedagogical knowledge* and developed an intervention model for incorporating this ethno-pedagogy into the

formal teacher education curriculum. Therefore, from the above study, researchers reached at the point that the tribal communities and their indigenous practices have many utilizations from developmental perspectives. For Example, helps in learning unique strategies that assist in maintaining and sustaining the lives of the communities. This traditional approach of knowing creates a unique pedagogical content, i.e., Indigenous pedagogy, which is the art of crisis management, and every tribal community member has certain skills through which they manage their life through the utilization of minimum costs. *Dr.Gope et al (2017)* conducted a study on '*Identification of Indigenous Knowledge for Sustainable Development Practiced by the Santhal Community*'. Through this study researchers explored that the tribals communities of West Bengal has many indigenous crisis management techniques such as family management, food crisis management, water crisis management, community crisis management, forest resources management, interpersonal management, relationship management, marriage ('*Bafla*' according to the Santhal '*Bafla*' is core relationship management tactic, they manage the relationship through the '*Baflas*' means marriage). Hence, if we want to transform indigenous knowledge into a formal educational process, we must build a unique place-based pedagogy qua indigenous

pedagogy, which is relevant for risk management. For this purpose, tribal indigenous knowledge is helpful; specially Santhal women have unique traditional pedagogical knowledge cum indigenous pedagogy or ethno-pedagogy through which they sustain the mother earth as well as their 'family, community and society'. These pedagogic practices are reflected through various means such as agriculture, animal husbandry, indigenous health care, traditional healing, indigenous fishing, nature study, land resource management, collection of natural resources from the forest, and crisis management tactics. Basically, the tribal communities of West Bengal learn through trial and error, observing the natural facts through close attachment and wisdom developed over a long time that is valid and reliable insofar as the perception of ground reality of society as well as nature is concerned. Simultaneously, they can understand the natural phenomena due to their deep involvement with nature. Whenever they face a problem, they try to manage it through the indigenous crisis management techniques that are already embedded in their experience. It is observed that tribal communities of Bengal have deep faith in their old heritage, in which the ancestral or old community members play a very crucial role both in the crystallization of social norms and the transmission of wisdom to the young community members. Thus, socialization and acculturation in tribal communities are always in sync with their cultural beliefs as well traditional practices. Another study conducted by Das Gupta & Saha (2008) on *Indigenous knowledge- Imperative for Environmental Sustainability*, emphasizes that development must be integral to the local ecosystem and the local people's culture. Local people's culture and the traditional practices too are in a dynamic balance with the changing biophysical and socioeconomic circumstances. So through this study, researchers reached the point that indigenous knowledge practiced by the tribal people of West Bengal has ecological qua

environmental crisis management ethics, through which they can reduce the anti-ecological agendas and be able to develop the sustainable world in all respects, i.e., economically, socially, and environmentally. Bhattacharya. D (2008) in his study has focused on the weather forecasting aspect—an aid to environmental awareness. By this study, the researcher explored that the indigenous knowledge system has unique value for weather forecasting. Indigenous community members have a special faculty to perceive abnormality in nature, and they get the indication of upcoming weather changes through guesswork and due to their proximity to nature. Obviously, it is not the occult power that they might worship. Still, it results from the bond they share in their daily life, their economy, and rituals, which create a comprehensive worldview as well as generate insight regarding the natural calamity. Therefore, through this study, the researcher reveals and explains the coordination between Indigenous Knowledge with crisis management with authentic implications for the 21st century when risks of climate change and climate disaster are increasing proportionately with unsustainable modernization and consumerist lifestyle. Hence, many people now realise and propose incorporating indigenous knowledge practices in the formal educational process.

Here, a pertinent question arises: how can Indigenous educational practices be used to strengthen crisis management tactics? If we look at the developmental strategies, we will find mainly two types of such strategies, i.e., global strategy and another is indigenous way or local ways of developmental tactic; both development processes have their unique essence and implications in different contexts, and they bear conflict management tactics or methods. Through this article, the researchers identify unique Indigenous Knowledge practised by the tribal people of West Bengal, especially in Purulia District in the westernmost part of West Bengal and which can be assimilated to

make practical life more resilient from the perspective of crisis management tactics. In the Purulia district, large numbers of Santhal community member reside, and their social customs are very helpful for crisis management. Within the Santali Samaj, they have different social strata, and according to these strata, they classify various sects of their community members, i.e., *Manjhi Hadam* (considered to be the village head, he regulates the conflict within the Santali Samaj, hence his position is considered very prestigious). The Santhal community has an indigenous knowledge pattern that is deeply associated with environmental perspectives dealing with three pillars of sustainability, i.e., *social, economic, and environmental sustainability*.

Basically, Santhal civilization firmly believes in the 3'J' Model, i.e., *JAL, JANGAL, AND JAMIN* (WATER, FOREST, AND LAND). A man cannot sustain life without these three natural gifts. By this natural and spontaneous perception that exists among the Santhal community, they are able to discern natural phenomena deeply, and it is a very unique knowledge of the said community that can be collected to devise appropriate strategies to achieve the Sustainable Development Goals of the 2030 agenda. Through this paper, researchers first identified Indigenous Knowledge practiced by the Santhali people and propose to utilize these strategies for empowering women through indigenous education. The need for women's empowerment at this juncture is crucial for the inclusive growth of a nation. In this scientific and sophisticated technological era, when we speak of momentous transformation, the question is how it can be achieved without gender justice? So, women's empowerment is an equally important postulate that we cannot gloss over. The expression of George Herbert Palmer that "One mother equal to a hundred school teachers" is but an in-depth realization. So, it is necessary to empower women in the areas of the economic, social, political, and

cultural fields through the process of the spread of literacy, cognitive development, awareness building, and allied training. The present education system, therefore, needs to incorporate Indigenous Knowledge inherent in communities like '*Santhal, Munda, Orao, Birhor, Sabar*, and so on, which can be utilised for the purpose of new curriculum construction that would be more grounded, culturally oriented, and effective for society. This Indigenous Knowledge gives importance to local culture, language, and social customary laws of the indigenous peoples. Most educationists have opined to build new education for the new millennium through cultural context, collective, holistic, and adaptive perspectives.

Indigenous Knowledge applies to the micro level or at the grassroots level because it is developed over centuries by local communities with a long history of interaction with their natural surroundings and settings.

This study seeks to explore Indigenous Knowledge and its possibility of empowering rural women with special reference to the Santhal community of Purulia district, West Bengal. The main objective of this study was to analyse Indigenous Knowledge and how it can contribute to the empowerment of women. The ethnographic research design was adopted for the study. The researchers used observation and contextual interview techniques to collect the data from 80 women of the Santhal community of Purulia district, which constitutes the sample size for the study. Analyses were carried out using percentage distribution.

II. OBJECTIVE OF THE STUDY

To explore, explain and different aspects cum operation and coordination of the system of indigenous knowledge within Santhal community and its sustainability in relation to the environmental sustainability

This article explored the possibility of indigenous knowledge for meeting the challenges of environmental sustainability.

III. METHODOLOGY OF THE STUDY

The researcher administered an ethnographic approach to fulfill the above objective. According to the ethnographic approach, researchers conduct naturalistic enquiry such as observation, field notes, and unstructured interviews, and in some cases, they conduct the 'case study' method for data collection. The researchers visited 20 Santal villages, including five families from each village.

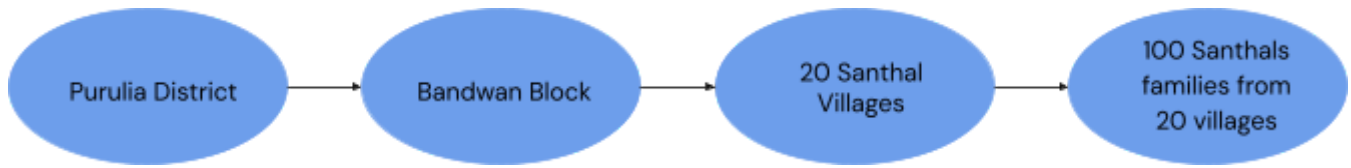
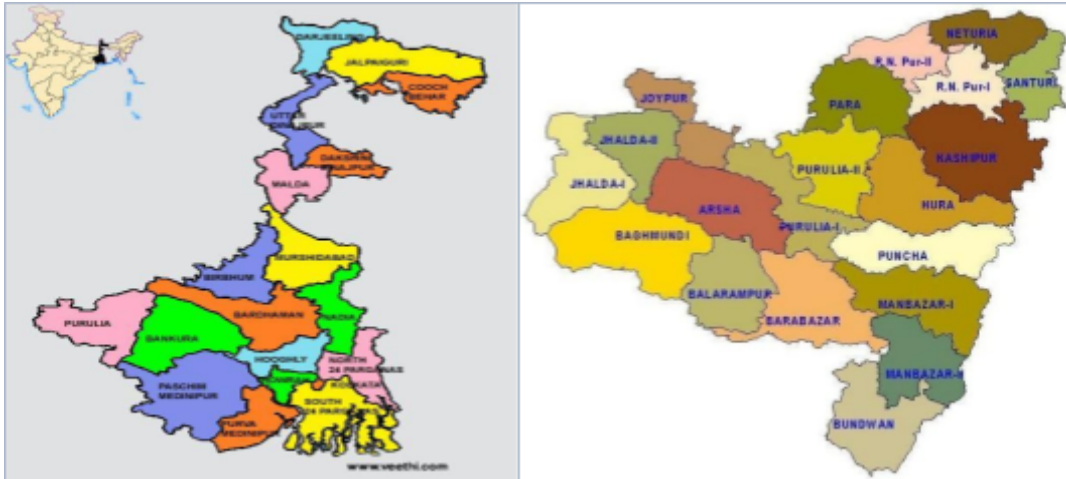


Figure 1: Sampling Area

Table 1: Sampling villages

Sl. No	Village Name	Gram Panchayat	Remarks (Each village has five families)
I.	Bhogidi	Chirudih	Five family
II.	Chirudi	Chirudih	Five family
III.	Jharibad	Chirudih	Five family
IV.	Kaera	Chirudih	Five family
V.	Jorasal	Kuilapal	Five family
VI.	Kesra	Chirudih	Five family
VII.	Mangal	Bandwan	Five family
VIII.	Bhasamkata	Chirudih	Five family
IX.	Hargara	Chirudih	Five family
X.	Sirisgora	Bandwan	Five family
XI.	Kadaya	Kumra	Five family
XII.	Asanpani	Kuchia	Five family
XIII.	Kunchia	Kuchia	Five family
XIV.	Makopali	Kuchia	Five family
XV.	Pachapani	Kuchia	Five family
XVI.	Senkebasa	Kuchia	Five family
XVII.	Shalidih	Kuchia	Five family
XVIII.	Dhanpora	Dhadka	Five family
XIX.	Latajharna	Kumra	Five family
XX.	Aspara	Bandwan	Five family
Total	20 Villages	06 Gram Panchayat	100 families



Pic 1: Political Map of Purulia District (Sample area)

IV. METHODOLOGY OF THE STUDY

Area of the study: The study was conducted in the Bandwan block of Purulia district of West Bengal, India. This study area is very remote and hilly; therefore, there is no proper transparent system and modern facilities of life, like a public health care system, water tank, etc. So people depend on traditional science (indigenous science) in this area.

Nature of the study: Basically, this study is a naturalistic inquiry because researchers have special insight regarding the Santhal community since their childhood, and researchers are well acquainted with the Santhal practices and habits, though researchers collect data from various sources. However, participatory observation was the primary basis of this study, but researchers also prepared an unstructured questionnaire for the expert group. Therefore, the study is based on primary as well as secondary sources of data. Later on, researchers also conducted extensive library work.

4.1 Data collection tool

Population of the Study: All the Santhal community members in the Purulia district are considered as population of the study.

Sample and the Sampling Procedure: Twenty Santhal Villages were selected randomly, and then a stratified random sampling technique was used for the data collection. The sample was classified by age group: male, female, literate, and illiterate.

V. FINDINGS OF THE STUDY

This section deals with the study's findings. The researchers juxtaposed the findings with two or more Indigenous knowledge components, i.e., Indigenous land management techniques, Indigenous health care, and Indigenous housing management tactics, which are part and parcel of crisis management. The tribes of West Bengal manage their lives through the utilization of Indigenous knowledge. Hence, the researchers have identified various components of Indigenous Knowledge and its essential aspects related to crisis management.

The findings indicate that the tribal communities nurture and bear many community perspectives and their practices have a unique knowledge pattern born of their inter-generational wisdom, their simple lifestyle and economy that banks on forests, and rituals which are integrally linked to nature and it develop a unique outlook that is never artificial, synthetic and unsustainable. Here, what is important is the informal education system. The practices it generates hold deep indiginity, and such indigenous practices have many aspects of crisis management and to empower abilities in food production, such as *farming style, natural resource management, cooking, animal husbandry, child rearing, indigenous medicine, food preparation and preservation, health care, traditional healing* and so on.

The uniqueness of tribal communities of West Bengal is reflected in their fondness for dance, drama, songs, and social functions. So, these cultural activities often become coterminous with their collective unique self-identity, and they identify themselves through these cultural activities. The researchers have sought to explore various conflict regulation practices practised by the tribal communities of Bengal. Here they have identified more than 20 indigenous practices associated with conflict management by the tribals communities through participatory cum focused group discussion. Most of the tribal community members have opined that they manage their lives through traditional norms. Majhi Hadam and Jog Majhi are the key people in this regard. They make decisions in family matters, and they help the youth to make just decisions.

a. Indigenous land management technique: (Tribal community members manage the land, particularly agricultural land, through these unique management tactics).

b. Indigenous health care: Tribal community members manage their health issues and

concerns through indigenous health care techniques; in this regard, they have faith in traditional healers, who treat people with great sensitivity at minimal costs.

c. Indigenous housing: (This is a unique kind of knowledge among the tribal community members. They built and managed their house with their ancient wisdom, as old member of the community instructed; they followed that instruction according to their faith and belief system.

d. Indigenous animal husbandry

e. Indigenous child-rearing practices

f. Indigenous forest resources management practices

g. Indigenous agriculture and land fertilization techniques.

h. Indigenous ritualistic practices and indigenous arts and crafts, especially bamboo craft.

i. Indigenous fishing and fisheries.

j. Indigenous horticulture

k. Woodwork and designing

l. Indigenous seed preserving

m. Indigenous cooking

n. Indigenous family management practices

o. Indigenous cottage industries

p. Indigenous food processing

q. Indigenous water resource management

r. Indigenous musical instruments

s. Indigenous relationship making and exchanging

- t. Indigenous communication and transport
- u. Indigenous religious practices.
- v. Indigenous development strategies mean what the indigenous Santhal perceived as development in the context of modern developmental practices.



Figure 2: Indigenous knowledge practiced by the Santhal community

The indigenous house decorating process by the Santhal community women is unique because it involves a knowledge pattern for sustaining their houses. Their aesthetic sense helps them manage the conflict inherent within society and the family.

Above all, these knowledge spheres are missing and have disappeared from the indigenous community, particularly from the tribal community, because of a lack of proper respect and nourishment of this indigenous knowledge. We academics have much arrogance and a taste for modern knowledge developed and emerged from a sophisticated laboratory. Due to recognition of this Indigenous Knowledge and its application in crisis management at large scales, it rapidly missing and becoming endangered. Nowadays, our academics, policy makers, and educationists have become very much interested in Eurocentric knowledge, and they are motivated by and leading to Eurocentric knowledge (*A knowledge pattern developed, grown, and nurtured by Europe or the West*). However, our former prime minister, Dr Manmohan Singh, emphasized this knowledge through the National Knowledge Commission in 2005. And now, our National Education Policy (2020) also emphasizes regional languages and indigenous ways of knowing and looking at the world.



Table 2: Indigenous knowledge practices practiced by tribal communities of West Bengal

Sl. No.	Name of indigenous knowledge practices practiced by the tribal communities of West Bengal	Implications for environmental sustainability
1	Natural colour preparation	Manage the house and uphold the sense of beauty. These practices promote ecosystem practices among the tribal community.
2	Land management/agricultural activity	Tribals have very deep knowledge regarding land and soil. They manage the soil resources through their knowledge system. Save soil, water, and forest, through this value concept, they sustain our Mother Earth.
3	Preparation of natural fertiliser	The Tribal community manages its economic life through natural resources. It practices resource integrity and maximizes the use of natural resources for resource generation. It does not use chemical pesticides, even for marketing, and it doesn't believe in making a profit by compromising its environmental ethic.
4	Knowledge about food preparation through natural products.	Indigenous food preparation helps them to address their food crisis.

5	Indigenous health care for sustaining health and well-being.	Indigenous health care helps them to sustain their health-related issue.
7	Indigenous resources management process	Indigenous communities run their life with minimum resources; their living style is very simple and satisfying with minimum resources.
8	Indigenous nature study	Indigenous community members are well acquainted with nature and its management tactics.
9	Indigenous housing	Indigenous community member builds their house with minimal natural resources.
10	Indigenous handicraft	Indigenous community members collect a livelihood through the use of natural resources in sustainable ways.
11	Forestry	They believe the forest is the source of all creatures, and they manage their survival crisis through forest resources.
12	Nature Study	Tribes have unique knowledge and beliefs about nature. They firmly believe that nature is the source of all kinds of resources and that we must worship nature for individual wellness.
13	Agriculture	'There is no culture without agriculture.' Most of the tribal community members engage with the agricultural field.
14	Animal husbandry	Animal husbandry is another economic activity among the tribal communities. They sustained their life through the nurturing animal.
15	Handcraft /domestic product	Most of the tribal community's members are associated with local resources and have deep knowledge of how to manage them. They also prepare household instruments with the help of local Resources.
16	Fishing style with unique ways: A new pattern developed by community members.	Among the tribal communities, they have much knowledge of fishing, through those arts, they catch fish.
17	Childrearing practices:	The tribal community in West Bengal nurtures its children with great sensitivity, and in this regard, it has developed a unique knowledge pattern for child-rearing.

From the above table, we reached a point that the tribal communities of West Bengal do possess deep indigenous crisis management tactics, and these practices we must document and incorporate into the formal schooling for strengthening the '*Knowledge Horizon for Crisis Management for achieving environmental*

sustainability.' This indigenous knowledge not only has the potential for crisis management and empowerment for tribal masses, but it has tremendous transformative potential for sustainable development, especially the 2030 Agenda or the SDGs. Through this knowledge pattern, we can develop an inclusive society

with equity and equality within the society for sustainable development.

CONCLUSION

'Everything on earth has a purpose, every disease has an herb to cure it, and every person has a mission to fulfil. This is the Indian theory of existence.

Documentation of indigenous knowledge is urgent and of utmost importance for achieving Environmental sustainability. This situational cum indigenous knowledge plays a pivotal role in strengthening our developmental process when we are facing unforeseen disasters of tremendous magnitude, and our lives in the globalised setting is becoming precarious. Another Indian proverb shows the importance of natural resources in human life. This proverb teaches us the importance of nature in human life, 'Only when the last tree has died and the last river has been poisoned and the last fish has been caught will we realize cannot eat money.' (Ancient Indian Proverb).

Tribal community members, particularly the Santhals, worship nature as a 'Marangburu' and devote the tree, land, and river as a God. In this way, they sustain themselves on this earth. One elder Santhal community member opined that the forest is not a resource for us; it is life itself. We were unable to live without the forest. It is the only place for us to live in harmony. Tribals are very keen on the forest and its essence. Santhal community male and female members discuss social issues and make decisions through the strong bond with nature and natural surroundings. Therefore, whenever any challenges come from the nature perspective, Santhal community members took up arms for the protection of nature, they thought that nature is a gift and only nature can sustain and survive. One small incidents open our eyes, i.e, Santhal not only has faith in the living beings but also in non-living such as woods, stone, leaf of the tree. Thus they don't over the anthropocentric world view which focuses on

the betterment of the human being only, rather than the creature-centric welfare. Planets are for everyone, not only for the betterment of human beings but also to advocate the beyond sustainability.



THE RESEARCHERS COLLECTED DATA THROUGH A
FOCUS GROUP DISCUSSION



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