International Journal of Environmental Sciences
ISSN: 2229-7359
Vol. 11 No. 4, 2025
https://theaspd.com/index.php

Exploring The Intersect Of Tribal Indigenous Knowledge And Sustainability: An Analysis Of The 5P Framework In Environmental Education

Rasmirekha Sethy[1], Priyanka Karunamay[2], Asmit Kumar Sahoo[3], Priyamvada[4], Dipanshu Sharma[5]

[1,3,5]Department of Education (DE), Regional Institute of Education (NCERT), Bhubaneshwar-751022, India
[2]M.Ed. Department, Ursuline women's Teachers Training college Lohardaga-835302, Jharkhand, India
[4]Department of Education/CIE, University of Delhi-110007, India
[5]Corresponding author E-mail address: drdipanshusharma@gmail.com

Abstract

Tribal Indigenous Knowledge refers to the traditional wisdom, practices, and beliefs developed by Indigenous communities over generations. This knowledge is deeply rooted in their relationship with nature and encompasses areas such as agriculture, medicine, environmental conservation, and cultural traditions. In India, tribal communities have contributed significantly to sustainability through their expertise in ethnomedicine, biodiversity conservation, and sustainable agriculture. Their knowledge systems are often passed down orally and play a crucial role in preserving ecological balance. The 5Ps of Sustainability are key principles that guide sustainable development efforts worldwide. They are: People – Ensuring social inclusion, equality, and human rights for all. Planet – Protecting ecosystems, addressing climate change, and promoting responsible resource use. Prosperity – Encouraging economic growth that is inclusive and environmentally sustainable. Peace – Fostering just, peaceful, and inclusive societies. Partnership – Strengthening global collaboration to achieve sustainability goals Environmental education is all about equipping people with the knowledge, skills, and motivation to make informed decisions about the environment. It encourages awareness, responsibility, and action to protect natural resources and promote sustainability. The objective of the paper is to assess the Various Tribal Indigenous Knowledge Practices for Sustainability. Tools for this study were Field notes and result showed that many forms tribal indigenous knowledge comes under 5P-Framework, which helps in achievement of sustainable Development Goal.

Keyword: *Tribal Indigenous Knowledge, Sustainability, 5P-Framework, Environmental Education*

INTRODUCTION

The autochthonous Indian tribes are thought to have been the first people to settle on the Indian Peninsula. Tribes in India are commonly referred to as "Adivasis" since they are thought to be the original occupants of the country and yet maintain their unique identity, both cultural and territorial. The majority of the tribal people are said to be descended from Dravidians who lived in the Indian subcontinent before to the advent of Nordic people, often known as Aryans (Battiste, 2002). Nearly every region of the planet is home to tribal communities that reflect ancient races and civilizations, practice a variety of traditions, and adhere to many faiths. Different countries have different names for tribal people. In the United States of America, for example, they are commonly referred to as "Red Indians," "Aborigines" in Australia, "Gypsies" in Europe, and "Tribals" in Africa and Asia. A tribe gained geographical identity when they established a permanent settlement in a specific area (Aikenhead & Michell, 2011). Generally speaking, the area that belonged to a specific tribe was called after it. It is thought that the powerful Bharata tribe is the source of India's name, Bharat. In a similar vein, the Matsya tribe was associated with the enormous Matsya Kingdom, which ruled across the eastern portion of present-day Rajasthan and flourished in the sixth century B.C. Several tribes still uphold their territorial and cultural boundaries today. cultural identity. For instance, the northern states of Mizoram, Nagaland, and Tripura are called after the Tripuri, Naga, and Mizo tribes, respectively, in the east. Similarly, the tribal names of the Santhal Parganas in Jharkhand, Gondwana, which includes portions of Chhattisgarh, Maharashtra, and Andhra Pradesh, and Lahaul, Swangla, and Kinnaur in Himachal Pradesh inhabitants,

specifically the Kanuaras, Lahaulas, Gonds, and Santhals (Jaiswal; Gour & Sagar, 2020).Western writers typically use the term "tribe" to refer to an ethnic group that is geographically isolated or semi-isolated, associated with a specific location, and has unique social, economic, and cultural customs and practices (Barnhardt & Kawagley, 2005). To maintain the integrity of their culture and Tribal people have a tendency to withdraw quietly due to their inner ideals. This behavior is frequently mistaken for "isolation" or "aloofness," which is untrue. Their culture is based on trust and self-respect. The tribesmen were and still are unwilling to sacrifice their culture and beliefs. This may have been the primary motivation for a tribal member's desire to remain with his people in order to uphold his moral principles and cultural authenticity. He attributes his incredible survival record and identity preservation throughout centuries of invasion on his territory to this desire land. Their active and passive resistance has defeated numerous attempts to subjugate their dominating culture, mostly due to their unwillingness to accept subordination Tribal people's customs and patterns promote steady, sustained growth and development while preserving social harmony with the environment (P.S., 2024)A cumulative body of knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission is how Berkes, F. (2012) describes about climate resilience and biodiversity protection (Gadgil et al., 1993). Chakma, Pappuswamy, Chaudhary, Meyyazhagan, Anand & Balasubramanian (2023) described that Indigenous tribes of North East India are hold some medicinal plants have extraordinary healing qualities. The quantity and accessibility of medicinal plants may be negatively impacted by these climate changes, which could result in the loss of entire species. Furthermore, the effects of climate change may go beyond availability and include changes to the pharmacological characteristics of different plants, especially those that are found in alpine regions. Majumdar and Chatterjee (2021) reveals that how Santhals continue to perceive the world differently than other people thanks to folk models. Ok, E. (2025) Santhal one of the biggest indigenous communities in India, the Santhal have a wealth of traditional wisdom that has allowed them to coexist peacefully with their surroundings for many years. According to research, the Santhal community's comprehensive view of nature and their strong cultural norms of stewardship and reciprocity provide insightful information.

Indigenous Knowledge

Knowledge is a result of education; it includes collections of facts, information, ideas, abilities, awareness, and familiarity that an individual has gained from education or experience for the theoretical or practical comprehension of a subject. Knowledge may also be defined as a socially recognized comprehension of a subject that enables a person or group to use it to achieve a certain objective. The "outcome of empirical investigation that resolves the issue at hand" (quoted by (Rohmann 1999). The phrase "knowledge is often used to refer to a body of facts and principles accumulated by mankind in the course of time," according to Lemke (1994). Given the global dispersion of humanity, what does knowledge mean to a specific One group may not matter to another in a different context. What each group defines and values as knowledge is influenced by biological and cultural traits, language, and environmental variables. However, the knowledge base of the dominant authority is frequently imposed on subjects as legitimate information when one culture conquers another militarily and economically. Thus, knowledge is essentially a complicated collection of several socially constructed concepts that are supported by the prevailing school of thought at any given period (Lemke, 1994). The concept of indigenous knowledge is as varied as the voices that use it.

The consensus that indigenous knowledge is an alternative to mainstream, Western-styled, or "modern" understandings of knowledge forms the basis of its various interpretations. Indigenous knowledge examines the distinct and collective wisdom of a community or population, which shapes their shared perspective (Ellen & Harris, 2000). Indigenous knowledge is rooted in local culture and is conditioned by it. It is founded on collective understanding. Indigenous knowledge has developed because of environmental mastery efforts and has been essential to the communities' existence. Indigenous wisdom has been further described as from birth; people are instilled with culturally informed knowledge that shapes their interactions with their surroundings. Additionally, it is continuously updated by external intelligence. It's not widely distributed. No one individual, authority, or social group understands everything, even though general information is more commonly disseminated locally than specialized knowledge. It is real. There is no major repository somewhere in totality (Sillitoe, 2002).

Indigenous knowledge is sometimes described as region-specific, typically passed down orally through experience and years of deliberate practice focused at mastery and excellence, and frequently spanning multiple generations of Indigenous people. Because of the dynamic nature of human interaction with his surroundings, knowledge is a product of its followers' own lives and is not subject to strict interpretations (Ministry of Education, 2020). The majority of indigenous knowledge is held by a small number of people, and universities that oversee the local communities that possess it frequently reject it in favour of a Eurocentric knowledge system (Kiggundu, 2007). The style of life of Indigenous people has been viewed as unsophisticated, naïve, and even primitive in academia and other research-oriented and scholarly circles, "reflective of an earlier, and therefore, inferior stage in human cultural progress," and as such, useless considering today's highly developed and technologically oriented demands (Knudston & Suzuki, 1992)

SUSTAINABILITY

When the United Nations Conference on the Human Environment declared in the 1970s that appropriate measures should be put in place to address these issues, environmental awareness got its start (United Nations, 2015). However, sustainability has only been more apparent in the 1980s, when the World Sustainable development was introduced into the mainstream by the Commission on Environment and Development, which defined it as "development that meets the needs of the present without compromising the ability of future generations to meet their needs" (Harlem, 1987). Actually, there are almost three hundred different definitions of sustainability (Santillo, 2007). Development and sustainability, two essential components of the idea of sustainable development, came before the idea itself was developed. Sharpley (2000) asserts that sustainability and development may be in opposition to one another, where while neoclassical economists stress that sustainability and development are not mutually exclusive, both may have unfavourable implications (Lele, 1991). Sachs (2010) also makes the argument that sustainability cannot exist without growth or that development cannot exist without sustainability. The essence of sustainability, however, is the planning and anticipating of the economy in the ecological metabolic cycle and its rhythms of time. As a result, consideration of the circumstances and effects of human activity on present and future generations is required. The process of actively and creatively investigating, learning, and influencing the present and future of human activity on Earth—and in space—must be viewed as sustainable development.According to Ostheimer (2013) sustainable is more than just a synonym for "good." Resilience in handling stress and unexpected events, as well as transformational competency in transition design, are the cornerstones of sustainability. Therefore, sustainability goes beyond emphasizing ideal objectives to critically consider the dynamics and barriers that either facilitate or obstruct a social reform process. To put it another way, intergenerational justice necessitates an understanding of process and complexity in order to address concerns of power, ignorance, and influencing the unpredictable. When extra-terrestrial life (life beyond Earth) is added to the global and multigenerational viewpoint, this requirement becomes even more pressing. If such entities exist, their rights and claims, may also need to be taken into account. Should we consider protecting planets as possible home for future generations or extraterrestrial life? Losch (2018). The nested spheres model, often known as the Venn diagram explanation, is the most widely used model to explain sustainability and the TBL (Figure 1).

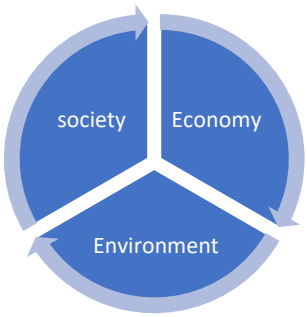

Figure 1. The nested spheres model (Sandhu et al., 2014, p. 5)

Environmental Education

The interaction between humans and the biophysical environment, as well as their comprehension of it, are the main topics of environmental education. Pollution is a serious worldwide problem. The natural resources of the environment have been abused by humans. Environmental harm needs to be brought to light right away. Environmental quality can be enhanced through public involvement and education. UNESCO states that "Environmental education implements environmental conservation goals." It is not a distinct science, but rather a multidisciplinary field of study that lasts a lifetime. It refers to environmental education and the use of education as a means of raising the standard of living in human societies (UNESCO, 2018). Humans are natural, social, cultural, religious, and political beings who typically inhabit their surroundings, yet environmental education will only be available to the understanding of his natural surroundings, and secondly, it will be his natural surroundings. Numerous studies have been conducted on the environmental impact of falling feathers in their social, cultural, religious, political, and economic contexts. Their material requirements have grown because of scientific advancements, and these wants have been satisfied through the exploitation of human natural resources (Laiphrakpam; Aroonsrimorakot & Shanker, 2019).

Characteristics of Environmental Education

The academic process by which people learn about their natural and artificial surroundings, such as pollution, resource appropriation, conservation, transportation, technology, and the overall state of the environment, is known as environmental education. people in both rural and urban planning. suggested, but the nation's environmental education program consists of two initiatives: the conservation of natural resources and their knowledge, and the contamination of the natural environment and knowledge. The goal of this education is to teach the vision, and the curriculum should Teaching kids, teens, and adults about the causes and effects of pollution and resource exploitation as well as methods for preserving natural resources and avoiding pollution is known as environmental education (Shobeiri, Omidvar & Prahallada, 2007).It is important to realize that conserving natural resources does not imply doing away with their usage; rather, it means granting them to people via prudent use of their education so that as many people as possible can profit from them., and the natural world
The term "pollution" refers to both natural and man-made pollution, especially hair pollution.

Modern environmental education was made possible by the inaugural Earth Day, which was observed on April 22, 1970, and the nationwide environmental education campaign. President Nixon signed into law the Environmental Education Act later that year, which sought to incorporate environmental instruction at K–12 institutions (Palmer, 1998). The National Association for Environmental Protection then Education for Environmental Education (sometimes called the North American Association) was established to support environmental education initiatives and enhance environmental literacy by giving educators access to resources. Following the UN Conference on the Human Environment's declaration that environmental education is a crucial instrument for addressing global environmental issues, environmental education acquired international respect (Silvius, 2018). Three significant declarations from the United Nations Environment Program (UNEP) and the United Nations Education Scientific and Cultural Organization (UNESCO) shaped the direction of environmental education (UNESCO, 2018).

Environmental Education and sustainability

Natural environment, and consequently jeopardizes the welfare of people who depend on it. Therefore, in order to survive in the current period, people must actively preserve and safeguard the natural environment. To do this, they need instruction for and about the environment. This entails taking a transformative approach to comprehending the intricacies of the environment, environmental challenges, and practical/pragmatic solutions to these issues. Individuals' thoughts and character are shaped by education (Ramana, 2012).

Rationale of the Study

This research seeks to bridge the gap between Indigenous ecological knowledge and formal environmental education. It also aims to contribute to the decolonization of education by recognizing and integrating indigenous epistemologies.

Research Objectives

6.1. To assess various Tribal Indigenous Knowledge (TIK) practices for sustainability and its alignment with five pillars of 5P Framework.

Research Questions

7.1. What are the key five pillars of the 5P Framework?
7.2. What are the tribal indigenous practices that promote environmental sustainability?
7.2. How do these practices align with the five pillars of the 5P Framework?

Research Methodology

A qualitative, exploratory study using ethnographic and participatory approaches. Qualitative method was used for exploring the intersect between Tribal Indigenous Knowledge and Sustainability: An Analysis of the 5P Framework in Environmental Education. The study was conducted in the tribal village located in Chakulia Block, East Singhbhum, Jharkhand India. Primary Data through Field visits from the selected tribal communities was Collected.

Data Analysis and Interpretation

The collected data are analysed as per the objectives of the study in terms of frequency count and percentage, which are presented in tables. The first Objective of this paper was to assess various Tribal Indigenous Knowledge (TIK) practices for sustainability and its alignment with five pillars of 5P Framework and the research question for this objective was; What are the key five pillars of the 5P Framework? What are the tribal indigenous practices that promote environmental sustainability? How do these practices align with the five pillars of the 5P Framework?

Key Pillars of the 5P -Framework in Environmental Sustainability among Indigenous Tribes

i) People: In addition to ensuring that every human being can reach their full potential in equality and dignity as well as in a healthy environment, we are committed to eradicating poverty and hunger in all its manifestations. The category for persons can include goals one, two, three, four, and five. As we recall from the 2030 plan aims to leave no one behind, according to a United Nations mandate. The SDGs are objectives that symbolize and highlight the significance of everyone's livelihood. The initial five objectives of the Sustainable Development Goals are intended to offer suitable targets for fulfilling the basic needs of every individual worldwide. The most fundamental sustenance was covered by the first two objectives. The availability to basic goals is asserted by goals three and four. of education, health, and wellbeing. One of the main societal issues that Goal 5 seeks to address is the empowerment of women and girls worldwide. By claiming that all women have equal access to jobs, food, and education. **Focus**: Ending poverty and hunger in all forms and ensuring dignity and equality.

Relevant SDGs: SDG 1 (No Poverty); SDG 2 (Zero Hunger); SDG 3 (Good Health and Well-being); SDG 4 (Quality Education); SDG 5 (Gender Equality); SDG 6 (Clean Water and Sanitation)

ii) Planet: We are committed to preventing the earth from degrading, which includes managing its natural resources responsibly, consuming and producing goods in a sustainable manner, and acting quickly to combat climate change. assist in meeting the needs of both the current and upcoming generations. Goals 6, 12, 13, 14, and 15 outline the global issues that our planet is currently confronting. Because the world community can clearly see how vital it is to save our planet and how changing how we respond to the climate issue will affect our future, this is significant for the planning that led to the international community's agreement on the SDGs. In order to guarantee that everyone has access to clean and safe water, Goal 6 calls for universal water and sanitation management. Since all living forms depend on water to thrive, it is well known that effective water management is essential to preserving the planet. In order to ensure sustainable development, goal 12 asserts appropriate and proportionate production and consumption in conjunction with goal 6. Directly, goals 13, 14, and 15 discusses the important work being done to protect our world. According to Goal 13, climate action should serve as the foundation for all environmental protection policies and objectives. Goals 14 and 15 emphasize how important it is to preserve our environment for the future of our planet while also serving as a reminder that we must work

together to accomplish these goals in a methodical manner. **Focus**: Protecting the planet's natural resources and climate for future generations.
Relevant SDGs: SDG 6 (Clean Water and Sanitation); SDG 7 (Affordable and Clean Energy); SDG 12 (Responsible Consumption and Production); SDG 13 (Climate Action); SDG 14 (Life Below Water); SDG 15 (Life on Land)
iii) Prosperity: We are committed to making sure that everyone can live wealthy and satisfying lives and that advancements in technology, society, and the economy coexist peacefully with the environment. The significance of economic development is not meant to be minimized by the SDGs. All people must have access to economic development that can lead to affluence if the world is to live in peace and prosperity. The SDGs' intended design goal is to recognize and value the vital role that sustainability plays in economic growth. Finding an energy source and using it effectively are essential for any developmental agenda or process to produce positive results. In order to manage and find sustainable solutions, we must also prioritize addressing the environmental issues and damage that can result from energy use.
iv) Peace: We are committed to creating inclusive, just, and peaceful society devoid of violence and fear. Peace cannot exist without sustainable development, and sustainable development cannot exist without peace. A key component of the 2030 agenda's development has been peace. The global peace was at danger due to conflicts, terrorism, and other challenges. Additionally, people who pose a threat to international peace may target weak institutions. Goal 16 so demonstrates how the international community must unite to advance and safeguard world peace, ideally through robust institutions of justice rather than through military force. **Focus**: Ensuring prosperous and fulfilling lives in harmony with nature.
Relevant SDGs: SDG 7 (Affordable and Clean Energy), SDG 8 (Decent Work and Economic Growth), SDG 9 (Industry, Innovation, and Infrastructure), SDG 10 (Reduced Inequalities), SDG 11 (Sustainable Cities and Communities).
V) Partnership: Through a revitalized Global Partnership for Sustainable Development, founded on a spirit of heightened global solidarity, we are committed to mobilizing the resources necessary to carry out this Agenda, with a special focus on involves the involvement of all nations, all stakeholders, and all individuals, and on the needs of the most vulnerable and impoverished. The partnerships for the goals are represented by goal 17. As demonstrated by MDG target eight, collaboration is a key component of all 17 objectives. Even though the SDGs were decided upon by the UN's member states, everyone in the global community must work to achieve them. **Focus**: Mobilizing global solidarity for sustainable development.
Relevant SDGs: SDG 17 (Partnerships for the Goals)

9.2. Alignment of Key Pillars of the 5P -Framework in Environmental Sustainability and Tribal Indigenous Knowledge (TIK) practices

Table No.1 Tribal Indigenous Knowledge (TIK) practices for sustainability with intersection of 5P - Framework

Sr. No.	Tribal Indigenous Knowledge	Tribal Indigenous Knowledge Practices	5-Framework	Sustainable Goal
1.	Agriculture	Ploughing, Biyoda Farming	People	SDG-1(No Poverty)
2.	Food	Leafy vegetables, Mushroom	People	SDG-2(Zero Hunger)
3.	Medicine	Various herbs like bamboo leaves	People	SDG-3(Good health and wellbeing

4.	Custom and Tradition	Sohray, sarhul, Baha	Partnership	SDG-16 Partnership for the goal
5.	Natural Resource Management	Jal, Jungle, Jameen	Planet	SDG 14 (Life Below Water) SDG 15 (Life on Land)

Major Findings

The tribals of Jharkhand has a very specific tribal indigenous knowledge system, various components and forms of tribal indigenous knowledge practices are there in Jharkhand which are still benefit of sustainable development such as Healthcare, Agriculture, food preparation, custom and Tradition, Natural resource management which is sustainable nature. Culturally relevant pedagogy is reflected in curriculum design, instructional strategies, and teacher-student interactions. Teachers who use CRP tailor their lessons to reflect the cultural knowledge, prior experiences, and learning styles of their students. This requires critical self-reflection and an understanding of sociopolitical contexts (Villegas & Lucas, 2002).Despite its formal inclusion, EE often lacks depth and experiential learning components. Critics argue that environmental topics are frequently taught in a didactic manner without fostering critical thinking or action-oriented approaches (Palmer, 1998). Additionally, limited teacher preparedness and lack of localized content hinder effective environmental learning (Ravindranath, 2007). While the benefits of CRP (Conservation Reserve Programs) are well-documented, challenges include a lack of training, resistance to change in institutional cultures, and superficial applications that tokenize culture (Sleeter, 2012). For CRP to be effective, it must go beyond the celebration of cultural holidays and address systemic inequities and power dynamics in education. Cultural relevance in pedagogy is not just a methodological choice but a commitment to educational equity and justice. By validating and incorporating students' cultural backgrounds, educators can create more inclusive, effective, and transformative learning environments.

Ethical Considerations

- Informed consent from participants
- Respect for intellectual property rights of indigenous knowledge
- Anonymity and confidentiality
- Benefit-sharing and community involvement

CONCLUSION

In conclusion, the exploration of the intersection between Tribal Indigenous Knowledge and sustainability through the lens of the 5P Framework in Environmental Education reveals a rich tapestry of insights and opportunities. This analysis has illuminated the profound wisdom embedded within indigenous practices and their potential to revolutionize our approach to environmental stewardship. The 5P Framework—encompassing People, Place, Participation, Partnerships, and Praxis—provides a comprehensive structure for integrating Tribal Indigenous Knowledge into modern sustainability efforts. By honouring the deep connection indigenous communities have with their environments, we unlock a wealth of time-tested strategies for living in harmony with nature. This synthesis of traditional wisdom and contemporary environmental education offers a powerful pathway forward in addressing the complex ecological challenges of our time. It emphasizes the importance of place-based learning, community engagement, and collaborative partnerships in fostering a more sustainable future. Moreover, it underscores the value of experiential learning and practical application—praxis—in cultivating a new generation of environmentally conscious citizens. As we stand at the crossroads of environmental crisis

and opportunity, the integration of Tribal Indigenous Knowledge into sustainability practices emerges as a beacon of hope. It reminds us that the solutions to our most pressing environmental issues may lie not only in cutting-edge technology but also in the ancestral knowledge that has sustained communities for millennia.Moving forward, it is imperative that environmental educators, policymakers, and community leaders embrace this holistic approach (Morrison; Robbins & Rose, 2008). By doing so, we can create more inclusive, effective, and culturally responsive environmental education programs that resonate with diverse populations and inspire meaningful action. The journey of exploring this intersection is far from over. As we continue to learn from and collaborate with indigenous communities, we open doors to innovative solutions and a deeper understanding of our place within the natural world (Ladson-Billings, 1995). This approach not only enriches our environmental education practices but also paves the way for a more sustainable, equitable, and harmonious relationship between humanity and the planet we call home. In embracing the wisdom of Tribal Indigenous Knowledge through the 5P Framework, we are not just preserving ancient traditions—we are charting a course towards a more sustainable future for all. This convergence of knowledge systems offers a powerful reminder that in the face of global environmental challenges, our greatest strength lies in our ability to learn from one another and work together towards a common goal of planetary stewardship.

REFERENCES

1. Aikenhead, G. S., & Michell, H. (2011). *Bridging cultures: Indigenous and scientific ways of knowing nature*. Pearson Canada.
2. Barnhardt, R., & Kawagley, A. O. (2005). Indigenous knowledge systems and Alaska Native ways of knowing. *Anthropology & Education Quarterly, 36*(1), 8–23. https://doi.org/10.1525/aeq.2005.36.1.008
3. Battiste, M. (2002). *Indigenous knowledge and pedagogy in First Nations education: A literature review with recommendations*. National Working Group on Education and the Minister of Indian Affairs.
4. Berkes, F. (2012). *Sacred Ecology* (3rd ed.). Routledge. Chakma, A., Pappuswamy, M., Chaudhary, A., Meyyazhagan, A., Anand, A. V., & Balasubramanian, B. (2023). Biodiversity and Indigenous Medicinal Knowledge of North East India: Navigating Climate Change Impacts on Medicinal Plants for Conservation and Advancement. In Plant Science Today (Vol. 10). https://doi.org/10.14719/pst.2374
5. Ellen, R. F., & Harris, H. (2000). Introduction. In R. F. Ellen, P. Parkes, & A. Bicker (Eds.), *Indigenous environmental knowledge and its transformations*. Harwood.
6. Harlem, B. G. (1987). Our common future. United Nations World Commission on Environment and Development. Rio de Janeiro: WCED.
7. Jaiswal, A., Gour, H., & Sagar, V. (2020). Dynamic Concept of Tribes in India. *Indian Journal of Dalit and Tribal Studies, 8*(1), 1–17. https://www.researchgate.net/publication/345758127
8. Kiggundu J (2007) Intellectual property law and the protection of indigenous knowledge. In: Mazonde I, Thomas P (eds) Indigenous knowledge systems and intellectual property in the twenty-first century; perspectives from Southern Africa. *Dakar Codesria*, pp 26–47
9. Knudston P, Suzuki D (1992) *The wisdom of the elders*. Stoddart LePena: Toronto
10. Ladson-Billings, G. (1995). Toward a theory of culturally relevant pedagogy. *American Educational Research Journal, 32*(3), 465–491. https://doi.org/10.3102/00028312032003465
11. Laiphrakpam, M., Aroonsrimorakot, S., & Shanker, A. R. (2019). Environmental education and awareness among students in India, Japan, and Thailand for sustainable development. *Interdisciplinary Research Review, 14*(2), 4853.
12. Lele, S.M. (1991). Sustainable development: A Critical Review. *World Development, 19*(6), 607-621. DOI: 10.1016/0305-750X(91)90197-P.
13. Lemke J (1994) What is postmodernism and why is it saying all these terrible things. *J Accel. Learn Teach*. http://academic.brooklyn.cuny.edu/edu/education/jlemke/papers/jsalt.htm 11/27/07 Accessed 16 Nov 2007
14. Losch, A. (2018). The need of an ethics of planetary sustainability. *International Journal of Astrobiology*, 1–8. https://doi.org/10.1017/ S1473550417000490
15. Majumdar, K., Chatterjee, D. The cultural dimension of environment: Ethnoscientific study on Santhal community in eastern India. *Int. j. anthropol. ethnol.* **5**, 16 (2021). https://doi.org/10.1186/s41257-021-00057-2
16. McKinley, E. (2005). Brown bodies, white coats: Postcolonialism, science, and Māori science education. *Cultural Studies of Science Education*, 1(2), 307–312.
17. Ministry of Education. (2020). *National Education Policy 2020*. Government of India.
18. Morrison, K. A., Robbins, H. H., & Rose, D. G. (2008). Operationalizing culturally relevant pedagogy: A synthesis of classroom-based research. *Equity & Excellence in Education, 41*(4), 433–452.
19. Ok, E. (2025, January 18). *Exploring Indigenous knowledge components for promoting sustainable development in the Santhal community*. https://www.researchgate.net/publication
20. Ostheimer, J. (2013). Nachhaltigkeit. Zum moralischen Gehalt eines Naturnutzungskonzpts. In: M. Vogt, & J. Ostheimer (eds), Wo steht die Umweltethik? (pp. 397–414). Marburg: Metropolis

21. P. S. (2024). Practices of Indigenous People are Leading Towards Sustainability. International *Journal for Multidisciplinary Research*, 6(1). https://doi.org/10.36948/ijfmr.2024.v06i01.12268
22. Palmer, J. A. (1998). *Environmental education in the 21st century: Theory, practice, progress and promise*. Routledge.
23. Ramana, M. V. (2012), What is education? https://shodhganga.inflibnet.ac.in/bistream/10603/8116/11/11chapter%202pdf.
24. Ravindranath, M. J. (2007). Environmental education in teacher education in India: Experiences and challenges in the United Nation's Decade of Education for Sustainable Development. *Journal of Education for Teaching*, 33(2), 191-206.
25. Rohmann, C. (1999). A world of ideas: a dictionary of important theories, concepts, beliefs, and thinkers. Ballantine Books, New York
26. Sachs, W. (2010). Environment. In W. Sachs (Ed.), The Development Dictionary: A guide to knowl edge as power (2nd ed.) (pp. 24-37). London, New York: Zed Books.
27. Sandhu, S., McKenzie, S., & Harris, H. (2014). Linking Local and Global Sustainability (Vol. 4). Springer. doi:10.1007/978-94-017-9008-6
28. Santillo, D. (2007). Reclaiming the Definition of Sustainability (7 pp). *Environmental Science and Pollution Research International, 14*(1), 60–66. doi:10.1065/espr2007.01.375 PMID:17352129
29. Sharpley, R. (2000). Tourism and Sustainable Development: Exploring the Theoretical Divide. *Journal of Sustainable Tourism, 8*(1), 1-19. DOI: 10.1080/09669580008667346.
30. Shobeiri, S. M., Omidvar, B., & Prahallada, N. N. (2007). A comparative study of environmental awareness among secondary school students in Iran and India. *International Journal of Environmental Research and Public Health*, 4(3), 235–242.
31. Sillitoe P (2002) Making anthropology work. In: Sillitoe P, Bicker A, Pottier J (eds) Participating in development: approaches to indigenous knowledge. Routledge, London
32. Silvius, G. (2018). Integrating sustainability into project risk management. In: M. Khosrow-Pour, et al. (eds), Global Business Expansion. Concepts, Methodologies, Tools, and Applications (pp. 330–352). Hershey: IGI GlobalSleeter, C. E. (2012). Confronting the marginalization of culturally responsive pedagogy. *Urban Education, 47*(3), 562–584.UNESCO. (2018). *Education for sustainable development: Learning to act, learning to care*. UNESCO Publishing.
33. United Nations. (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. Resolution adopted by the UN General Assembly on 25 September 2015. Retrieved from: https://sdgs.un.org/2030agendaVillegas, A. M., & Lucas, T. (2002). *Educating culturally responsive teachers: A coherent approach*. SUNY Press