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DIGITAL ETHNOGRAPHY, CULTURAL RESILIENCE AND CLIMATE RESILIENT TRIBAL DEVELOPMENT

Abstract

Application of Digital ethnography, the computer-mediated social interaction, developed in IBRAD helped in understanding the cultural resilience, the natural, financial and social capital of the tribal and the development of social institutions for the adoption of appropriate technology. This required change of worldview, and cognitive stimulation, building the capacity of the community for biodiversity conservation and trade-off analysis while changing their course of action for climate- resilient livelihood. The Participatory Action Research following the seven social sequential steps has encouraging outcomes in terms of the adoption of organic farming, water conservation for irrigation and fishery, and conservation of biodiversity for the herbal garden. The IBRAD model is not only appreciated by the Government of India but all the states of India have been advised, vide letter dated 9th August 2021 of the Ministry of Environment, Forests and Climate Change to apply such methods of Digital Ethnography

Keywords: *Ethnography, Cultural, Participatory, Action, Tribe, Pesa*

Introduction

Digital Ethnography is a fast-growing discipline which is playing a supplementary role in furthering the traditional ethnographic approach to studying communities, their culture, institutions, natural habitat, and processes of co-adaptation as acculturation is a natural process of social interaction. The application of digital technology and a perpetually digital lifestyle have become an intransigent presence in the manner of living our lives.

I consider digital ethnography, the computer-mediated social interaction, a game changer because we find a significant shift in the current methods for the default approach for the study of culture, market research, health care, social development and of course academic research. I must add here, that all such studies through computer-mediated interaction may not be considered ethnographic studies. I will explain in the following pages under

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the heading- essentials of ethnography.

Before I go on to deal with the notion and application of digital ethnography for tribal development, I propose to discuss the fundamentals of ethnography, and how the emic approach- the insider perspective, the belief, values and morals of a particular culture- can help understand the cultural resilience of the community towards the application of digital ethnography for climate-resilient tribal development. The valuable scientific theories and methods of Anthropology, ethnography in particular, often poses challenges to traditional researchers. Especially how both qualitative and quantitative data of the understanding of social reality have greater utility with applied value to the world. I will discuss and illustrate – how qualitative and quantitative ethnography can help researchers and development practitioners address these challenges to the community.

I am sure it will be accepted widely that there are not many examples of the application of ethnography, where the ethnographer has involved the community as a partner of Participatory Action Research in identifying their hard-pressed problems of sustenance and livelihoods, in the context of climate change or any issues of development as and worked further for the application of Anthropological or Social theories for facilitating the socio-ecological process with an intended outcome. I am sure one must agree that the ethnographer must have some purpose for the study and intended outcome. Here, I intend to study how the tribal community face the challenges of the degradation of forest, depletion of water and biodiversity and then have a series of focus group online discussion and involve the community as my partner to find different options of livelihood as climate resilient action at the local level. I will discuss- what we mean by climate resilient action and how the ethnographer can facilitate such development it may appear to be a utopian idea. But I with the team of IBRAD could demonstrate the unique approach in the history of digital ethnographic studies and participatory action research.

I will present my discourse in five parts- (1) The essentials of ethnography (2) The uniqueness of digital ethnography (3) Understanding cultural resilience (4) Applications of digital ethnography for facilitating development (5) The outcome of the experiments and conclusion

1. The Essentials of Ethnography Traditional Approaches

The term “ethnography” has its roots in the nineteenth century, when it was used to describe parts of a community’s or culture’s characteristics that were typically seen as primitive or unusual. Although there has been an increase in its usage in a variety of forms in applied and commercial research, like in the field of marketing studies, ethnography is still used in academic research at a steady rate (Venkatesh 2015). Ethnographic features may focus on revealing the ways of life of particularly little-known groups, their issues, the situations

they face and cope with the problems they withstand and how they see themselves. They may see themselves as being of low or high social status and even marginal or central to economic and political power in the context of public policy and practices (Hammersley, Atkinson 2019, Page 169). Malinowski propounded the concept of functionalism where the institution and cultural activities were for meeting the physiological needs of the people.

It is my assertion that ethnography is the study of people and their culture in the natural environment, and gives a holistic understanding of the basics of structural functionalism. That means that the ethnographer would have an understanding of the interconnectedness of institutions like family, kinship, religion, economic and political systems that operate with the natural ecosystem and where the community co-adapts to the socio-ecological system in the framework of the public policy. I must add here the importance of assessing cultural resilience to know the nature of cultural traits and the ability of the community to cope with the disastrous situation. How the community uses its specific indigenous knowledge to overcome the state of crisis is also significant. Once the ethnographer assesses cultural resiliency he or she can facilitate the process of climate-resilient development by pursuing consumption patterns that ensure social and economic development while reducing the use of natural resources and maintaining ecosystem services. This means that understanding cultural resilience is important for facilitating the climate-resilient development.

I proposed the following aspects for study.

- (i) The worldview, emic in particular and cultural practices related to the specific issues in the context of climate change
- (ii) Social institutions, family, kinship, economic and gender construct
- (iii) Institutions which instil morals and act as a control mechanism for ways and means of economic activities
- (iv) The capability of the community for economic use of the natural resources for survival and development
- (v) The process of co-adaptation with other communities
- (vi) Political institutions are the framework of public policy and public institutions

Therefore, I assert here, again that the ethnographers cannot justify the rationale of the existing cultural practices and emergent social institutions without understanding the 'functionalism and bottle neck as compulsions' of the community to co-adapt.

The Ethnographer need to understand public policy as well as government institutions and compatible social institutions (Roy 1992) and

relevant indigenous knowledge that enables natural resource conservation while facing the challenges in meeting the survival and development needs. The social action, as cultural practices of the community, is focussed on conserving the natural resources to meet their survival needs as also the requirements of public policy of Forest Right Acts 2006 and the procedures. as systems of incentives and sanctions in the context of the degrading natural landscape.

2. Approaches to Building Cultural Resilience

In the literature of the social sciences, the idea of cultural resilience for climate adaptation is increasingly being studied. The ability of a culture to preserve and advance its cultural identity as well as essential information and practises is referred to as cultural resilience. It takes into account how a person's cultural background—including traditions and customs—helps them overcome challenges (Clauss-Ehlers 2015).

It is “both the capacity of individuals to navigate their way to health-sustaining resources, including opportunities to experience feelings of well-being, and a condition of the individual's family, community and culture to provide these health resources and experiences in culturally meaningful ways” (Ungar, 2008).

While tribes work to make visible their own stories of history and geography, some of the indigenous knowledge, traditional art, skills, and crafts as well as production systems can be crucial to tribal identity. We need to look at cultural activity, particularly economic activity in resilient communities, which has not received much attention from anthropologists. Culture is a dynamic process, therefore it's crucial to understand how rural communities grow and change over time—whether as a result of external pressures or internal factors—to co-adapt with the neighbours.

3. The uniqueness of Digital Ethnography for Climate Resilient Development

Climate change has a severe impact on the life of human society and is a threat to tribal communities in particular for future sustainable development. It requires Climate Resilient Tribal Development. I must mention here, what we mean by 'Climate Resilient Development'. Climate resilient development is all the actions which help in the reduction of the greenhouse gas emissions. Here, the tribal has to act to minimise the use of fossil fuels, coal or any other to minimise emissions of greenhouse gases. The approaches to implementation of adaptation options include increasing green cover, conservation of biodiversity, soil and water and improvement of soil moisture and soil health by using organic manure and indigenous seeds that provide nutritious food. A unique type of “digital ethnography” has been applied for climate-resilient

development. They include a narrow focus on computer-mediated communication and networks, the study of virtual worlds, the use of digital technology to record the features of the landscape, the degree of degradation and analyse elements of daily life, and the use of social actors and digital resources to write and reconstruct the results of ethnographic research. Many of the social worlds where we now conduct fieldwork are suffused by digital technologies of various kinds of training for the community. In particular, the use of smartphones, Tablets, and laptops is now deeply embedded in the lives of many people enabling global as well as greatly increased local connections (see, for instance); In short, the social relationship of many people are digitally mediated (Hammersley, Atkinson 2019 Page 139).

Ethnographers are experimenting with creative ways of using Digital Ethnography to study human society and culture in its natural habitat. Digital tools like smartphones and digital cameras provide an opportunity to scan several documentary sources. These have added tremendously to the repertoire of ethnographers, both ‘in the field’ and beyond (Pink et al.. 2016). Digitaethnography has become one of the essential methods for field workers who wish to conduct their academic research despite their not physically accessing the ‘field’. The Covid-19 pandemic resulted in impeding several fieldwork plans. This uncertain situation continues to loom large over the prospect of ethnographic research. Under the circumstances, digital technology has become the order of the day for all disciplines in this rank and file.

According to some social anthropologists, long-term “conventional” fieldwork may soon be rendered impossible. As a result, researchers are developing new techniques to carry out their studies (Miller 2018). In this “political economy of knowledge,” the situation is made all the more difficult for researchers who are just starting out (Nagar 2014). They do budget-constrained, time-sensitive research. Although some experts may have concerns regarding the efficacy of digital ethnography, there is a clear benefit. IBRAD’s digital ethnography model for sustainable tribal development has been acknowledged by the Indian Ministry of Environment, Forests, and Climate Change, which has sent letters to all the States requesting that they train their field employees in digital ethnography’s tools and methodologies.

This chapter offers an exploratory panorama of aspects that are critical to certain key issues and pose challenges of significance to some key issues.

These are related to how people face problems of dwindling suitable livelihoods and focus on the challenge and even to what kind of social relationships exist in the form of cohesive groups for collective action.

4. Application of Digital Ethnography for Understanding Cultural Resilience

The application of Digital Ethnography for Tribal Development is

emerging as a unique discipline which is time-saving and effective for cost-effective methods of field studies. The Ministry of Environment, Forest and Climate Change has officially recognised it as an effective model for tribal development while issuing a letter on the 9th of August, 2021 to all States of India to engage such approaches effectively wherever needed.

Understanding the nature of cultural resilience through digitally mediated communication, either through a smartphone, zoom, google, or any other computer-mediated interaction platform has been a challenging issue. Cultural resilience is more than resources, technology or defence forces. It denotes how to conduct a scientific inquiry and assess the human values, empowerment of the community, social cohesion, leadership, accountable governance, public service provision, and national solidarity that stand inherently the community.

How can the community be strengthened so that it can endure the consequences of deforestation and swiftly and effectively recover from a hazard? This would include the maintenance and restoration of the ecosystem's fundamental structures and processes. Degradation of the forests affects the livelihoods of forest-dependent tribal communities as it has reduced the quality and quantity of their collection of non-timber forest products and hurt the socio-economic as well as cultural traits, and traditional knowledge of tribal populations.

Humans learn and remember events as they occur in sequential order in time. The temporal order or sequence of interactions and behaviour has an impact on the outcome of social actions. The sequence, an intrinsic feature of all behavioural phenomena, has been largely ignored in attempts to explore and understand these phenomena (Thomas, Frank 2013). More generally, "Efforts to analyze given actions while ignoring their interactive context seem misdirected, error prone and noise generating" (Duncan, Kanki, Mokros and Fiske, 1984, p 1346)

To better comprehend such knowledge, inventions, and practises, ethnographers, can investigate and document the finest practices from traditional cultures and natural landscapes that are significant to the conservation and sustainable use of biological variety as climate-resilient action. Others in the same region will benefit from Indigenous people's efforts to preserve biodiversity. Thus, the Forests Right Act of 2006 will serve as a follow-up to the Indian Biological Diversity Act of 2002 in that it will encourage the community to promote the conservation of natural resources and the equitable sharing of the benefits arising from such conservation and application of cumulative knowledge innovations and practises sustainably.

In my opinion, traditional ethnography has no real equivalent in digital form. However, it can show and use certain other options. When the ethnographer has already spent time in the field investigating institutionalised

forms of authority, cultural practises, and social phenomena, it can serve as a useful addition. There are several areas, like tribal capacity-building, sustainable development, and the study of culture, nature, and social institutions, that digital ethnography may expand upon. Community members' worldviews were shifted, a new social order was established, and institutions were established for the management of natural ecosystems thanks to the widespread use of smartphones, video conferences modes, and constant interactive Focus Group Discussions facilitated by computers. While we acknowledge that digital ethnography is not a replacement for ethnographic practice, we also recognise its potential for enhancing field investigation techniques in situations where physical fieldwork is not an option. The fundamental characteristic of digital research is its openness and adaptability. It takes form in relation to specific research issues, institutional settings, and the involvement of study participants (Pink et al., 2016).

I must mention here that I have applied digital ethnography not only for the study of the community, and their culture in the natural environment but also involved the community and public forest front-line staff, to be partners in identifying the challenging issue of livelihoods and facilitated them to work together in finding the solution besides opening the option for the adoption of appropriate technologies for sustainable livelihoods. Participatory Action Research is a collective inquiry through which the researchers focus on the specific problem and the existing social institutions. Researchers and participants can help the community become more self-reliant by conducting a study to better understand and enhance existing practices.

Background and Rationale of the Study for Facilitating Climate-Resilient Tribal Development

One of the greatest dangers to the cultural, social, and ecological well-being of indigenous peoples is the effects of climate change. Being a globally recognised scientific phenomenon, climate change poses a threat to the cultural stability of nations and communities everywhere. Deforestation and climate change have exacerbated inequalities within and between the community of the same tribal landscapes. The livelihood commonly adopted for the sustenance of the indigenous community depends upon the rich biodiversity, water, arable land and their compatible traditional practices. The degradation of biodiversity, depletion of water bodies and soil pollution have been instrumental in driving migration, displacement, and instability. To maintain the global average temperature under the 1.5 degrees safe limit stated in the Paris Agreement, we need collective action, political leadership, and funding. To properly manage risks, however, you need to anticipate a variety of adverse outcomes associated with different warming scenarios and deal with unexpected concurrent threats like the one that arose after the COVID-19 pandemic.

Forests with their rich two-thirds of all terrestrial biodiversity and the

indigenous tribal community with their traditional knowledge and belief system have a symbiotic relationship. The ecological stability, resistance, resilience, and adaptive capacities of forests depend upon the cultural and social resilience of the tribal community.

With the successive trends of deforestation, I strongly believe in the ability of the tribal to withstand external pressures, and cultural resilience can help them to 'bounce back' to their pre-disturbance related state and be enabled to adapt to the changing conditions. The issue of cultural resilience and climate change, the capacity of indigenous communities, their role in mitigation and adaptation is receiving increasing attention currently.

The concept of cultural resilience examines how one's cultural background (i.e., one's culture, cultural values, language, practises, and norms) influences one's ability to bounce back from adversity.

The concept of cultural resilience postulates that people and communities can face and overcome hardship not just because to the strength of their own individual traits, but also with the help of larger socio-cultural forces.

We do not find much of ethnographic studies in scholarly literature to understand the nature of cultural resilience as most of the research relevant to climate change is restricted to etic, survey analysis (Paranich 2018). I have applied both etic and emic perspectives as essential for ethnographic study to obtain a detailed understanding of the worldview, cultural beliefs both sacred and profane, knowledge, morals, kinship patterns, hierarchy, leadership, social, political and economic institutions at the tribal village, and their spiritual connections like totemism with nature in particular which will be the soul of forest biodiversity conservation.

Deforestation and climate change have exacerbated inequalities within and between the community of the same tribal landscapes. The livelihood for the sustenance of the indigenous community depends upon the rich biodiversity, water, arable land and their compatible traditional practices. The degradation of biodiversity, depletion of water bodies and soil pollution have been instrumental in driving migration, displacement, and instability. The 1.5 degree Celsius safety limit stated in the Paris Agreement can only be maintained via concerted international effort, strong political leadership, and sufficient funding. Prudent risk management, on the other hand, is getting ready for a variety of unfavourable outcomes linked with different warming scenarios and efficiently addressing unforeseen concurrent dangers like the post-COVID-19 crisis.

The overall objective of Climate Action by the Tribal

The main objective of the project was to raise awareness and build the capacity of the tribal, in the form of cultural resilience for ecosystem restoration

as a part of Climate resilient development. It is essential to sensitise the community who can then have an assessment of their situation and find options for sustainable livelihood support through site-specific, nature-based innovative methods of natural farming and reduce the risk and impact of climate change with measures through the application of their traditional knowledge as fruitful adoption of appropriate technology and public support for soil, biodiversity and water conservation, organic farming and the cultivation of drought and flood-tolerant indigenous seeds.

Background of IBRAD's work in Digital Ethnography

IBRAD, a not-for-profit professional institute established in 1985, was founded mainly by Anthropologists in Kolkata, West Bengal, India. This institute has been involved in action research, training for the community, and the Government functionaries in sustainable natural resource management and institutional development in different parts of India and other countries. The institute is a recognized Centre for Excellence under the Ministry of Tribal Affairs, Government of India. The concept of digital ethnography for tribal development evolved while conducting a series of online trainings through a smartphone for the remotely located Particularly Vulnerable Tribal Groups (PVTGs) under a national programme - GOAL (Going Online As Leader). It is a joint endeavour of the Ministry of Tribal Affairs and Facebook.

As IBRAD has been working on issues of tribal development it highlighted that Scheduled Tribes (STs) continue to be way behind in terms of health, education and various socio-economic or Human Development Indicators (Roy and Mukhopadhyay 2020). Therefore, it was considered a prioritized need of the ethnographers to apply the digital ethnographic methods for tribal development.

This has been a milestone in the history of digital ethnography where the Government of India has recognized the importance of the method and issued a letter to all the States to train the frontline staff for enacting such scenarios of digital ethnography locally for attaining sustainable tribal development. IBRAD utilized the concepts and techniques developed for "Bilateral Matching Institution, Participatory Biodiversity Management, Skill Development for Non-Destructive Harvesting of Non-Timber Forest Produce, Application of Traditional Knowledge and women empowerment" through the blended digital technology approaches based on the academic strengths of ethnography as a part of the broader anthropological perspective.

Prerequisites to Approaches for Human Development

The development practitioners working for Action Research for facilitating development may have different notions, perceptions, aspirations and approaches to assess the nature and degree of Development. Some tend to

measure the development in terms of economic development, ecosystem development, health development, education and gender equality or any other gradient. The assessment of the status of Tribal Development or human development by any government or agency tends to look for scientific approaches and indices to evaluate the status of tribal development. Therefore, ethnographers or Anthropologists have to adopt the internationally accepted scientific method of assessment of the Human Development Index and Sustainable Development Goals for understanding the status of tribal development of any landscape or any given tribe. The Human Development Index (HDI) is a composite indicator of a country's level of progress along three broad indicators of well-being: life expectancy, education level, and income. The HDI is calculated as a geometric mean of the three normalised indices. Hence, everyone interested in comparing the results of development must adhere to some index that allows for comparisons to be made in terms of objective deliverables rather than just the subjective perception of whether or not development was completed.

For an understanding of the cultural resilience of the community, it is important to assess which aspect of the cultural practices and social institutions help in all three parameters of HDI knowledge, access to resources and health. This means that the ethnographer has to focus on the functioning of the social system, functionalism following Durkheim and culture to determine what are the knowledge, belief, and social, moral, laws of the community that enable Climate-resilient activities. Following as per Tylor and those which will improve the quality and quantity of resources for meeting physiological needs according to Malinowski. Then what kind of nutritious food, herbs, seeds, and water quality are there that can improve the health status to finally improve the HDI?

Social organisation and economic theories by Ramond Firth and political system by Edmund Leach, all such theories have practical applications, which must be used by development practitioners. Additionally there are many other methods and theories. It requires a holistic approach to attain tribal development. The theory of Structural-functionalism, eco-chain for raising awareness, cognitive knowledge, development of cohesive groups and building capacity for climate resilient appropriate technology have demonstrated outcomes in terms of biodiversity conservation based sustainable livelihoods and improved health. The government has recommended the IBRAD Model for training government functionaries. It is not the application of one single theory but a bundle of theories and approaches while are being applied.

Anthropologists are unusually involved in tribal studies and are not many in facilitating tribal development. Approaches to Tribal Development require knowledge and skills for the application of development theories, and monitoring of time-bound outcomes, of any tribal development project. Participatory Action Research and Sustainable Tribal Development

management should be introduced in the curriculum for those who wish to have Tribal Development as a career.

Understanding the policies and Acts Such as Constitution Art 342, PESA, FRA 2006, Forest Conservation Acts 1980, Wildlife Act Biological Diversity Act 2002, and CAMPA 2016, are some of the essential requirements to understand the ground realities for a recommendation of any issue of tribal policy or development.

The analysis of such patterns can involve the community moving step by step in a social sequence pattern right from identifying the problem, finding the causal effects, inviting the proactive social change agents whom we call Self Initiated Community Organizers (SICO), formation of a cohesive group and appreciation of social institutions, adoption of appropriate technologies social sequence methods have become increasingly prevalent

While digital ethnography has seemingly compromised the classical method the basic tenets have by no means taken a back seat. It has added several creative, user-friendly, cost-effective and time-saving approaches to meet the primary purpose of conducting a study with a focus on the specific problem of the community under research and the possible options being presented as solutions.

It ultimately requires changing the community's cognitive thinking, transferring and adapting the appropriate technologies and institutionalising the processes through targeted interventions, hand-holding and monitoring.

With the advancement of knowledge, every discipline has been known to grow with innovative skills, tools and approaches to refine the methods and develop theoretical frameworks for serving the development needs of human communities.

The main goal of any ethnographic study is to collect as much information as possible on a certain social or cultural group. The goal of an ethnographer is to obtain insight into a community through living through similar experiences to those of its members. The ethnographer's participation in the group, interviews with members of the group, and analysis of group records and artefacts all contribute to the ethnographer's narrative of the group. An introduction to ethnography and the steps involved in doing ethnographic research are provided here.

According to the structural-functionalist theory, political activity entails not only the creation and maintenance of social bonds but also the cultural production of social meanings that serve to strengthen or weaken those bonds.

The significance of religious rituals in maintaining social order, and how they serve as a kind of "collective conscience" that strengthens a feeling of community and shared identity.

Challenges for digital ethnographic research and more importantly, how the outcomes are being used for tribal development in the habitats of the natural forest ecosystem is of greatest concern. The assumptions based on my experience are that tribes and forests have a symbiotic relationship and no policy or research can help in tribal development unless the community itself participates in the process (Roy and Mukhopadhyay 2015a). Another important assumption is that the institutional support of the government functionaries is an essential element of community development (Roy 1992). The success of digital ethnography for tribal development requires skills to establish rapport and build personal relationships with the community and government functionaries, wherein the numbers of the community and the government functionary, both benefit from the research project outcomes and deliverables. The researchers cannot continue with longitudinal studies unless the subjects enjoy being frequently connected and foresee benefits from the online interview and research. There are few instances of research outcomes being applied to formulate a community development model true to Hammersly & Atkison (2019), who talk about “Developing theory through systematic empirical investigation rather than by relying on ‘armchair theorizing’.” The challenge, however, is that digital ethnography should not remain restricted to digital devices alone (Pink and Horst et al. 2016).

This chapter will illustrate the field-tested methods of IBRAD1 in applying digital ethnography, for studying the options available for livelihoods among the tribals who have been known to suffer from poverty and malnutrition. It is an unprecedented case of participatory action research where the researchers connected with the Particularly Vulnerable Tribal Groups (PVTGs) of Odisha and Chhattisgarh who participated through video conferencing on a smartphone across the zoom platform for a year-long study and engaged the government functionaries to extend support for livelihoods consolidation of the tribals.

Setting Priorities: The Scope and Application of Digital Ethnography

Let me begin with the first point-setting priorities. Why do I choose to study the Particularly Vulnerable Tribal Groups (PVTGs)? Why did I consider studying the forest ecosystem as an essential component of ethnographic study? As of the 2011 Census, 8.6 percent of the country’s population was made up of members of the Scheduled Tribes. Despite the passage of the Forest Rights Act in 2006, these people continue to suffer from social and economic exclusion, preventing them from sharing in the advantages of development. There are four main components to digital ethnographic research: the problem, the topic, the routes and places (the where), the importance of documentation (the how), and the crucial role of research subjects (the who) (Cocq 2019).

Following Malinowski’s lead as an anthropology student, I will begin our discussion by describing the community’s access to resources for addressing

its physiological demands and the makeup of the dominant social institutions for maintaining social harmony. Between 1910 and 1930, two distinct forms of functionalism emerged: Malinowski's biocultural (or psychological) functionalism and Radcliffe Brown's structural-functionalism (Goldschmidt 1996:510).

This chapter illustrates the prioritized problems, methodological approaches, ethical and challenging issues in applying digital ethnography for understanding the sum total of meeting the physiological needs as ordained and sustained social institutions appreciating the situation of the tribal community suffering from the crunch of livelihood resources lost due to deforestation. The tribals and the forests have a symbiotic relationship. Depletion of the rich biodiversity, drying of water bodies in their forest habitat, and feeble opportunities for agriculture result in malnutrition especially among the PVTGs. It must be highlighted that the Lodha, Birhor, Mankedia, and Hill Kharia tribals are the worst hit because their traditional subsistence practices are non-agrarian. Rampant malnutrition, lack of opportunities for sustainable livelihoods, degradation of natural resources and the consequent impact of climate change necessitated the launch of this project on Digital Ethnography for tribal development. The project involves PVTG partners in assessing their social institutions and cultural practices for developing improved biodiversity conservation, while adopting organic farming systems as a climate-resilient livelihood.

Understanding Policy: Provision of an Enabling Environment For Ethnographic Study

The cultural life, traditional knowledge, and lifestyles of PVTGs are dependent entirely on their forest habitat. Ethnography is devoted to 'the recording and analysis of a culture or society, along with the natural habitat based on participant-observation of a people, place or institution' (Simpson and Coleman 2017). After a brief study as 'situation analysis', the ethnographer discussed the available provisions to support the PVTGs across the Zoom platform with the forest functionaries. We connected with the community through the video conferencing mode and could observe the natural habitat as well as other artifacts of the community. According to Hammersley and Atkinson (2019) the 'Positivist' is- the product of the ethnographic study and is the amalgamation of the competency of observation, its interpretation, and what is logically inferred from what is observed.

The government forest field functionaries and other officials are more responsive, following the policy guidelines to meet the needs of the tribals while respecting their traditional culture. It is imperative to review the relevant policy and Act that has direct relevance for tribal development. There are many enabling policies and Acts like the Biological Diversity Act 2002, Forest Rights Act 2006, and others which favour the tribal community to enjoy several benefits. These Acts, however, have not been implemented in letter and spirit.

An enabling environment can be created by listening to the community, appreciating their problems, and seeking their suggestions for the way forward. The community as a primary stakeholder, is involved in the program as a major contribution to the decision-making process. This requires the participation of the tribal community along with the government functionaries in the form of a 'Bilateral Matching Institution' (Roy 1992). The community and the government functionaries develop the mechanism of Participatory Biodiversity Management for successful monitoring of forest resources (Roy and Mukhopadhyay 2015b).

Digital ethnography serves to study and document the nature of the problem and involve the community as partners for enabling sustainable livelihoods, particularly for the landless, the food gatherers, and the small landholders. Critical agendas directing the research were to demonstrate improvements in the status of water conservation, production of organic vegetables, and preservation of biodiversity as compared to the baseline initiation.

The use of digital ethnography to study tribal culture, the natural environment and the processes of effective conservation of the natural resources with the support of the government functionaries has been discussed. The methodology and theories applied by an ethnographer in connecting informants through computer-mediated devices, particularly smartphones, to attain the intended outcomes of tribal livelihoods have been highlighted. To begin with, as an essential part of the development scenario, I highlighted the preparedness required for core issues concerning the use and practice of digital ethnographic participatory action research and how the incorporation of such methods is an essential field of tribal development with new methodological innovations where the capacity building of the community and facilitating the social processes for adoption of appropriate technology towards achieving sustainable development take the prime seat in digital ethnography.

Identifying the Tribes, the Habitat and Essential Components Under the Study

IBRAD designed the digital ethnographic studies process through a series of video recordings of the in-situ observation and interactions on the Zoom platform. The identification of tribes like the Lodha, Mankedia, Hilla Kharia, and Baiga as PVTGs was based on the secondary data and information received from the government functionaries who helped identify the most deprived tribal community that was suffering due to acute deforestation. The PVTGs, as non-agrarian food gatherers and forest dwellers, suffered severe losses due to the depletion of forest resources and absence of skills and resources for agriculture, that could have supported the option of alternative livelihoods.

Thus, the ethnographer's presence digitally within the field scenario benefits the overall ability to deliver a knowledgeable, detailed, informed and authentic representation of the community under study. An ethnographic study conducted by a devoted researcher can effectively uncover through deep-seated analysis most of the information based on the relevant emotional setup and reflective attitudes. In the case of PVTGs, the ethnographer has to make a concise note of the belief system's 'Sacred' and 'Profane' entities, which are associated with a strong belief in supernatural forces (Malinowski 1954) that can become an important part of the decision-making processes on the use of any natural objects existent around the community. Secondary data and development agency consultations are the deciding factors in identifying the tribe and its habitat for development assistance on priority.

Application of Digital Ethnography in the Situation Analysis

The application of digital technology for a situation analysis of the natural habitat of the project location is one of the most critical parameters of ethnographic study. The action research initiated by IBRAD involves using satellite images to have first-hand information about the nature of vegetation, forest density, waterbody, the pattern of homestead land and connectivity of the village with the market. The conduct of such a situation analysis and discussion with the forest officials over the Zoom platform provided adequate understanding of the tribal landscape and the option of livelihoods for the community.

After the webinar with government officials, specific concerns affecting tribal livelihoods and food security were assessed through a series of Focus Group Discussions (FGDs) facilitated by cellphones. To investigate the interconnected activities, institutions, and policies at the landscape level, the ethnographer must establish connections with various agricultural, forest, and water sectors (Reed et al., 2015). When conducting digital ethnography, it is important to keep in mind that the researcher's interaction with the participants is mediated rather than direct (Pink et al., 2016). The tribal community's eagerness to learn relevant technologies that increased the value of their NTFP and allowed them to transition to organic farming was really heartening to discover. The research conducted by IBRAD members has shown that traditional knowledge is useful in all facets of natural resource management (Mukhopdhyay et al., 2015).

I must add here that an open discussion on the Zoom platform helped identify some of the smaller groups as stakeholders because they were also designated the victims of forest degradation. This is why they were the preferred target groups to be trained first for organic farming. After identifying the tribes and the natural habitat, the digital interviews helped pinpoint the issues on the larger landscape through PRA (Participatory Rural Appraisal) mapping. The researcher's trust-building capacity and the ability for getting the

community prepared for repeated interactions on the video conferencing platform for a village-level micro plan was brought into play. I must also add here that informants from the community are not merely data providers, they are also the stakeholders and partners in the decision-making. Participatory Action Researchers (PAR) focussed on community problems, questions, concerns, and the mission to understand the causal model for solving the inherent problems. The community's involvement is an essential part of PAR for developing a new body of knowledge. Data is collected in the field using multiple ways, including FGD using a smartphone to provide information, authentic representation, numerous ideas as also the community's worldview.

An essential part is to plan how the knowledge gained by the ethnographer may be used effectively for accruing benefits to the community. The author calls upon joint development mechanisms to bring about developmental gains for the community besides professional growth for the ethnographer.

Creating Environment of Social Learning: Virtual Class Rooms For Capacity Building

Digital anthropology's goal is to help indigenous communities advance by means of online discussion and instruction. Sharing information and gaining insight from one's peers is facilitated by these online, interactive seminars. Paths to climate resilience can be developed with a better understanding of the cultural characteristics and social institutions that help a community endure and recover from disaster and other external shocks. As culture is in constant flux, it's useful to get an understanding of how rural communities evolve over time, whether as a result of outside forces or from inside, in order to co-adapt with their neighbours.

To help PVTG participants work together and solve ongoing challenges, IBRAD has established a forum in which they can discuss these concerns and offer solutions. The IBRAD team found these development oriented movies to be extremely useful as a social learning tool, as they helped the community adjust more quickly to the emergence of novel behavioural patterns, which are typically learned by witnessing and copying members of the same cultural group. According to Messick and Watkins (1990), gaining a whole picture of learning requires an appreciation of informal and accidental learning, which is typically achieved through social learning strategies. The major emphasis must remain on the key targeted learning strategies typical of the culture or location (Hite 1999). IBRAD has produced a variety of movies, chart paper plans, maps, posters, and games that have served as effective tools in making the learning and planning process an engaging one.

The tribal participants learn and take pride in sharing their learning tools, group activities, documents and showcasing the outcome in the field. These are some of the ways to incorporate social learning to bring new and

appropriate social order. The human urge to compete and win the award takes social learning to a wider and higher plane.

Approach to Participatory Action Researchers (PAR) and Ethics

People living on the forest fringe play significant roles in biodiversity conservation. The study by IBRAD reveals that no ‘Scientific Theory; or ‘Policy’ could be effective without accountable public governance. Community participation in ‘Participatory Biodiversity Monitoring and Management’ helps make the program more effective. (Roy and Mukhopadhyay 2015) Video conferences with the community through a smartphone to assess the degree of germination of the vegetable crop have been a major help in deciding the nature of further action. This was possible by building and nurturing the community institutions to harvest forest produce for meeting their survival needs but is non-destructive (Mukhopadhyay et al. 2012). Populations dwelling on the forest fringe possess rich traditional knowledge and follow conservation practices for helping biodiversity spread across associated ecosystems. Women are especially well versed in these practices. Identifying such institutional knowledge and practices can prove fruitful in designing adaptive measures to ensure livelihood security and have the propensity to heighten the resilience of the stakeholders under climatic stress (Mukhopadhyay and Roy 2015). IBRAD utilized the concepts and methods developed for “Bilateral Matching Institution, Participatory Biodiversity Management, skill development for non-destructive harvest, application of traditional knowledge and women empowerment” through the blended digital technology approaches based on academic strengths of ethnography as a part of the broader anthropological perspective. It is significant to note that digital ethnography has impacted the ethnographic techniques and processes since the last few decades (Hjorth et al., 2017).

The Conceptual Framework of Study and Intervention

The development of a conceptual framework for the study is necessary to develop the ability of the community by analysing the situation and intervening to solve its problems. According to Mitashree et al. (2006), tribes like the Birhor and the Kamars in Chhattisgarh are suffering from hunger and the degradation of forest-based resources (Pandey et al. 2000). The majority of these tribes lack access to land and rely on NTFP collection and local wage labour as their only sources of sustainable existence.

5. Outcome of the application of Digital Ethnography

Involvement of the Government Functionaries as Significant Contributors

The IBRAD team facilitated the government officials and community leader’s digital interface. It was done in a phased manner. The first step

comprised an online discussion with the Principal Chief Conservator (PCCF) to inform and explain the merits of helping the tribals and the forest field staff through digital technology to facilitate forest biodiversity conservation.

When locals and government officials work together in a Bilateral Matching Institution, there is a greater possibility that natural resource management will provide sustainable results (Roy 1992). This approach's strategic planning includes developing a roadmap, designating checkpoints, deliverables, and a projected deadline. Digital ethnography, in contrast to traditional ethnography, examines social constructs of cultural life using online virtual worlds (Boellstor 2012). Due to the consequent destruction of their habitat, indigenous populations that have historically relied on forests for their livelihood now face uncertainty over their ability to survive and earn a living. The gradual deterioration of the rich traditional knowledge of managing natural ecosystems that has been institutionalised within the populations relying upon these sources for millennia has already been exacerbated by climatic changes.

As a result, the strategic plan to raise awareness among the tribes, improve their skills, and work with them as partners to create social action and suitable social institutions has placed a strong emphasis on fostering effective climate resilient organic farming. This program's success has been tested in three States, Chhattisgarh, Jharkhand, and Odisha, as the "Replicable Model", using the seven social sequential phases of SAPTAPADI created by IBRAD for creating community institutions for sustainable livelihood (Roy and Mukhopadhyay 2021).

The Social Sequential Seven Steps: SAPTAPADI

Sociological theories provide the framework for the study of social sequence patterns. Societies, according to structural theorists are systems that exhibit predictable patterns. Even the most insignificant of social occurrences follow a very predictable pattern (Parsons, 1951).

In this approach of eco chain and SAPTAPADI, the essentials to sensitize the community to develop appropriate social institutions, following the social sequential steps for enhancing conservation and sustainable harvesting of natural resources for livelihood creation and perpetuation.

Turn-taking and the preponderance of reciprocal utterances are two sequential ideas that are increasingly at the centre of the research of interaction patterns. In order to comprehend how social connections and activities are carried out in real-time, social network researchers have started to use sequence approaches and concepts (Butts, 2008 and Cornwell, Benjamin, 2013).

Let me share here how the seven social sequential steps were followed. I must mention here that these seven steps have to be followed in sequence to have a synergetic impact. Missing any step will not lead to the intended outcome.

Step 1. Focus on the specific problem: Raise awareness to reorient the worldview through cognitive stimulation by asking the community about the consequences of deforestation and the options available for livelihood. We have experimented by asking a question through a focus group as given in the Eco Chain Method, to motivate people to come forward and participate. It is the SICO (Self-Initiated Community Organisers) who work as change agents for social development. People love to adhere to social contracts, build social relations, take the challenging task under certain conditions and serve the social cause. Ramu Ram, one of the SICOs Baiga community, of Kabirdham of Chhattisgarh learnt how to grow organic vegetables in his vacant land. He encouraged Chotelal* and Hiralal*, his fellow villagers, to initiate organic farming on their vacant homestead land. Inspired by Ramu, both Chotelal and Hiralal have started producing organic vegetables in their nutrition kitchen garden. This is an example of how cultural traits spread from one culture to another, one person to another, any idea, value, social practice, or attitude through and between populations as propagated by Franz Boas in his Theory of Diffusionism.

Ramu Ram² is an example of how new climate-resilient livelihood practices can be promoted, replicated and expanded fast by local change agents

Step 2. Formation of Cohesive Group: Society needs change agents for the adoption of any technology and idea. The organization consists of groups of individuals bound together for a common purpose. The second step was the formation of cohesive groups after holding online meetings with the line departments to share concepts, methods, and approaches for preparing a road map. The government functionaries were most helpful in charting the landscape.

After the identification of SICO a group was formed on the pattern of Self Help Group (SHGs) Upendra Bhukta* from the Lodha community of Nedom village in Odisha has set an example to show how they formed the group and learned to develop nutritious vegetables for his family. It is more surprising to see that Upendra Bhukta has learnt organic farming. This also enhances the scope of his earning by selling the surplus vegetables in the nearby market, especially during the COVID 19 pandemic period.

As Upendra did not have a proper way of earning, he was suffering from poverty and malnourishment; hence for meeting his immediate need he learnt the skills of organic farming after he received training through digital technology from IBRAD. The land which otherwise remained fallow for most of the year is now being used for cultivating different types of vegetables like brinjal, corn, bitter gourd, angled gourd and various leafy vegetables around the year.

As a result of this, he has now started earning some income from his garden. He not only sold 16 kg bitter gourd, 12 kg corn, 12 kg brinjal, 20 kg

angled gourd, 15 kg luffa but also had enough left over for his own consumption of these healthy and non-toxic vegetables. He is now associating himself with mustard cultivation³.

Step 3. Development of Social institutional rules and regulatory mechanisms that guide all types of organizations. Effective self-regulating mechanisms for the enforcement of social contracts facilitate economic development and the morale of the community. The community framed their own norms for Micro Plans through PRA. The microplan was made using digital technology to follow standard PRA (Participatory Rural Appraisal) methods. The PRA mapping and essential plan preparation based on land available for setting up nutrition gardens, community nurseries, harnessing water sources for irrigation, digging and maintaining vermicompost pits, identifying water bodies to promote fishing, rainwater harvesting, and pond placements following the flow of water collected in or around the village.

Step 4. Capacity building of the communities to be more Cultural Resilient for climate-resilient livelihood development through an effective communication strategy for science communication is one of the essential requisites. We have discussed these under the heading of cultural resilience. IBRAD established the 'Prashikshan Shivar' or Training Camp as a Continuous Learning Forum for support and management. It was a semi-permanent hexagonal structure built on the lines of the traditional 'Ghotul' or youth dormitory for incorporating into the tribes' cultures. Such a youth dormitory used to be popular in Bastar. It was made in a central, prominent part of the village. As forum of continuous learning through 'Prashikshan Shivar', an informal classroom setting is established where the community members can meet and interact, discuss their problems and the training needs are constantly assessed through video conference mode with the ethnographer. Some video clippings, as training aids, are sent to the group coordinator who enjoys sharing the training materials. The development of community resource persons has been observed to be an excellent social learning strategy to build the capacity of the community with a focused assignment of skill development for all levels of the community members. Such an approach of social learning through the group's participatory learning, observation, and imitation helps in the fostering and retention of the learnt skills.

Step 5 Facilitate the Trade-off Analysis. It's a way for the community to learn by doing, so they can get a better idea of what they'll get out of their sacrifices and time spent on the plantation, water conservation, and organic farming in the future. It's also a way to measure the effects of SDGs, especially in the context of how to reach all of the SDG targets by using diversified farming practices to lessen the trade-offs.

Digital ethnography was used for interventions and evidence-based outcomes related to the herbal garden, orchard, and several organic kitchen gardens and seed banks as some of the activities of climate action at the local level. This helped train the community to be self-organized and self-reliant. The patterns of this type of organisation were important for setting up the relationships that make up each system (Capra, 1996). The conversations over the smartphone helped the community take part in Ecosystem Restoration, especially through the building of structures to collect rainwater, the preservation of rare medicinal plants, and the identification of biodiversity niches for food, medicine, fodder, and fuel needed to improve and restore village and forest fringe mosaic lands. The process gave priority to the production of species that are good for the environment, have economic value, and are grown under technical supervision. The improvement of water quality and quantity will improve soil health and food production as climate-resilient action

Step 6. Plan to converge different resources such as a fund for agriculture and plantation or fishery and involving the community for the development of village level plans and not planning in an isolated sector. Here the IBRAD Model of Integrated Forest Mosaic Landscape Management of the tribal habitats (Roy and Mukhopadhyay, 2021) has been implemented to assess the interconnected ecosystems and their impact on tribal life and livelihoods. The method has followed the priorities of community urgency and attendant conservation problems which required quick assessment of inherent resource use based on ecological knowledge while rapidly imparting basic techniques to the locals (Martin, 1995).

Step 7. Introduce Rituals and Cultural Program. Ethnographers often document the ritualized action as well as link it up to the larger context, and down to the meanings it holds for participants. But I say here again, that such a rich experience of the ethnographers remained in documentation only and I do not find use the concepts, philosophy and knowledge of rituals to help the community for social development.

I analyzed the rituals that connect the experience of the community and emotions to the larger context of nature and conservation. Such approaches to tailor-made rituals have been a matter of controversy as how the ethnographer approaches the field, data collection, options for analysis, and presentation of findings can have any applied value for the community development.

To stabilise the new conservation behaviour patterns and newer traditions within the organizations themselves we introduced several IEC (Information, Education and Communication) materials, slogans and posters besides organising quiz contests, cultural programs and ritual and design frameworks for the community working for forest or water conservation.

Conclusion

The approaches to digital medium-enhanced field site of enquiry, focus group discussion, and application of the ethnographic theory of functionalism to understand the inter-connected social, family, economic, and political institutions and to understand the emic perspective of the community for facilitating capacity building of the cultural resilience to climate action has been a unique experiment where the community has improved the status of natural resource-based livelihoods such as conservation of water, nutritional organic vegetables, herbal garden, planting fruits trees, and demonstrated climate action at the local level. The approaches to building cultural resilience essentially require maintaining and developing the cultural identity of the community on one side and applying the critical cultural knowledge for climate resilient development has been a unique attempt to demonstrate the improvement of climate resilient livelihoods in two PVTGs, Lodha of Odisha and Baiga in Chhattisgarh.

Building the cultural resilience of the community for collective action and navigating their way to climate action for sustainable development has been a great experience and feelings of well-being and self-esteem.

A letter by the Ministry Of Environment, Forests and Climate Change, Government of India on the 9th of August, 2021 to all the states to try the IBRAD model of Application of Digital Ethnography for Sustainable Tribal Development is a mark of recognition of such methods

Acknowledgements

Ministry of Tribal Affairs, Government of India for the support for the project,

Ministry of Environment, Forests and Climate Change for the guidance and recognition of the IBRAD Model of Application of Digital Ethnography for Forest Mosaic Integrated Landscape Management towards Sustainable Tribal Development, the State Forest officials of Chhattisgarh, Odisha, West Bengal.

Dr Rajni Lamba, Anthropologist and Dr Raktima Mukhopadhyay for editing the manuscript.

Notes

1. Indian Institute of Bio Social Research And Development. (IBRAD) is a professional institute, established in the year 1985, at Kolkata. It has been working in action research and training for government officials and the developing communities within India and even abroad through the International network of SEPARN.
- 2** Pseudo names have been used here so that their identity is not disclosed.
- 3** Here pseudo names are used so that their identity is not disclosed

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RECEIVED: 04TH MAR 2023

REVISED: 02ND APRIL 2023

ACCEPTED: 10TH APRIL 2023



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