



## Integrating indigenous knowledge systems in higher educational institutions of Tamil Nadu: Pathways to cultural preservation and sustainable development

Dennis S<sup>1</sup>, Dhivviyanandam I<sup>2</sup>, Azhagu Raj R<sup>3\*</sup>

<sup>1</sup> Department of Botany, North Bengal St. Xavier's College, Rajganj, Jalpaiguri, West Bengal, India

<sup>2</sup> Department of Mathematics, North Bengal St. Xavier's College, Rajganj, Jalpaiguri, West Bengal, India

<sup>3</sup> Department of Zoology, St. Xavier's College (Autonomous), Palayamkottai, West Bengal, India

### Abstract

This study examines the implementation of Indigenous Knowledge Systems (IKS) within the framework of higher educational institutions (HEIs) in Tamil Nadu, particularly focusing on initiatives in HEI. IKS is integrated through field visits, dedicated courses, and community outreach programs, aligning with Sustainable Development Goals (SDGs) and the National Education Policy (NEP) 2020. This research highlights the essential role of HEIs in preserving traditional knowledge, promoting sustainability, and enriching students' educational experience through exposure to cultural heritage. The study period taken for the investigation is from 2018 to 2023. We discuss the following aspects in our study: Teaching Indian language, Arts and Culture, History and Archaeology, Festivals and National Commemorative Days, Archaeological Sites, and Seminars on IKS etc. This Study deals with the integration of Indigenous Knowledge System (IKS) in Higher Educational Institutions (HEI) in Tamilnadu. Here we give a study on practices followed in A++ accredited autonomous HEIs completed the fourth cycle of accreditation. The paper also discusses the infrastructural and curricular challenges in scaling IKS initiatives in Tamilnadu, India.

**Keywords:** Indian knowledge system, indigenous knowledge system, arts and culture, history and archaeology, festivals and national commemorative days, and seminars on IKS

### Introduction

Indigenous Knowledge encompasses the demonstrations, customs, beliefs, comprehensions, revelations, and histories of Indigenous communities, developed numerous generations through deep engagement with a specific geographical area. Indigenous Knowledge, as defined by the United Nations, includes local knowledge unique to a given culture, accumulated over generations through interactions with the environment (Chikaire *et al.*, 2012; Emery, 1997; Salim & Monolisha, 2019; Kalaivania *et al.*, 2023, Seerangan and Venkata Ravi, 2023) <sup>[1, 2, 4, 9]</sup>. A significant gap exists in the documentation and validation of indigenous knowledge (IK) related to higher education, agriculture, animal husbandry, health, and allied fields. To address this, this study focuses on higher education institutions arts and science autonomous colleges in Tamil Nadu that are well-regarded for their accreditation, ranking, and overall performance. (Nisha and Arunachalam, 2018; Sujeetha and Ashokan, 2022 <sup>[7, 8]</sup>). Recognize the value of IKS in understanding traditional ecological practices, folk medicine, and cultural heritage. These aspects contribute significantly to environmental sustainability and social cohesion within local communities. The paper aims to: Evaluate the status of IKS integration in Tamil Nadu's HEIs, Analyze the curriculum and resources dedicated to IKS and Identify challenges and suggest policy recommendations for IKS integration. Reference the NEP 2020, which promotes the integration of IKS in the educational curriculum to foster cultural awareness and sustainability. UGC's 2023 guidelines recommend that 5% of the credits in undergraduate and postgraduate programs be dedicated to IKS.

### Methodology

Data was sourced from the NAAC portal, focusing on HEIs in Tamil Nadu accredited between 2018 to 2023, revealing that 54.88% of accredited institutions are located in Tamil Nadu, with a significant number achieving an A++ grade. In India totally 112 Autonomous Colleges have been accredited in 4th cycle out of which 54.88% are in Tamilnadu and rest 55% from other states in India (15.12% and 12.60 % from Karnataka and Kerala respectively). In Tamilnadu out of 49 Autonomous colleges, 14 Autonomous colleges have secured "A++" grade in 4th cycle of accreditation from the NAAC dashboard as on 05-09-23. Qualitative content analysis of course syllabi, field visit reports, and research publications to understand the IKS framework. Quantitative analysis of student participation in field activities and outreach programs were analysed.

### Results

#### 1. Curricular Integration of IKS

Tamilnadu HEIs incorporates IKS through various UG and PG courses, mandating IKS related credit courses, field visits, national days, harvest festivals, important days for education and hands on projects. UGC's guidelines for NEP compliance recommend credit courses in IKS, with 5% of total credits allocated for this purpose. In St. Xavier's College offering a Fieldwork and Community Engagement was a STAND Program. This outreach program engages students in rural villages to learn about traditional agriculture, climate adaptation, and indigenous medicinal practices. The program has adopted over 200 villages so far, and fieldwork is compulsory for SXC students to get a credit, fostering hands on learning.

**Table 1:** Curricular Integration of Indian Knowledge System (IKS) data of HEI Tamilnadu from the NAAC portal from the academic years 2018 to 2023

HEIs in Tamilnadu	1	2	3	4	5	6	7	8	9	10	11	12
Holy Cross College (Autonomous) Tiruchirappalli	✓	✓	✓	✓	✓							✓
Justice Basheer Ahmed Sayeed College For Women Teynampet	✓	✓		✓							✓	✓
Loyola College (Autonomous) Nungambakkam	✓	✓		✓		✓					✓	
Fatima College (Autonomous)				✓			✓	✓	✓		✓	✓
St. Joseph's College, Tiruchirappalli	✓	✓		✓						✓		✓
PSGR Krishnammal College For Women (Autonomous) Coimbatore	✓	✓		✓								✓
Thiagarajar College, Madurai	✓	✓		✓		✓						
M.O.P. Vaishnav College For Women (Autonomous), Chennai	✓	✓	✓	✓	✓							✓
The New College, Royapet Tah	✓	✓	✓	✓	✓			✓		✓	✓	✓
Sri S.Ramasamy Naidu Memorial College, Virudhunagar	✓	✓	✓	✓		✓			✓		✓	✓
PSG College Of Arts And Science (Autonomous), Coimbatore	✓	✓	✓	✓		✓			✓	✓	✓	✓
St. Xavier's College (Autonomous), Palayamkottai	✓	✓	✓	✓	✓	✓			✓	✓		✓

1. Pongal, 2. Teachers Day, 3. Independence Day, 4. Yoga Day, 5. Republic Day, 6. Bharathiyar Day, 7. Muthamizh Vizha, 8. Human Rights Day, 9. Constitutional day, 10. Sports Day, 11. Science day, 12. Women's day

In India, Higher Education Institutions (HEIs), particularly in Tamil Nadu, have integrated the celebration of various festivals and national observances into their educational curriculum to preserve and promote Indigenous Knowledge Systems (IKS) and foster cultural awareness. For more than decades, HEIs have celebrated a range of significant days, including pongal, Teachers' Day, Independence Day, International Yoga Day, Republic Day, Bharathiyar Day, Muthamizh Vizha, Human Rights Day, Constitution Day, Sports Day, National Science Day, and International Women's Day. These events are incorporated to reinforce traditional values, heritage, and civic consciousness among students, fostering a holistic educational environment.

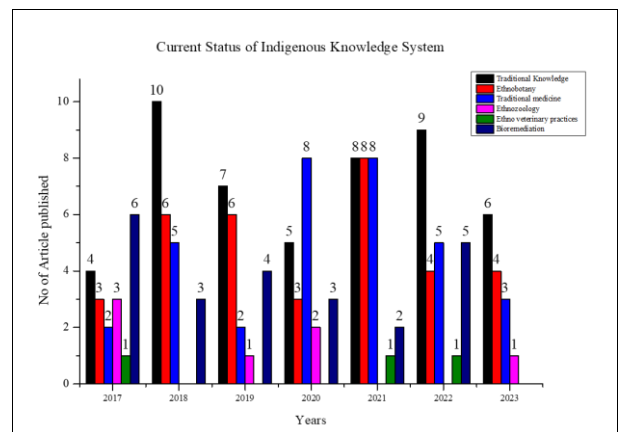
**Pongal:** As a harvest celebration, Pongal exemplifies three essential components of IKS: agricultural knowledge, environmental consciousness, and appreciation for the natural world and thanks to nature. In HEIs, Pongal celebrations introduce students about ecological cycles and traditional farming cultivation methods. **Teachers' Day:** This day, which has its roots in the reverence for "gurushishya" (teacher-student) Indian customs, highlights the significance of teachers in maintaining cultural continuity and the transmission of knowledge to the society through IKS. Students are introduced to India's history, freedom fights, and core values on Independence Day and Republic Day through programmes and celebrations. **International Yoga Day:** An essential part of IKS is yoga, an age-old Indian discipline. Observing this day helps students in HEIs connect with ancient health practices and enhances their physical, mental, and spiritual well-being.

**Tamil poet Shri.Subramaniya Bharathi (Bharathiyar Day)** celebrates Tamil Nadu's literary and linguistic legacy while paying tribute to poet and independence fighter Subramania Bharati. By conserving literature and language that represent indigenous values and knowledge, it is consistent with IKS. The Tamil Sangam "three Tamils" (Iyal means literature, Isai means music, and Natakam means drama), which are essential components of Tamil Nadu's native cultural expression, are preserved through Muthamizh Vizha, a celebration of the Tamil language and culture. IKS's emphasis on community welfare and respect for every individual within a society. **Human Rights Day** and **Constitution Day**, two celebrations that advance social justice, equality, and rights. **Sports Day:** Indigenous lives frequently incorporate traditional sports and physical conditioning. Sports Day connects to cultural identity by promoting indigenous games and physical wellness of the students in HEIs.

**National Science Day:** Celebrating scientific achievements, this day can draw attention to indigenous scientific knowledge, such as customs in astronomy, medicine, and agriculture. **International Women's Day:** Honoring women's efforts to preserving traditional crafts, cultural customs, and communal well-being is in line with IKS. By including these festivities, HEIs uphold the principles, expertise, and community-focused viewpoints that are essential to IKS while also paying tribute to India's rich cultural legacy.

**2. Research Outputs on IKS**

Between 2017 and 2023, Tamil Nadu HEIs published 149 research articles on topics like ethnobotany, ethnozoology, ethnobiology, ethno-veterinary, traditional medicine, and ethno-bioremediation, highlighting the academic interest in traditional knowledge.



**Fig 1:** Indigenous knowledge research papers published from 2017 to 2023 in Tamil Nadu

**Table 2:** Indigenous knowledge research papers published from 2017 to 2023 in Tamil Nadu

Years	TK	EB	TM	EZ	EVP	BR	Total
2017	4	3	2	3	1	6	19
2018	10	6	5	0	0	3	24
2019	7	6	2	1	0	4	20
2020	5	3	8	2	0	3	21
2021	8	8	8	0	1	2	27
2022	9	4	5	0	1	5	24
2023	6	4	3	1	0	0	14
Total	49	34	33	07	03	23	149

TK-Traditional Knowledge, EB-Ethnobotany, TM- Traditional medicine, EZ- Ethnozoology, EVP-Ethno veterinary practices, BR- Bioremediation

## Discussion

This curriculum structure provides students with opportunities to engage directly with indigenous practices, thus reinforcing IKS principles of ecological respect, intergenerational knowledge transfer, and cultural continuity. Celebrations like Pongal, Muthamizh Vizha, and National Science Day in HEIs also play a crucial role in preserving IKS. These events encourage students to participate in cultural rituals, traditional games, and discussions on indigenous science, thus linking classroom knowledge to broader community practices (Emery, 1997). Recognizing these celebrations in educational settings not only honors cultural traditions but also promotes the holistic worldview inherent to IKS (Berkes, Colding, & Folke, 2000).

Field visits and curriculum based IKS courses foster a deeper understanding of Tamil Nadu's indigenous practices, aiding in preserving these traditions while aligning with SDG objectives for sustainable ecosystems. Challenges in scaling IKS include, Limited resources and faculty training for IKS courses, Infrastructure demands, such as dedicated museums or archives, which are essential for comprehensive IKS integration (Kimmerer, 2002).. Expanding collaborations with local artisans and community leaders can enhance experiential learning. The NEP 2020 offers a framework to potentially institutionalize IKS across HEIs nationwide, fostering sustainable practices and traditional knowledge preservation.

## Conclusion

Tamil Nadu's HEIs highlight a robust integration of Indigenous Knowledge Systems (IKS), with 54.88% of autonomous colleges receiving high NAAC accreditation in the latest cycle. HEIs offers mandatory IKS courses and the outreach program, immersing students in local cultural practices aligned with NEP 2020. Research publications from 2017 to 2023, totaling 149 papers on traditional practices, reinforce academic interest in IKS. Challenges remain, including limited resources and infrastructure, but expanding partnerships with local artisans and NEP's supportive framework present promising avenues for nationwide IKS institutionalization.

## Conflict of the Interest

The authors declare that they have no conflict of interest.

## Author Contributions

Azhagu Raj.R conceptualized the study, designed the methodology, conducted the investigation, curated the data, supervised the project, and managed administrative tasks. Dennis.S and Dhivviyanandam performed the formal analysis, validated the results, and reviewed and edited the manuscript.

## Acknowledgements

The authors would like to express their sincere gratitude to Dr. A. Lourdusamy, Former Professor and Head, Department of Mathematics, and Mr. Karthick, Research Scholar, Department of Zoology, St. Xavier's College, Palayamkottai, for their invaluable support and encouragement throughout this study. The authors would like to acknowledge the assistance of Gemini and ChatGPTAI language tools in improving the clarity and readability of this manuscript.

## References

1. Chikaire J, *et al.* Indigenous traditional ecological knowledge in Tamil Nadu fisher folks: combating climate variability. *Indian Journal of Traditional Knowledge*,2012;18(4):781–792.
2. Kalaivania P, Pongomathi S, Priya RS. Transition spaces in traditional Tamil Nadu houses. *Indian Journal of Traditional Knowledge*,2023;22(2):426–432.
3. National Assessment and Accreditation Council (NAAC) Dashboard. Accreditation data for Tamil Nadu colleges, 2023. Retrieved from [https://assessmentonline.naac.gov.in/public/index.php/hei\\_dashboard](https://assessmentonline.naac.gov.in/public/index.php/hei_dashboard).
4. Salim SS, Monolisha S. Indigenous traditional ecological knowledge of Tamil Nadu fisher folks. *Indian Journal of Traditional Knowledge*,2019;18(4):781–792.
5. Anandarajaa N, S Nithilab, K C Sivabalan. Exploratory study on ITK practices prevailing in Pudukkottai district, Tamil Nadu. *Indian Journal of Traditional Knowledge*,2024;23(1):16-24.
6. Palanisamy Prakasha, Gopi Mohanakrishnanb, Ekambaram Gayathirib, Pushpakarani Ravi Kumarc, Kuppusamy Selvama, Rengrajan Manivasagperumald, *et al.* Indigenous medicinal plants of the Kani tribes in Kanyakumari District: Ethnobotanical documentation and quantitative study. *Indian Journal of Traditional Knowledge*,2024;23(1):39-48.
7. Sujeetha TN, Ashokan M. Traditional knowledge adopted by the tribal farmers of the Nilgiris district, Tamil Nadu in animal husbandry. *Journal of Applied and Natural Science*,2022;14(SI):171-175. <https://doi.org/10.31018/jans.v14iSI.3605>.
8. Nisha R, Arunachalam R. A Study on Awareness and Adoption of the Rational ITKs in Tea Crop among the Hilly Tribes. *Asian J. Agricultural Extension, Economics & Sociology*,2018;24(2):1-9.
9. Seerangan C, Venkata Ravi R. Integrating traditional knowledge with modern education in the Kolli hills. *International Journal of Business and Administration Research Review*,2023;10(2):46-58.