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Two-Day National Level e-workshop on Incorporating IKS in the Existing Curriculum: A Pedagogy Lab (TDNLW-2026)

Date: 13th & 14th March, 2026

DOIs:10.2017/IJRCS/TDNLW-2026

Special Issue - 46 August, 2026

Organized by:

The Lord's Universal College of Education
Daftari Road, Malad East, Mumbai, India

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Two-Day National Level e-workshop on
Incorporating IKS in the Existing Curriculum: A Pedagogy Lab

(Workshop Special Issue)

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Vidya Vikas Education Trust's

The Lord's Universal College of Education

(Linguistic Gujrati minority Institution | Affiliated to Mumbai University | Recognized by NCTE)

Off Daftary Road, Malad East, Mumbai, Maharashtra - 400097. Email: info@beateacher.in

IQAC Organised

Two-Day National Level e-workshop on

Incorporating IKS in the Existing Curriculum : A Pedagogy Lab



Date: 13th & 14th March, 2026 | Time: 10:00 a.m. - 4:00 p.m.

About the organizing Institution:

We, at The Lord's Universal College of Education under the aegis of Vidya Vikas Education Trust, function as creators of proficient facilitators, shaping the future citizens who will meet the demands of our dynamic society. We extend our sincere gratitude to our honourable Patron and Chairperson, a visionary leader, **Shri. Jesus Lall**, who has made a significant mark on academia. Working within a democratic culture, we are proud to fulfil his futuristic vision of 'REAL' (Redefining Education and Learning).

Universal Education is a huge family of Educational Institutions ranging from KG to PG with the inspiration of providing quality education to our student community.

Aligning with this foresight, we train educators to effectively balance advanced technology with core humanitarian values. Our Institution actively combines ICT-based instruction with soft skills training that empowers our student teachers with the skills of critical thinking, communication, empathy, and sincerity. By shaping emotionally resilient educators, we ensure they can effectively guide their students. This prepares the next generation to contribute meaningfully to an ever-evolving society, remaining deeply humane rather than becoming enslaved by AI dependency.

We also strive to generate academic knowledge wealth that benefits the broader educational community. To achieve this, we organize national and international seminars and webinars. These events focus on building capacity for teaching faculties at all levels, introducing advanced strategies and methodologies to enhance classroom learning.

We are pleased to build upon this momentum by introducing the report of our National-level e-Workshop, successfully organized in March 2026. This report comprises the participants' research-based products in the form of Lesson plans and conceptual and research articles.

About the e-Workshop:

Today's world faces a critical crisis of sustainability and ethics, often prioritizing vested interests over collective societal progress. To counter this, our education system must instil the timeless values practiced in India since ancient times. These ancient principles are still immortal and worthy of being embraced by modern society.

The education system must be equipped to inculcate in students these values, which are sustainable and universally applicable. Indian Knowledge System (IKS) introduced by NEP 2020 can prove to be a significant contributor to sensitizing the younger generation about the humanitarian treatment to be given to fellow citizens, irrespective of their personal, social, and economic status. It is hence, we felt the need to contribute towards the capacity building of the teaching faculty in applying IKS in their respective levels of academic streams.
We had planned to showcase the ways and means to connect the curriculum with the IKS. The foremost requirement that we believe is a critical understanding of IKS, with the challenges that initially teaching faculty may face.
The strategies and activities that we had planned for the workshop were very much related to the participants' respective knowledge areas. These participants were offered a first-hand learning experience for working on the existing syllabus to redesign it, focusing on IKS strategies. They had the choice to select between the second and the third sub-themes to work on the task in their respective institutions, which later were submitted to us as a mandatory assignment.
we suggested that the participants use experiential learning strategies that would help students to transform their learning into a real-life situation. In the Present webinar, we accordingly conducted a brief orientation for more clarity on this strategy.
The outcome of our sincere efforts is the compilation of the participants' literary contributions that can serve as guidelines for many more professionals, which will be available online on request. Aligning with our vision, the present e-workshop aimed at the following learning outcomes for the participants-

Objectives of the e-workshop:

- Develop a critical understanding of the concept, need, and challenges of integrating IKS in the teaching and learning process.
- Find out the connection between IKS and transformative pedagogy.
- Create a Lesson plan by integrating IKS with the existing syllabus.
- Develop an Instructional Module by creating a small unit based on IKS as an addition to the existing one.

Organizing Committee

PATRON

Hon'ble Shri. Jesus Lall
Chairman, Vidya Vikas Trust's,
The Lord's Universal College of Education

CONVENOR

Dr. Savita Manchekar,
I/C Principal

COORDINATORS

Dr. Malavika Ahlawat Asst. Professor

Dr. Asha A.K. Asst. Professor

Executive committee members

Mrs. Soma Guha (Asst. Professor)

Mrs. Hinal Chitalia (Asst. Professor)

Dr. Sunita Shah (Asst. Professor)

Mrs. Sheetal Dhotre (Librarian)

Mrs. Lalita Shenai (Admin)

The Eminent resource persons who oriented the Participants were as follows:

Session I **Keynote Address**	**Dr V. Reghu** Former Dean, Rajiv Gandhi National Institute of Youth Development, University of Kerala, Ministry of Youth Affairs, Govt. of India, TN.
Session II **Redesign the Content by Integrating IKS - analyse, reflect and create.**	**Dr. Puja Rai** Chief Operating Officer Excelsior Education Society, Thane (East)
Session III **Developing an IKS-based instructional module using interdisciplinary & multidisciplinary approaches in pedagogy**	**Dr. Madhavi Dharankar** Director, Head, Professor Department of Educational Technology, SNDT Women's University, Mumbai
Session IV **Valedictory Function**	**Dr. Ayushman Goswami,** Associate Professor, HOD, Regional Institute of Education, Ajmer, Rajasthan.

Message From e-Workshop Convenor.



Dr. Savita Manchekar
I/C Principal,
The Lord's Universal College of Education,
Malad East, Mumbai, Maharashtra

It brings me immense joy to share this special issue of our March 2026 National-Level e-Workshop proceedings with the readers. This journey was a great learning experience for me and my dedicated team, who showed outstanding teamwork from start to finish. Following up with participants was a massive task, as our team provided continuous guidance on planning and implementing the new lesson strategies learnt in the workshop. After collecting and meticulously editing every submission, we digitally compiled the work into a comprehensive handbook. This resource serves as a lasting reference to help everyone effortlessly integrate these collective materials into their regular classrooms.

We invite all educators who access this publication to share it widely within their networks. By doing so, you help advance the vital integration of the Indian Knowledge System (IKS) into modern teaching pedagogies.

Redesigning Content by Integrating Indian Knowledge Systems (IKS): Analyse, Reflect and Create

Dr. Puja Rai

Chief Operating Officer
Excelssior Education Society, Thane (East)

Education isn't just about handing over information. It's about teaching people to think, question, and eventually create something of their own suiting to the need of their learner's. NEP 2020 pushes us to root education in Indian culture and knowledge traditions, without losing sight of a fast-changing technologically evolving world — and that's exactly where Indian Knowledge Systems comes in. Not as an add-on chapter, but as a different lens on the content we already teach.

This session, "Redesigning Content by Integrating IKS – Analyse, Reflect and Create," was held for faculty members and B.Ed. students, with a simple goal: show them practical ways to bring IKS into everyday classroom teaching, across subjects.

The starting point was this — IKS integration doesn't mean squeezing in a separate unit on Indian heritage. It means asking whether Indian traditions already have something to say about the topic you're teaching, and building from there.

To make that concrete, the session offered a three-step framework: Analyse, Reflect, Create. Analyse asks the teacher to look at a topic they already teach and check — does Indian tradition have anything on this topic ? A story, a practice, a discovery, a text, a lived custom? This turns the teacher from someone delivering a syllabus into someone actively designing the learning experience.

Reflect pushes further. What values or questions does this knowledge raise? Is it still relevant today? What's worth learning from it, and what deserves to be questioned? This step matters because it keeps IKS from becoming something we just admire uncritically — instead it opens up real dialogue and comparison. Critical reasoning must not be erased from IKS.

Create is where it all comes together — turning the insight into something students actually do. A story becomes a case study. A traditional practice becomes an investigation. An old mathematical idea becomes a problem to solve. A philosophical question becomes a classroom debate.

The session walked through how this plays out subject by subject. In Maths, India's history with the decimal system and place value gives students a real, grounded entry point. In Geography and EVS, traditional water-harvesting systems and sacred groves become windows into sustainability. In History, Indian sources provide an insight into the culture and practices which in modified form are still running and helps them understand it better. In English, the Panchatantra, Jataka Tales, and the Ramayan and Mahabharat become material for comprehension, creative writing, and value-based discussion.

The same works in Political Science and Social Science — the Arthashastra, Ramayana and Mahabharata aren't just mythology here, they're springboards for talking about leadership, governance, duty, and hard ethical choices. Upanishads, Atharveda's ideas of wellbeing, wellness and self-awareness find a natural path in life-skills discussions in modern classrooms.

What was interesting is that this isn't limited to the humanities. Even Computer Studies can draw on India's traditions of logic and systematic thinking, while also asking students how traditional knowledge itself might be documented and preserved using today's technology.

The point, throughout, was never to swap modern knowledge for traditional knowledge. It's about putting the two in conversation — encouraging students to question, compare, spot the overlaps and the gaps, weigh evidence, and connect it all back to their own lives. That's very much in step with what NEP 2020 is asking for: multidisciplinary, experiential, critical learning that still stays rooted in Indian languages and values.

For the B.Ed. students especially, this reframes the lesson plan itself. Instead of just asking "what do I need to teach," they're encouraged to ask three sharper questions: What can I connect? What can I get my learners to reflect on? What can I help them create?

The session closed on this note — the future of IKS in our classrooms isn't about piling on more content. It's about redesigning how we teach in the first place. The teacher becomes the bridge between India's knowledge traditions and what today's a learner actually need.

The goal was never to pull students backward into the past. It's to help them draw wisdom from it, question it honestly in the present, and carry it forward all that is relevant and sustainable

Analyse. Reflect. Create. That's the path from knowledge to understanding — and from understanding to wisdom.

Report on the National-Level e-Workshop

"Incorporating Indian Knowledge Systems (IKS) in the Existing Curriculum: A Pedagogy Lab"

Date: March 13- 14, 2026

Organized by: The Lord's Universal College of Education

The Lord's Universal College of Education conducted a two-day National-level e-workshop on *'Incorporating Indian Knowledge Systems (IKS) in the Existing Curriculum: A Pedagogy Lab.'* The workshop aimed to integrate traditional Indian knowledge with contemporary educational practices, in alignment with the National Education Policy (NEP 2020). The workshop emphasized identifying, validating, and pedagogically integrating IKS to enhance teaching-learning processes. Around 75 participants from different parts of India were involved in the e-workshop, which required them to submit the task assigned at the end of this 2-day academic event. Principals, teachers, research scholars & student teachers participated in the workshop. A total of 13 participants registered for the research-based paper publication on the sub-themes as follows:

- "Redesigning the content by integrating IKS - analyze, reflect & create ".(The task was to create a lesson plan & reflect.)
- "Creating an additional unit based on IKS using interdisciplinary & multidisciplinary approaches in the pedagogy." (The task was to create an additional unit to the existing syllabus of the course prescribed in the institution & write a proposal for implementation.)

Participants who have opted for paper writing are required to write a research-based report based on the implementation of any one of the above-mentioned sub-themes. We are happy to publish these articles in this special issue.

The following experts enlightened the audience and brought good clarity on the Theme of the e-Workshop

1. Dr V. Reghu, Former Dean, Rajiv Gandhi National Institute of Youth Development, HOD at RGNIYD, Ministry of Youth Affairs, Govt. of India, TN
2. Prof. Dr. Puja Rai Pradhan, Chief Operating Officer, Excelssior Education Society, Mumbai
3. Dr. Madhavi Dharankar, Director, Head, Professor, Department of Educational Technology, SNDT Women's University, Mumbai
4. Dr. Ayushman Goswami, Associate Professor, HOD, Regional Institute of Education, Ajmer, Rajasthan.

Day 1 Overview

The workshop commenced with a Sarvadharma prayer and Vande Mataram. The inaugural session included a welcome address by the Principal of the host college, who outlined the objectives of the e-workshop.

Keynote Session - The keynote address by Prof. Dr. V. Reghu focused on *'Understanding IKS in Education: Concept and Challenges.'* The session highlighted the philosophical foundations of IKS, its relevance in modern education, and its inclusion under NEP 2020. The speaker discussed knowledge

sources such as *Darśanas* and *Lokavidya*, and emphasized empowering youth through culturally rooted education. The speaker also addressed implementation challenges and institutional strategies.

Curriculum Redesign Session - Dr. Puja Rai Pradhan conducted a session on 'Redesign the Content by integrating IKS - *Analyze, Reflect, and Create*.' She emphasized incorporating IKS across subjects and encouraged using diverse, less conventional knowledge sources to enhance engagement with suitable examples.

IKS in Existing Syllabus - Ms. Soma Guha discussed practical approaches to incorporating IKS into existing syllabi, highlighting challenges and solutions. The session was followed by a breakout activity in which participants developed lesson plans under faculty mentorship, using experiential and constructivist approaches. The principal reviewed the presentations and provided expert feedback.

Day 2 Overview

Day 2 began with a prayer and Vande Mataram, followed by a briefing on the previous day and the day's schedule by the principal ma'am Dr. Savita Manchekar. Dr. Malavika Ahlawat hosted the day.

Instructional Module Development - Dr. Madhavi Dharankar led a session on 'Developing IKS-based instructional modules using interdisciplinary and multidisciplinary approaches in the pedagogy.' The session emphasized ethical practices, sustainability, and self-realization as core elements of IKS. The session provided practical examples and templates for integrating IKS into the curriculum.

Extended Unit Orientation - Dr. Sunita Shah provided guidance on designing extended units within existing curricula. She outlined structured steps for developing instructional modules and highlighted key IKS domains.

Practical Application - Participants engaged in a second breakout session to design instructional modules incorporating IKS. The activity promoted collaborative learning, and participants presented their work and received constructive feedback from experts.

Valedictory session – The valedictory session included a report reading of the e-workshop by Ms. Hinal Parekh and a reflection by the participants. Dr. Ayushman Goswami gave a valedictory address on 'Transformative Pedagogy and IKS'. Dr. Savita Manchekar gave participants follow-up instructions. The session culminated with a vote of thanks by Dr. Asha A.K., followed by the National Anthem.

Analysis of the Feedback

The feedback collected indicated a high level of participant satisfaction. Most participants rated the workshop as *excellent* or *very good* across parameters such as content quality, organization, and delivery.

Key findings include:

- Strong understanding of IKS concepts and applications
- High appreciation for experiential and constructivist approaches
- Improved lesson planning and pedagogical skills

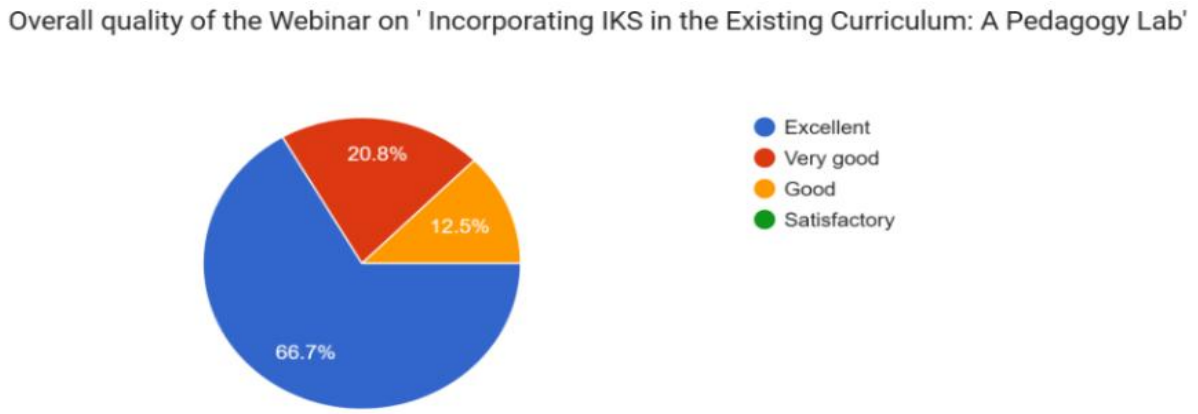
Participants described the workshop as highly enriching and professionally valuable. The sessions were well-structured and interactive, offering both theoretical insights and practical applications. The opportunity to design lesson plans and instructional modules under expert guidance was particularly beneficial.

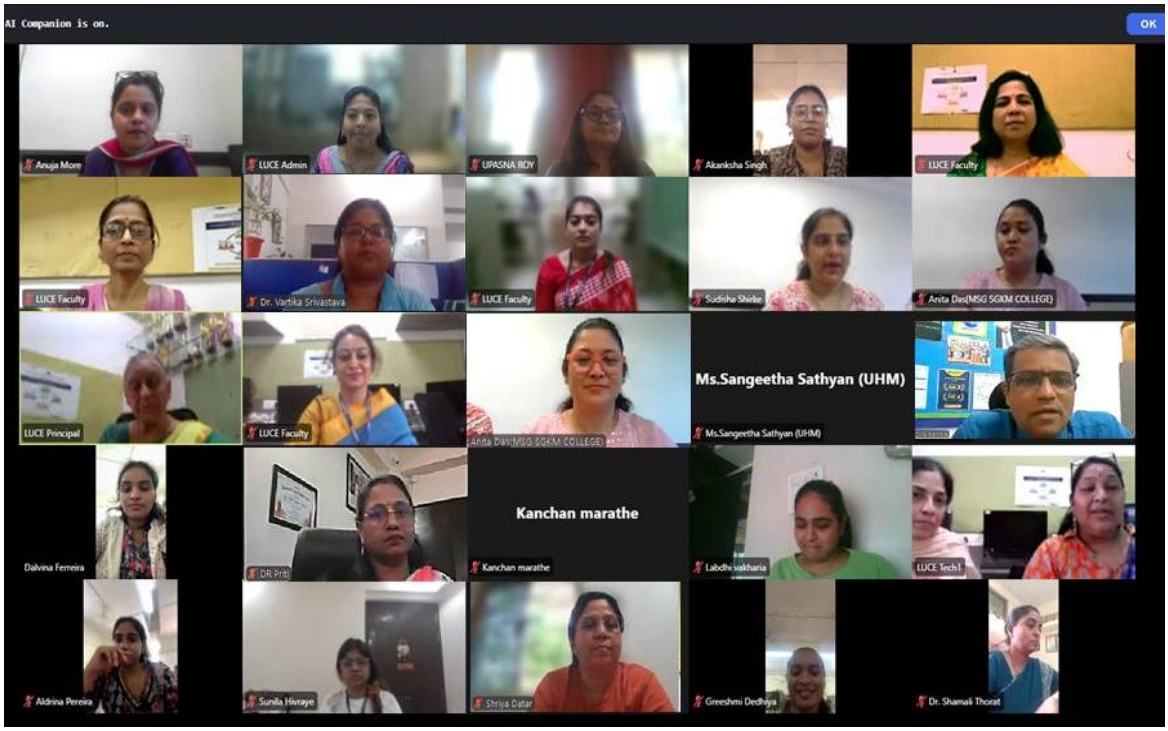
Many participants noted that the Principal's leadership and active involvement, along with the organizing team's efficient coordination, contributed significantly to the e-workshop's success. The experiential learning approach enhanced engagement and fostered meaningful learning outcomes.

The workshop successfully achieved its objective of promoting the integration of Indian Knowledge Systems into modern education. It provided participants with both conceptual understanding and practical strategies for implementing IKS. The program was well-organized, academically enriching, and impactful.

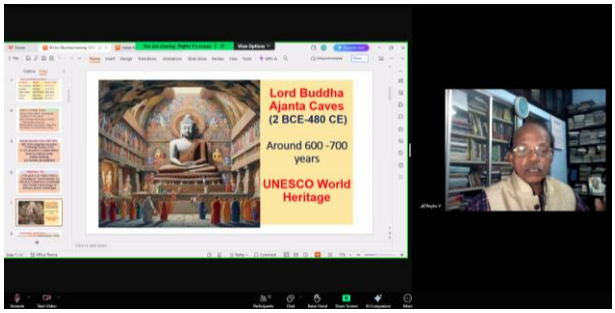
Future initiatives may focus on continued training, collaborative projects, and extended implementation support to sustain the integration of IKS in educational practices.

Distribution of feedback ratings across key parameters, Overall Rating of Webinar

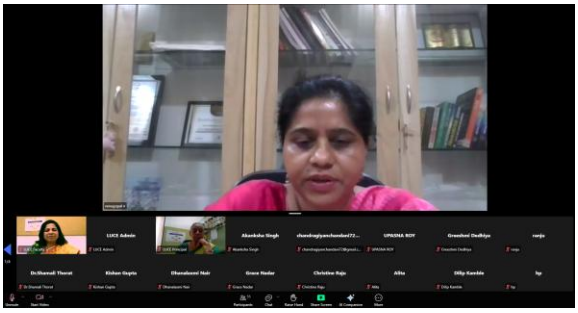




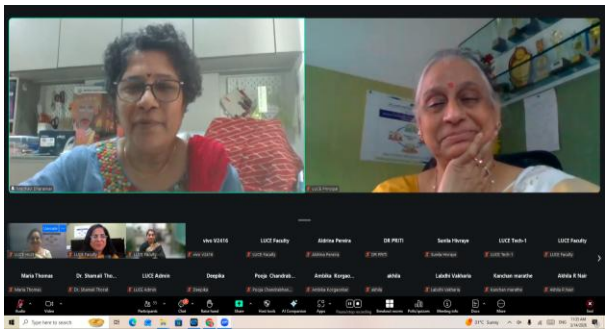
Workshop Participants



Keynote Address by Dr V. Reghu



Session II by Dr. Puja Rai



Session III by Dr. Madhavi Dharankar



Valedictory Function by Dr. Ayushman Goswami



Organising Team

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A Pedagogy Lab (TDNLW-2026) Date: 13th & 14th March, 2026

Understanding Indian Knowledge Systems in Education: Concept, Challenges and Implications for Economics Pedagogy

Dr. Jyotsna Sangore
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SNDT Women's University, Mumbai, Maharashtra, India
Email ID: jyotsna.sangore@gmail.com

Abstract: *Indian Knowledge Systems (IKS) represent India's diverse intellectual, cultural, scientific, technological, philosophical, and practical traditions developed over generations. These traditions include knowledge of agriculture, mathematics, medicine, environmental management, arts, governance, trade, and economic practices. The National Education Policy (NEP) 2020 emphasizes integrating Indian knowledge traditions into contemporary education to promote holistic development, cultural awareness, critical thinking, and problem-solving skills. This research paper examines the concept of IKS in education and explores its relevance and challenges, particularly in Economics pedagogy. Traditional practices related to agriculture, resource management, local markets, production, crafts, and community cooperation provide meaningful contexts for understanding economic concepts. The study follows a descriptive and analytical approach based on secondary sources, policy documents, and existing literature. Major challenges identified include inadequate teacher preparation, curriculum rigidity, limited authentic learning resources, language barriers, lack of standardization, and insufficient institutional support. The paper argues that IKS should not be treated merely as historical information or accepted without critical examination. Instead, it should be integrated through an inclusive, evidence-based, experiential, and learner-centered approach. In Economics education, local knowledge and traditional practices can connect theoretical concepts with students' real-life experiences and promote understanding of sustainable development. The study concludes that effective IKS integration requires appropriate teacher training, curriculum innovation, reliable learning materials, interdisciplinary collaboration, and meaningful engagement with local communities.*

Keywords: *Indian Knowledge Systems, Education, Economics Pedagogy, NEP 2020, Indigenous Knowledge, Experiential Learning, Sustainable Development, Teacher Education.*

1. Introduction

Education is closely connected with the society and culture in which it grows. India has a rich and diverse Indian Knowledge System (IKS) developed through written texts, oral traditions, community practices, observation, and practical experience. It includes knowledge related to agriculture, mathematics, medicine, ecology, architecture, philosophy, arts, governance, and economics.

The National Education Policy (NEP) 2020 encourages integrating IKS into education. It aims to develop critical thinking, creativity, cultural awareness, problem-solving skills, and holistic learning.

IKS is particularly useful in Economics education. Traditional farming can explain production and sustainability; water-management systems can explain scarcity and resource allocation, while

traditional crafts can help students understand labour, entrepreneurship, and employment. Historical economic practices can also be compared with modern taxation, public finance, and administration.

Therefore, integrating IKS into Economics can make learning more practical, relevant, and experiential. It helps students connect economic concepts with India's cultural heritage and everyday life.

Concept of Indian Knowledge Systems

IKS may be understood as a collection of knowledge traditions that have developed through multiple forms of knowledge transmission. These include:

- **Written knowledge** – classical and regional texts.
- **Oral knowledge** – stories, songs, traditions and community memory.
- **Practical knowledge** – agriculture, crafts, medicine and technology.
- **Apprenticeship** – learning through observation and participation.
- **Community knowledge** – locally developed practices for managing resources.
- **Ecological knowledge** – understanding of local environments and natural resources.

The contemporary IKS framework is consequently interdisciplinary rather than restricted to philosophy or ancient texts. The IKS Division's current research classification explicitly includes political, economic and strategic sciences, agricultural sciences, mathematics, physical sciences, architecture, medicine and other areas.

IKS and NEP 2020

NEP 2020 provides an important policy context for the contemporary discussion of IKS. The policy envisions education rooted in Indian ethos while preparing learners for participation in a rapidly changing world. It also emphasizes multidisciplinary learning, Indian languages, and cultural awareness.

Institutional initiatives have subsequently supported the policy environment. The UGC has issued the Guidelines for incorporating Indian Knowledge in Higher Education Curriculum and the Guidelines for Training of the Faculty for effective implementation in educational setups. (Both issued in 2023) Thus, they emphasize both including IKS in the curriculum by overhauling design and pedagogy and building the teaching faculty's capacity to implement the new design effectively.

The present study therefore considered the following objectives

2. Objectives of the Study

- To examine the concept and educational significance of Indian Knowledge Systems.
- To analyze the relationship between IKS and NEP 2020.
- To review existing literature on IKS integration in education.
- To examine the relevance of IKS for Economics pedagogy.
- To identify major challenges in integrating IKS into Economics education.
- To propose a pedagogical framework for integrating IKS with Economics.

3. Review of Literature

Tiwari and Tiwari (2023) examined economic thought within the Indian Knowledge System, with particular attention to concepts such as *Dharma, Artha, Purushartha*, and *Arthaśāstra*. The study highlights that Indian economic thinking was not limited to wealth creation but was also connected with ethics, social welfare, duties, and responsible use of resources. This study is highly relevant to the present research because it provides a theoretical foundation for understanding Indian economic thought and its possible relationship with contemporary Economics education.

Jadon, Saxena and Jadon (2025) explored the role of Indian Knowledge Systems in contemporary education in the context of NEP 2020. The study discusses the importance of traditional Indian

educational principles such as experiential learning, holistic development, ethical values, and cultural awareness. It suggests that IKS can be integrated with modern education without limiting it to historical knowledge. The study is relevant to the present research because it establishes the educational and pedagogical significance of IKS.

Singh (2025) reviewed different strategies for integrating IKS into contemporary education. The study examined curriculum development, pedagogical approaches, institutional support, and implementation challenges. It argues that effective IKS integration requires systematic curriculum planning, appropriate learning resources, and teacher preparation. This study is relevant to the present research because it provides a basis for analyzing the curricular and institutional challenges of introducing IKS into Economics pedagogy.

Nayak (2025) examined the integration of IKS into teacher education, focusing on curriculum, teaching methods, and teacher preparation. The study emphasizes that teachers need adequate knowledge and training to use IKS meaningfully in classrooms. It also highlights the importance of innovative and experiential teaching approaches. This is directly relevant to the present study because the successful integration of IKS into Economics teaching depends significantly on teacher competence and pedagogical preparedness.

Giri and Baskey (2025) analyzed the opportunities and challenges of integrating IKS into modern education under NEP 2020. The study identifies potential benefits such as cultural awareness, holistic development, interdisciplinary learning, and preservation of knowledge traditions. At the same time, it highlights challenges in curriculum reform, teacher training, standardization, quality control, and differences between traditional and contemporary knowledge systems. The study is particularly useful for the present research because it supports a balanced and critical analysis of both the possibilities and limitations of IKS integration.

Vashishtha and Bhardwaj (2025) conducted a systematic literature review on integrating Artha śāstra into modern education. Their study examined how ideas associated with Kauṭilya's economic and administrative thought can contribute to contemporary learning. The review identifies themes such as ethics, governance, organizational resilience, economic thinking, and educational application. This study is highly relevant to the present research because it directly connects an important Indian knowledge tradition with Economics education and pedagogy. It also indicates the need for further empirical research on the classroom application of Indian economic thought.

Hoque (2025) examined the integration of Indian Knowledge Systems into modern education. The study discusses IKS's contribution to culturally relevant education, holistic development, critical thinking, and sustainability. It argues that incorporating indigenous and traditional knowledge can help learners establish stronger connections between education, society, and their cultural environment. This study supports the present research by providing a broader educational basis for arguing that IKS can make Economics teaching more contextual, meaningful, and connected to students' real-life experiences.

Sagar and Sharma (2026) examined the integration of indigenous knowledge with modern pedagogy under NEP 2020. The study discusses how to incorporate traditional knowledge into contemporary teaching while maintaining academic quality and inclusiveness. It also identifies issues such as teacher preparedness, accessibility, differences between traditional and modern knowledge systems, and the need for critical engagement. This study is relevant to the present research because it provides a pedagogical framework. All the aforesaid studies support the author's perspective for integrating IKS with contemporary teaching, which can be applied to Economics through experiential, contextual, and comparative learning approaches.

4. Methodology

The study follows a qualitative descriptive and analytical research design as described below.

Analysis: IKS and Economics Pedagogy

Economics is often taught through theoretical concepts, mathematical models, graphs, and textbook-based explanations. Although these methods are important for developing conceptual understanding, students may sometimes find it difficult to connect abstract economic ideas with their everyday experiences. Indian Knowledge Systems (IKS) can provide contextual and practical examples that help students understand economic concepts in relation to local communities, traditional occupations, natural resources, and historical economic practices.

Interpretation of the Analysis

IKS can serve as a contextual bridge between theoretical Economics and real-life economic activities. Instead of teaching concepts only through definitions and diagrams, teachers can introduce a familiar traditional practice and then connect it with the relevant economic principle.

For example, traditional water management can explain scarcity and resource allocation. Students can investigate how a community distributes a limited resource and then relate their observations to the economic concept of choice.

Similarly, traditional agriculture provides an opportunity to study production and productivity. Students can compare inputs such as land, labor, water, seeds, and technology with the resulting output. This allows them to understand the factors of production in a practical context.

Traditional crafts and village industries are particularly useful for explaining labor, entrepreneurship and employment. Students can examine how artisans acquire skills, organize production, obtain raw materials, determine prices and access markets. Such activities can also introduce students to informal employment and local entrepreneurship.

Local markets provide an easily accessible context for understanding demand, supply, price, and exchange. A simple market survey lets students observe real economic behavior rather than relying entirely on hypothetical examples.

Studying traditional ecological practices can connect Economics with sustainable development. Students can examine whether methods of using land, water, and other resources provide economic benefits while protecting resources for future generations.

Finally, historical sources such as Artha sastra can encourage comparative learning. Students can examine selected ideas relating to taxation, trade, administration and state economic responsibilities and compare them with contemporary economic institutions. Such teaching should be based on reliable sources and should encourage critical comparison rather than assuming that traditional ideas are automatically superior to modern economic theories.

IKS has broad educational relevance and includes knowledge related to agriculture, ecology, governance, trade, and economic practices, which can support Economics learning by connecting concepts such as scarcity, production, labor, entrepreneurship, markets, and sustainability with real-life traditional practices. Experiential learning is effective for IKS-based Economics teaching through local markets, agriculture, crafts, and community resource-management activities.

Teacher training is essential because effective IKS integration requires adequate knowledge, resources, and appropriate teaching methods to understand the changing nature of the curriculum, which should be fully loaded with the traditional Indian Value system and practices that remain highly relevant to current economic transactions. A multidisciplinary approach is appropriate to facilitate learning of Economics by presenting Indian economic practices, current local practices, and age-old traditions of economic activities like the barter system, the historical development of Indian economics, etc.

Critical evaluation is important to ensure that traditional practices are studied using reliable evidence and are not accepted or glorified without examination.

Major challenges include limited resources, curriculum rigidity, language barriers, lack of trained teachers, and insufficient institutional support. A research gap exists because limited empirical research has examined the specific impact of IKS-based pedagogy on Economics teaching and student learning.

5. Conclusion

The analysis suggests that IKS can make Economics education more contextual, experiential, and learner-centered. Its value lies not simply in presenting traditional practices but in using them as case studies through which students can observe, analyze, compare, and apply economic concepts.

However, IKS-based Economics teaching should follow three principles:

Evidence-based: Traditional claims should be supported by reliable historical or empirical evidence.

Comparative: Traditional practices should be compared with contemporary economic approaches.

Critical analysis: Students should examine both the strengths and limitations of traditional practices.

Thus, integrating IKS can transform Economics from a predominantly textbook-oriented subject into a learning experience connected to local society, culture, economic activity, and sustainable resource use.

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The Concept of Zero in Indian Knowledge Systems:Mathematical Origins, Philosophical Foundations and Educational Implications

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Abstract : *Zero represents one of the most significant intellectual developments in human history. Although it denotes the absence of quantity, its presence enabled the emergence of modern Mathematics, scientific computation, and digital technology. The concept of zero originated in the intellectual traditions of the Indian subcontinent and gradually spread across cultures, shaping global mathematical practice. This paper examines the etymological, historical, linguistic, mathematical, philosophical, and pedagogical dimensions of zero within Indian Knowledge Systems (IKS). It discusses the concept's transmission from Sanskritic traditions to Arabic and European intellectual contexts, the mathematical formalization by the seventh-century scholar Brahmagupta, and the broader philosophical associations of śūnya in Indian thought. The paper further explores the relevance of zero in modern scientific applications, computational systems, and educational practice. By integrating mathematical understanding with cultural and philosophical perspectives, the study highlights how the concept of zero exemplifies the interdisciplinary richness of Indian Knowledge Systems and their continuing relevance in contemporary education.*

Keywords: *Indian Knowledge Systems (IKS), Zero, Mathematics History, Cross-Cultural Transmission, Interdisciplinary Education.*

1. Introduction

Among the numerous intellectual discoveries that have shaped human civilization, the concept of zero occupies a uniquely transformative position. At first glance, zero appears deceptively simple, representing the absence of quantity or nothingness. Yet within the structure of Mathematical reasoning, zero functions as one of the most powerful conceptual innovations ever developed. It represents a profound paradox: while signifying emptiness, it simultaneously enables the expression of infinity, magnitude, and complex numerical relationships. Without the concept of zero, the positional decimal system would collapse, rendering modern Mathematics, scientific computation, and digital technology practically impossible.

The intellectual origins of this remarkable concept are deeply rooted in ancient Indian scholarly traditions. Indian mathematicians and astronomers not only introduced the symbolic representation of zero but also articulated the mathematical rules governing its operations. These developments emerged within a broader intellectual environment that combined mathematical inquiry with philosophical reflection, astronomical observation, and practical problem-solving in fields such as trade, architecture, and calendrical calculations. The Indian numerical system, including the concept of zero, eventually traveled through intercultural exchanges to the Arab world and later to Europe, profoundly influencing the evolution of global Mathematics.

Within the framework of Indian Knowledge Systems (IKS), knowledge is not viewed as fragmented disciplinary information but as an interconnected network of philosophical insight, scientific

observation, and experiential wisdom. Mathematical knowledge in the Indian tradition often developed in dialogue with metaphysical reflections about the nature of existence, time, and the cosmos. The Sanskrit term **śūnya**, from which the concept of zero originates, literally means "void," "emptiness," or "absence." However, within Indian philosophical discourse, śūnya does not imply mere nothingness. Instead, it represents a deeper idea of potentiality, balance, and the generative ground from which creation emerges.

2. Literature Review

The concept of zero has been widely examined in the historical, mathematical, philosophical, and educational literature. Scholars have consistently recognized the development of zero as one of the most transformative intellectual achievements in the history of Mathematics.

Historical research on the origin of zero highlights the central role of ancient Indian mathematicians in conceptualizing and formalizing the number. Studies by Georges Ifrah argue that the positional decimal system and the use of zero as a numeral were among the most significant contributions of Indian Mathematics to world civilization. Similarly, Carl B. Boyer and Uta C. Merzbach note that the emergence of zero enabled the development of efficient numerical notation, which later facilitated advancements in algebra, astronomy and commerce.

The mathematical formulation of zero is closely associated with the seventh-century scholar Brahmagupta. His treatise ***Brahmasphutasiddhanta*** systematically described arithmetic rules involving zero and negative numbers, thereby establishing foundational principles for algebraic thinking. Historians of Mathematics such as George **Gheverghese Joseph** have emphasized that these contributions demonstrate the sophistication of mathematical thought within the Indian intellectual tradition. Research on the transmission of mathematical knowledge indicates that the concept of zero traveled from India to the Arab world through scholarly exchanges and translations. Mathematicians such as **Muhammad ibn Musa al-Khwarizmi** played a significant role in disseminating Indian numerical methods in the Islamic world. Later, these ideas entered Europe through Latin translations of Arabic texts, eventually transforming European mathematical practice during the medieval period.

Philosophical discussions of zero often connect to the broader Indian concept of śūnya, or emptiness. Scholars studying Indian philosophy have observed that śūnyatā in Buddhist thought refers not merely to absence but to reality's interdependent, dynamic nature. This familiarity with emptiness may have helped conceptualize zero as a meaningful mathematical symbol. In recent decades, educational researchers have examined the pedagogical implications of teaching mathematical concepts within cultural and historical contexts. Studies in Mathematics education emphasize that connecting mathematical ideas with historical narratives can deepen conceptual understanding and student engagement. Integrating culturally rooted knowledge systems into Mathematics education can therefore enrich learners' appreciation of both the intellectual and cultural dimensions of mathematical discoveries. Within the framework of Indian Knowledge Systems (IKS), scholars have increasingly emphasized the importance of revisiting classical Indian contributions to science and Mathematics. Contemporary academic discourse highlights how indigenous knowledge traditions can complement modern scientific education and promote culturally responsive pedagogy.

Thus, the literature suggests that the concept of zero represents not only a mathematical innovation but also a cultural and intellectual bridge connecting different civilizations. Its development demonstrates how mathematical ideas evolve through interdisciplinary interactions between philosophy, science, and practical knowledge.

3. Need of the Study

Zero is widely recognized as one of the most profound intellectual achievements in the development of Mathematics and scientific thought. Despite its fundamental role in modern computation, engineering, and digital technology, the historical and philosophical origins of zero—particularly its emergence within the intellectual traditions of the Indian subcontinent—are often insufficiently emphasized in contemporary educational discourse. In many Mathematics classrooms, zero is introduced primarily as

a numerical symbol or operational tool, with limited attention to its cultural, historical, and philosophical background.

Recent educational reforms in India, especially those articulated in the National Education Policy (2020) and the National Curriculum Framework (2023), highlight the importance of integrating Indian Knowledge Systems (IKS) into modern curricula. These frameworks encourage educators to connect scientific knowledge with its historical roots and cultural contexts. In this view, the concept of śūnya (zero) offers a powerful example of how mathematical innovation can emerge from a rich intellectual environment that combines philosophy, astronomy, commerce, and practical problem-solving. Furthermore, contemporary Mathematics education increasingly emphasizes interdisciplinary learning, conceptual understanding, and culturally responsive pedagogy. Exploring the development of zero from mathematical, philosophical, and pedagogical perspectives helps learners see Mathematics not merely as a collection of formulas but as an evolving body of knowledge shaped by human inquiry and cultural exchange. The study is therefore necessary to highlight the multidimensional significance of zero, situating it within Indian Knowledge Systems while also demonstrating its continuing relevance in modern education, scientific practice, and technological innovation.

4. Objectives of the Study

- To examine the historical, mathematical and philosophical foundations of the concept of śūnya (zero) within Indian Knowledge Systems.
- To explore the pedagogical relevance of zero in contemporary Mathematics education through culturally contextualized and interdisciplinary teaching approaches.

5. Research Design

The present study adopts a qualitative, exploratory research design grounded in historical and conceptual analysis. Because the research aims to examine the intellectual, philosophical, and pedagogical dimensions of zero rather than test a statistical hypothesis, a qualitative approach is appropriate. The study follows a historical–analytical and interpretative research framework, commonly used in studies examining the evolution of scientific ideas and intellectual traditions.

Research Approach: The study primarily uses a documentary and interpretative research method, focusing on analyzing historical texts, academic literature, educational policy documents, and contemporary research on mathematics education and Indian Knowledge Systems.

Sources of Data

The research relies on secondary sources, including:

- Classical mathematical texts such as *Brahmasphutasiddhanta*
- Historical studies on the development of Mathematics
- Scholarly research on Indian Knowledge Systems
- Educational policy documents such as NEP 2020 and NCF 2023
- Academic literature on culturally responsive Mathematics education

6. Method of Analysis

The collected sources are examined using thematic and conceptual analysis. The analysis focuses on several interconnected dimensions:

- Historical dimension – tracing the development and transmission of the concept of zero.
- Mathematical dimension – examining the formalization and operational rules associated with zero.
- Philosophical dimension – exploring the relationship between the mathematical idea of zero and the philosophical concept of śūnyatā in Indian thought.
- Pedagogical dimension – identifying teaching approaches that integrate cultural knowledge with mathematical learning.

Through this multidimensional analysis, the study aims to present zero as both a mathematical innovation and a culturally embedded intellectual achievement.

Etymology of Zero

The linguistic evolution of the word "zero" illustrates the historical movement of knowledge across civilizations. The earliest conceptual root of the term can be traced to the Sanskrit word "शून्य (śūnya)", which signifies emptiness, void, or absence. In classical Sanskrit literature and philosophical discourse, śūnya referred not merely to physical emptiness but also to a deeper metaphysical notion of potentiality and openness. Through intellectual exchanges between Indian scholars and the Islamic world, the Sanskrit term entered Arabic linguistic traditions as "ṣifr." The Arabic word similarly conveyed emptiness or an unoccupied place. Medieval scholars of the Islamic world played an important role in transmitting Indian mathematical knowledge to other regions, particularly through translations of scientific and mathematical treatises.

Later, the Arabic term entered Latin during the medieval period as "zephirum." Over time, linguistic transformations within European languages led to the Italian form "zefiro," which eventually evolved into the modern English term "zero."This etymological trajectory demonstrates the intercultural circulation of mathematical knowledge. The linguistic transformation from *śūnya* to *zero* reflects the transmission of intellectual traditions from India to the Arab world and subsequently to Europe.

Ethnological and Cultural Background of Zero

The emergence of zero cannot be fully understood without considering the broader cultural and philosophical context of Indian civilization. Indian philosophical traditions, particularly Vedantic and Buddhist schools of thought, frequently engaged with the concept of emptiness or void. In

Buddhist philosophy, the idea of śūnyatā refers to the fundamental interdependence and impermanence of all phenomena. Rather than representing absolute nothingness, śūnyatā signifies openness, relationality, and the absence of inherent permanence.

Such philosophical familiarity with emptiness may have provided a conceptual foundation for mathematical thinkers to represent the absence of quantity symbolically. In this sense, cultural and intellectual traditions created an environment in which the abstraction of zero could emerge.

Ancient Indian Mathematics was closely intertwined with practical disciplines such as astronomy, trade, architecture, and calendrical computation. Astronomical calculations required precise numerical systems that could represent extremely large quantities and complex positional values. Similarly, commercial transactions and measurement systems required reliable numerical notation. Within such contexts, the need for a placeholder in positional notation became increasingly evident. Thus, the conceptual development of zero was not an isolated mathematical event but rather the outcome of a broader intellectual ecosystem that integrated philosophy, science, and practical knowledge.

Mathematical Formalization of Zero

Although the conceptual foundations of zero developed gradually, the seventh-century Indian mathematician Brahmagupta formally articulated its mathematical rules. In his seminal work *Brahmasphutasiddhanta*, composed in 628 CE, Brahmagupta provided explicit rules governing arithmetic operations involving zero. He defined zero as the result of subtracting a number from itself. Furthermore, he described several mathematical properties of zero, including the following principles:

$$a + 0 = aa + 0 = aa + 0 = a$$

$$a – 0 = aa - 0 = aa – 0 =a$$

$$a \times 0 = 0a\backslash times\ 0 = 0a \times 0 = 0$$

These formulations established the foundational arithmetic rules that remain integral to modern Mathematics. By introducing systematic operations involving zero, Brahmagupta transformed the symbol from a placeholder into a functional number in calculations.

Brahmagupta's work significantly influenced later developments in algebra and numerical computation, and later mathematicians expanded on these principles, contributing to the evolution of advanced mathematical disciplines.

Real-Life Applications of Zero

The practical applications of zero extend across multiple domains of modern science and technology.

- **Computing:** Modern digital systems operate using the binary number system, where information is represented through combinations of 0 and 1. In this system, zero typically represents an "off" state or low voltage level, forming the fundamental basis of software and digital communication.
- **Physics:** In thermodynamics, absolute zero (0 Kelvin) represents the theoretical temperature at which molecular motion reaches its minimum possible value.
- **Finance and Economics:** Zero functions as a reference point indicating balance or break-even status, helping to determine profit, loss, credit, and debt in financial accounting.
- **Navigation and Geography:** Zero is used as a reference marker in global systems such as the Prime Meridian (0° longitude) and other coordinate frameworks that enable accurate geographical navigation.

These applications illustrate how a symbol originally developed to represent absence became a fundamental component of modern scientific and technological systems.

Relevance of Zero and Indian Knowledge Systems in Educational Reform: The renewed emphasis on indigenous knowledge traditions in contemporary Indian education policy has created new opportunities for integrating historical mathematical contributions into the curriculum. Both the National Education Policy 2020 and the National Curriculum Framework 2023 advocate including Indian Knowledge Systems in teaching and learning.

The National Education Policy 2020 encourages educational institutions to incorporate India's rich intellectual heritage into modern curricula. It recognizes that knowledge traditions from fields such as Mathematics, Astronomy, Medicine, Philosophy, and Linguistics have contributed significantly to global intellectual development. Within this context, the discovery and formalization of zero serve as a prominent example of India's contribution to world knowledge.

The policy also highlights the importance of interdisciplinary learning, critical thinking, and conceptual understanding. Teaching the historical development of zero helps students see Mathematics not merely as a set of procedures but as an evolving human endeavor shaped by cultural and intellectual contexts. Similarly, the National Curriculum Framework 2023 emphasizes experiential learning, conceptual clarity, and integrating cultural heritage into classroom instruction. Mathematics education under the new framework encourages teachers to adopt activity-based methods, historical narratives, and contextual examples that connect mathematical ideas with real-world experiences.

Including Indian Knowledge Systems also supports culturally responsive education. When learners encounter examples of scientific and mathematical innovation originating within their own cultural context, it strengthens their sense of intellectual heritage and academic confidence.

Implications for Mathematics Education: The study of zero shows how mathematical concepts can bridge historical knowledge, philosophical reflection, and contemporary scientific applications. Teaching Mathematics through such interdisciplinary perspectives encourages students to develop a deeper appreciation for the cultural roots of scientific knowledge. Educational strategies that combine historical narratives, experiential learning activities, and conceptual exploration can help learners move from concrete experiences to abstract mathematical understanding. In this way, zero becomes not merely a numerical symbol but a gateway to understanding the intellectual richness of Mathematics and its connection to human civilization.

Pedagogical Approaches for Teaching the Concept of Zero: Effective teaching of zero requires pedagogical strategies that move from concrete experience to abstract understanding. Integrating experiential learning, historical narratives, and interdisciplinary perspectives enables learners to understand both the mathematical and cultural significance of the concept.

Concrete Experience Method: Teachers may introduce the concept of zero through concrete experiences using physical objects. For example, learners can observe the gradual removal of items from a set until none remain, helping them understand the transition from quantity to absence.

Number Line Representation: A number line visually demonstrates that zero occupies the central position separating positive and negative numbers and represents numerical balance.

Place Value Demonstration: Examples such as 5, 50, and 500 illustrate how zero functions as a placeholder within the positional decimal system, significantly altering the magnitude of numbers.

Story-Based and Historical Approach: Narratives about historical mathematicians such as Brahmagupta can connect mathematical ideas with their historical and cultural origins.

Interdisciplinary Connections: The concept of zero enables interdisciplinary learning across multiple fields.

- **Mathematics:** number systems, place value, Algebra
- **Philosophy:** the concept of śūnyatā (emptiness and potentiality)
- **Science:** natural cycles such as day–night and seasonal change
- **Art:** circular designs and mandala patterns symbolizing balance and continuity

Activity-Based Learning Strategies

Activity-based methods help students actively engage with mathematical concepts. Examples include:

- Empty Box Activity: comparing a filled and empty container to represent zero
- Human Number Line: students stand in numerical order with one student representing zero
- Circle Drawing Activity: illustrating cycles in nature through circular shapes
- Creative Writing Task: imagining how zero might describe its role in Mathematics

Psychological and Social Interpretations of Zero: Beyond its mathematical significance, zero may also carry symbolic meanings in psychological and social contexts.

Intrapersonal dimension: Zero can represent mental clarity, balance, and renewal, similar to the reflective state encouraged in meditation.

Interpersonal dimension: Symbolically returning to a "zero state" may represent neutrality, humility, and openness in dialogue and conflict resolution.

Values and Ethical Dimensions in Mathematics Education: Teaching Mathematics also involves nurturing values such as accuracy, honesty, perseverance, and logical reasoning. Ethical mathematical practice includes responsible use of data, fairness in assessment, and integrity in problem solving. Integrating cultural and philosophical perspectives into Mathematics education encourages learners to appreciate both the intellectual and ethical dimensions of knowledge.

7. Conclusion

The discovery and development of zero illustrate the remarkable intellectual achievements of ancient Indian scholarship. From its origins in the Sanskrit concept of śūnya to its formal mathematical articulation by Brahmagupta and its eventual global dissemination, zero represents a powerful example of the interplay between culture, philosophy, and scientific innovation.

In contemporary educational discourse, revisiting such contributions provides an opportunity to integrate historical awareness, cultural knowledge, and mathematical understanding. Within the framework of Indian Knowledge Systems and current educational reforms, studying zero serves as an

important pedagogical tool for fostering interdisciplinary learning and intellectual curiosity. Ultimately, the symbol of zero reminds us that what appears as emptiness may also represent potential. In both Mathematics and philosophy, it signifies the space from which new ideas emerge and knowledge continues to expand.

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Reimagining Secondary Education through Indian Knowledge Systems: Reflections on Contemporary Challenges and Possibilities

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Abstract: *Secondary education plays a vital role in education because it shapes learners' intellectual development, identity formation, aspirations, employability, citizenship, and capacity to respond to emerging social challenges. Despite considerable development, secondary education still faces concerns related to access, quality and relevance, curriculum, assessment, teaching, technology, financing, and governance. As a faculty member in teacher education, my engagement with these concerns has led me to examine whether Indian Knowledge Systems (IKS) can provide meaningful conceptual and pedagogical resources for addressing some of these challenges. This reflective article presents my perspective on integrating IKS into teaching and learning in secondary education. This IKS perspective can help prospective teachers move from a predominantly examination-oriented understanding of secondary education towards a more holistic conception of learners, knowledge, and educational purpose.*

Keywords: *Indian Knowledge Systems, secondary education, teacher education, curriculum, pedagogy, assessment, educational challenges, faculty reflection, NEP 2020*

1. Introduction

Secondary education is an important phase in a young person's life. It is a period when students gradually develop their interests, consider possible careers, form their social identities, and develop their own ideas about values and responsibilities. What happens in secondary school, therefore, influences much more than academic performance. It can shape the way young people understand themselves, their communities, and the society in which they live.

As a faculty member in teacher education, I encounter the challenges of secondary education not only as academic themes but also as questions about preparing future teachers. When I engage with issues such as access, quality, curriculum, assessment, pedagogy, technology, financing, and governance, I increasingly ask a deeper question: What conception of knowledge should guide secondary education in the Indian context? This question has led me to reflect on Indian Knowledge Systems (IKS).

National Education Policy (NEP) 2020 provides an opportunity to reconsider the relationship between India's intellectual heritage and contemporary education. However, I believe that meaningful integration of IKS requires more than adding a few traditional topics to existing courses. It requires reflection on what counts as knowledge, how knowledge is constructed and transmitted, how learners engage with knowledge, and what purposes education should serve.

My engagement with IKS has therefore shaped how I approach teaching *Challenges and Issues in Secondary Education*. Rather than presenting the challenges as isolated administrative problems, I try to encourage prospective teachers to examine their philosophical, cultural, social, and pedagogical

dimensions. This article attempts to show how the challenges and issues in Secondary Education can be viewed through the lens of the Indian Knowledge System and its traditions.

2. Understanding IKS Beyond the Idea of Tradition

One of my initial reflections as a faculty member was that IKS can easily be seen either as a collection of historical facts or, at the other extreme, as an idealized representation of India's past. This approach does not align with an educational perspective.

As a faculty member, I understand IKS more broadly as encompassing the diverse knowledge traditions that have evolved in the Indian subcontinent across areas such as philosophy, mathematics, astronomy, medicine, agriculture, ecology, architecture, linguistics, literature, arts, ethics, and social thought. These traditions emerged in different historical, geographical, and cultural contexts and cannot be treated as one homogeneous system.

This diversity is pedagogically significant. When I introduce IKS while teaching secondary-education issues, I do not simply emphasize *"teaching Indian knowledge"*. Instead, I ask prospective teachers to explore:

How can Indian knowledge traditions help us rethink the purposes, processes, and practices of education today?

This shift—from IKS as *content* to IKS as a *perspective*—has become central to my reflection.

3. Reflecting on Access to Secondary Education

Access is often understood through indicators such as enrolment, retention, school availability, infrastructure, and transition rates. These are essential indicators, but my engagement with IKS has encouraged me to consider another dimension of access, i.e., the cultural and contextual accessibility of education.

A learner may physically attend school but still experience education as distant from their language, community, and environment and lived experiences.

In my teaching, I use this idea to encourage prospective teachers to examine the knowledge resources available within learners' own communities. Local agricultural practices, water-management traditions, crafts, folk literature, architecture, food systems and ecological knowledge can become entry points for classroom learning.

For example, a teacher working in a rural secondary school might ask students to investigate how water has traditionally been conserved in their locality. Students can document the practice, understand its historical context, examine its ecological principles, and compare it with contemporary water-management approaches.

Such an activity does not merely "add culture" to education. It changes the learner's position in relation to knowledge. The learner begins to see that knowledge exists not only in textbooks but also in communities and environments.

This has led me to view access as having at least three dimensions:

physical access + educational access + cultural/contextual access.

This is one of the important insights I bring into my teaching of secondary education.

4. Quality and Relevance: Rethinking What Counts as Quality

Discussions of quality in secondary education often focus on learning outcomes, examination performance, teacher qualifications, infrastructure, and institutional effectiveness. These dimensions are important, but I believe quality education must also answer a more fundamental question:

Quality education for what purpose?

If students achieve high examination scores but cannot apply knowledge, think independently, collaborate with others, or respond responsibly to social and environmental concerns, can we regard the education as fully successful?

My engagement with IKS has encouraged me to adopt a more holistic conception of educational quality. Indian intellectual traditions contain extensive discussions concerning the relationship between knowledge, conduct, self-discipline, ethical responsibility, and human wellbeing.

I do not interpret this as an argument for returning to an earlier educational system. Instead, I see it as an invitation to reconsider the purposes of contemporary education.

When teaching M.Ed. students, I encourage them to consider whether secondary education can simultaneously develop conceptual understanding, critical thinking, practical competence, creativity, ethical sensitivity, social responsibility, ecological consciousness, and self-reflection among learners. In this way, knowledge becomes relevant when learners can connect it with their lives, communities, and future responsibilities.

5. Curriculum: From Content Selection to Knowledge Dialogue

Curriculum is perhaps the area in which IKS offers the most visible possibilities. As a faculty member, I increasingly question the assumption that curriculum is simply a prescribed body of content that teachers transmit to learners. Curriculum also reflects choices about whose knowledge counts.

An IKS-informed approach can create opportunities for learners to encounter diverse Indian knowledge traditions within contemporary disciplinary frameworks.

For example:

Mathematics - Students can investigate historical developments in Indian mathematics, mathematical patterns in traditional designs, measurement practices, combinatorial ideas, and contributions to numerical knowledge.

Science - Students can investigate traditional agricultural practices, ecological knowledge, metallurgy, water conservation and medicinal knowledge while distinguishing historical practices from claims that require contemporary scientific validation.

Social Science - Local histories, community institutions, knowledge networks, oral histories, and traditional forms of resource management can enrich students' understanding of society.

Language - Classical, regional and oral literary traditions can provide opportunities to explore linguistic diversity and cultural expression.

Environmental Education - Traditional practices relating to forests, water, soil, biodiversity, and seasonal cycles can become objects of inquiry.

6. Assessment: Beyond the Examination

Assessment is one of the most persistent concerns in secondary education. The dominance of high-stakes examinations can encourage memorization and narrow definitions of achievement.

My reflection on IKS has strengthened my conviction that assessment should recognize the learner as a whole. If education values inquiry, practical understanding, ethical reasoning, creativity, and application, assessment should reflect these dimensions.

In my teacher-education practice, I encourage prospective teachers to consider alternatives and use qualitative assessment strategies and tools such as reflective journals, portfolios, project-based assessment, field studies, observation, presentations, peer assessment, self-assessment, community-based projects, and performance-based tasks.

An IKS related project illustrates this possibility. Rather than asking students to reproduce information about a traditional practice, a teacher could ask them to identify a local practice, document it, interact with knowledge holders, examine its relevance, compare it with contemporary approaches, and critically evaluate its strengths and limitations.

Such an assessment measures much more than memory. It examines inquiry, communication, analysis, application, and reflection.

- **Teaching and the Role of Teachers**

The issue of teaching is particularly significant for me because I help prepare teachers. Contemporary learners have access to information from multiple digital sources. Consequently, the teacher's role cannot remain restricted to transmitting information. The teacher increasingly needs to become a facilitator, mentor, designer of learning experiences, and evaluator of knowledge claims.

My engagement with Indian educational thought has encouraged me to reflect on the teacher-student relationship as one involving intellectual guidance, mutual respect, disciplined inquiry and ethical responsibility. I do not advocate mechanically reproducing historical teacher-learner relationships. Instead, I extract principles that remain educationally meaningful.

In my teaching of future teachers, I therefore emphasize the teacher as facilitator rather than authoritarian transmitter; the learner as active participant rather than passive recipient; dialogue rather than one-way communication; experience rather than memorization alone; and ethical development alongside academic achievement.

This has helped me connect historical educational ideas with contemporary learner-centered pedagogy.

- **Technology: IKS in the Digital Age**

Technology presents a particularly interesting challenge because it can simultaneously increase educational opportunity and deepen educational inequalities. I reflect that IKS and technology need not be viewed as opposites.

Digital tools can actually support the preservation, documentation, dissemination, and critical study of knowledge traditions.

For example, secondary students can:

- digitally document local oral histories;
- create digital maps of community resources;
- record traditional crafts;
- develop multimedia presentations;
- create digital archives of local ecological knowledge;
- interview community knowledge holders;
- compare traditional and contemporary practices; and
- Critically examine online claims about Indian knowledge.

7. Financing and the Value of Education

Financing is generally approached through expenditure, resource allocation, infrastructure, teacher recruitment and technological investment. These remain essential concerns. My engagement with IKS has nevertheless encouraged me to think about financing from the perspective of what society chooses to value.

If education is understood exclusively as preparation for employment, areas such as ethics, arts, culture, ecological responsibility and community knowledge may become peripheral.

A broader conception of education requires investment in experiences that may not produce immediate economic returns but contribute to social and human development. Schools can also develop

partnerships with local artisans, environmental organizations, museums, cultural institutions, universities, and community knowledge holders. Such partnerships can expand learning opportunities and connect formal schooling with social knowledge resources.

At the same time, I emphasize an important ethical principle: community knowledge should not simply be extracted for school projects. Knowledge holders should be respected, acknowledged, and meaningfully involved.

8. Governance: From Institutional Control to Ethical Participation

Governance is another challenge that is often treated primarily as an administrative issue. My reflection on IKS has encouraged me to think about governance through responsibility, participation, ethical leadership, and collective wellbeing.

Schools function within communities. Therefore, effective governance should involve meaningful participation of teachers, learners, parents and communities.

An example could be a school-community knowledge initiative in which students work with local community members to document ecological, agricultural, or cultural knowledge. Such initiatives can strengthen relationships between the school and its social environment.

For me, this suggests that educational governance should move beyond the question:

“Are institutional procedures being followed?”

to a broader question:

“Are institutional decisions contributing to the educational and social wellbeing of learners and communities?”

This ethical dimension has significantly shaped my understanding of educational governance.

My Faculty Reflection: From Teaching a Module to Transforming Perspective

The most significant change in my thinking is that I no longer see the challenges of secondary education as independent topics. Access, quality, curriculum, teaching, assessment, technology, financing, and governance are interconnected. IKS has helped me see these relationships more holistically.

Consequently, while teaching this module, I try to move beyond conventional question-and-answer approaches. I use discussion, case analysis, reflective writing, project ideas, and local examples to encourage prospective teachers to examine educational problems from multiple perspectives.

9. Critical Concerns in Integrating IKS

My reflection would be incomplete without acknowledging the concerns surrounding IKS integration.

First, India's knowledge traditions are extremely diverse. Presenting them as one unified system can oversimplify history and marginalize regional, linguistic, and community-specific traditions.

Second, traditional knowledge should not automatically be treated as scientifically validated knowledge. Some traditional practices may have considerable value, while others may require critical examination.

Third, teachers require adequate preparation. Simply instructing teachers to “integrate IKS” without providing conceptual and pedagogical support may lead to superficial implementation.

Fourth, curriculum integration should avoid creating additional content overload.

Fifth, ethical questions remain about ownership, representation, and appropriation of community knowledge.

These concerns reinforce my belief that IKS integration should be guided by criticality, inclusivity, evidence, contextual sensitivity, and respect for diversity.

10. Conclusion

My engagement with the challenges and issues of secondary education has led me to reconsider the role of Indian Knowledge Systems in contemporary education. I do not view IKS as a nostalgic return to the past. Nor do I view it as additional content to fit into an already crowded curriculum.

Instead, I see IKS as a lens for questioning and enriching educational thought and practice. Its meaningful integration requires critical scholarship rather than unquestioning acceptance. India's knowledge traditions must be explored in their diversity, historical contexts, and epistemological complexity, while contemporary scientific and educational knowledge must remain part of the dialogue.

As a teacher educator, I therefore see my role not merely as transmitting information about IKS but as facilitating a critical dialogue between Indian knowledge traditions and contemporary educational thought. Such dialogue can help future teachers design learning experiences that are contextual, inclusive, experiential, ethical and intellectually rigorous.

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Teachers' Readiness and Attitude towards Integrating Principles of Indian Knowledge Systems (IKS) for Implementing Inclusive Education

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Abstract : *Integrating Indian Knowledge Systems (IKS) into schools is a key goal of the National Education Policy (NEP) 2020. Although major changes suggest integrating IKS into modern schools, ensuring all children are included in education depends largely on the teachers who work in classrooms every day. This research examines teachers' attitudes, understanding, and readiness to use IKS ideas in inclusive classrooms. The study used a mixed-methods approach, collecting both quantitative and qualitative data from schools in India. The numbers showed how confident teachers felt about IKS and how much support they thought they had. The stories came from interviews that helped to understand the problems teachers face when trying to use IKS in the classroom. The results show that teachers like the idea of using Indian values like Vasudhaiva Kutumbakam, which means the world is one family, and Lokasamgraha, which means well-being for all. They think these ideas can help make classrooms caring and more accepting of different people. When it comes to actually using these ideas, teachers are not very ready. They face problems like not knowing exactly what IKS includes, lacking strong teaching materials, not getting enough training, and not knowing how to adapt old ideas to fit different kinds of students. The study concludes that even if teachers like the idea of IKS, they need support to make it work in the classroom. To make the policy plan more effective, it needs better tools and clearer guidance. Supporting teachers is key to turning the idea of IKS into daily lessons.*

Keywords: *Indian Knowledge Systems (IKS), Inclusive Education, Teacher Readiness, Teacher Attitude, Practical Obstacles.*

1. Introduction

Educational systems worldwide face two problems at once. They must keep people's culture alive while also ensuring all students have the chance to acquire the latest updated knowledge. In India, the release of the National Education Policy (NEP) 2020 was a step toward bringing back Indian Knowledge Systems (IKS). The policy aims to end a memorization-based teaching approach from the colonial era. Instead, it aims to create more complete learning environments grounded in values and connected to students' real lives.

At the same time, creating schools that are fair for everyone—where students from any background, whether they have a disability, different ways of thinking, or come from different economic or cultural groups, can learn together — is essential in modern education. Where these two goals meet is a question for teachers. How can India's traditional ways of thinking, teaching, and learning help make schools fairer and more welcoming for everyone today? Indian thinking has always said that people are different but still part of one group. It has always valued respect among people learning together in a community and teaching in ways that fit each student's abilities. These ideas can make schools fairer by shifting classrooms from strict rules to more understanding, flexible ways of learning. Making these ideas work

in real classrooms depends on the teachers. Teachers take what the education system says and make it happen in the classroom. If teachers don't understand the ideas, feel unsure, or don't believe in blending traditions with new teaching methods, the policy's goals won't be met. To know whether teachers are ready, we need to look at how they feel and what they actually do. This includes how they think about inclusion and how confident they are in their skills. Many teachers believe in including culture. They have trouble making it work. They face challenges such as rigid lesson plans, exams that allow little flexibility, a lack of specialized teaching materials, and limited training on integrating traditional ways of learning. This study examines teachers' perceptions of their skills and their readiness to use Indian Knowledge Systems in the classroom. By identifying what stops them and what they need, this research offers ideas for teachers, school program developers, and policymakers. The goal is to bring India's traditional knowledge into modern approaches to ensuring all students are included in learning.

2. Literature Review

Conceptual Foundations and Policy Intent: Tripathi and Tandon (2024) examined how Indian Knowledge Systems are being revived in Indian teacher education. Their study showed that although NEP 2020 strongly encourages incorporating Indian wisdom, teacher preparation programs still lack clear courses on local ethics, traditional science, or holistic learning ideas. Tripathi and Tandon said that integrating Indian Knowledge Systems requires curriculum redesign, specialized workshops for teacher certification, and new local teaching materials. Tripathi and Tandon's work focuses mainly on policy analysis and general teacher education, leaving a gap in how teacher education uses these ideas to help diverse classrooms and students with special needs.

Relevance and Pedagogical Challenges: Sharma (2025) examined how Indian Knowledge Systems fit into teacher training to create culturally responsive learning. Sharma argued that incorporating history, community values, and traditional ecological knowledge into lessons helps students feel proud of their culture and supports inclusive classrooms. Sharma identified major obstacles: few written records of local ways, teachers' limited awareness, and strict curriculum limits that restrict teaching flexibility. While Sharma highlighted the value of Indian Knowledge Systems for diversity, the study did not examine how ready teacher education feels or how teachers think about adapting Indian Knowledge Systems for students with mental or physical challenges.

The Attitude-Behavior Gap in IKS Implementation: Chakravorty and Nair (2026) studied pre-service and in-service teachers. The study measured teachers' awareness, attitudes, and readiness to use Indian Knowledge Systems in class. The numbers showed a gap between what teachers say they like about Indian Knowledge Systems and what teachers actually know and use. Some teachers felt unprepared and lacked confidence to turn ideas into real lessons. Although this study identified the gap, it focused on regular classrooms and did not examine special inclusive rooms.

Teacher Education for Inclusion Under NEP 2020:

Singh and Kumar (2025) examined how NEP 2020 deals with education and teacher readiness. They highlighted policy ideas to change pre-service curricula, provide training in inclusive teaching, and use adaptive technology. Singh and Kumar said teacher educators must equip student teachers with classroom management skills. However, the paper remained broad on inclusion tactics and did not examine how Indian Knowledge Systems could become tools for inclusive teaching.

Deshmukh and Joshi (2024) looked at how Indian teaching ideas—Adhikari Bheda and Pancha Kosha—work in today's primary schools. They said that these old ideas naturally support values by letting each child move at their own pace, caring about feelings, and avoiding competition. Deshmukh and Joshi saw that senior teachers liked the ideas. Junior teachers struggled to align them with modern inclusive rules and individual education plans. The work mainly used teacher reflections. Did not measure how confident teachers feel using these ideas.

Institutional Scaffolding and Resource Deficit: **Verma and Rao** (2025) surveyed central universities to see how schools support teachers in using Indian Knowledge Systems in lessons. They found that more than 68 percent of teachers said the lack of quality, peer-reviewed teaching aids was the main problem.

Verma and Rao said a school's readiness—in materials, admin support, and ICT—directly reflects teachers' confidence. While this research showed the need for school support, it looked at university teachers, not school teachers who run inclusive mixed-ability classrooms.

3. Research Gap

- **Absence of Empirical Focus on the IKS-Inclusive Intersection**

Tripathi & Tandon (2024) examine IKS adoption and policy intent in teacher education more broadly. Much existing research examines how to teach Indigenous Knowledge Systems as a subject or how to apply broad educational reforms under NEP 2020. Very little empirical work examines the intersection of Indigenous Knowledge Systems and inclusive education. Scholars have not closely examined whether teachers see IKS principles—like Vasudhaiva Kutumbakam or Lokasamgraha—as tools for promoting inclusion or as extra content added to the curriculum without deeper meaning.

- Lack of Operational Frameworks for Differentiated Instruction: Research by Sharma (2025) emphasizes the value of indigenous knowledge for promoting diversity in learning environments. Although theory suggests that Indigenous Knowledge Systems naturally support responsive teaching, there is no clear guidance on how teachers can translate these ideas into daily classroom practice. In classrooms, teachers need to create Individualized Education Plans and adapt instruction for students with different physical and cognitive needs. Yet current literature does not explain how concepts from Indigenous Knowledge Systems can be adapted to support students with specific learning disabilities or neurodivergent profiles.

- Domain-Specific Evaluation of the "Attitude-Readiness Disconnect"

Chakravorty and Nair (2026) found that teachers show strong positive attitudes toward IKS but low behavioral practice scores in standard classrooms.

The idea that people may hold attitudes but fail to act on them is well known in general education research. It has not been studied specifically in inclusive classrooms. Teaching in a setting requires special confidence, specialized training, and flexible teaching strategies. A high level of appreciation for heritage does not mean teachers feel ready or capable of meeting the actual needs of diverse learners in their classrooms.

- **General Inclusion Policy vs. IKS Pedagogy**

Singh & Kumar's (2025) policy analysis examines general teacher preparation and infrastructure for inclusive education under NEP 2020. Most policy discussions talk about changes—like barrier-free access, assistive technology, and general teacher training—but do not link those policies directly to how Indigenous Knowledge Systems should shape teaching methods. Research shows how policy language around Indigenous Knowledge Systems can become tangible, usable strategies for everyday inclusive classroom teaching.

- **Qualitative Framework Appreciation vs. Quantitative Self-Efficacy**

Deshmukh and Joshi (2024) explored Indian pedagogical frameworks like Adhikari Bheda (differentiated readiness) and Pancha Kosha (holistic development) through qualitative reflections. These traditional models are conceptually rich and align with inclusive goals. We lack quantitative data on how confident teachers feel when applying these models in real classroom settings. Without tools to measure self-efficacy, it's hard to know if teachers truly believe they can use ancient knowledge systems effectively within modern evaluation systems and standardized frameworks.

- **Higher Education Analysis vs. Ground-Level School Constraints**

Verma and Rao (2025) identified institutional resource shortages and infrastructure deficits as predictors of faculty readiness in university settings. The challenges university professors face differ greatly from those of secondary school teachers who run inclusive classrooms every day. School teachers deal with schedules, rigid board syllabi, pressure from standardized testing, and constant classroom management demands.

Despite this, most research does not examine the barriers schools face—such as a lack of age-appropriate Teaching-Learning Materials, limited hands-on workshops, or overwhelming administrative tasks—that make it difficult for teachers to adopt IKS-based inclusive approaches.

4. Objectives of the Study

- To assess school teachers' attitudes toward integrating Indian Knowledge Systems (IKS) principles into inclusive classrooms.
- To evaluate teachers' perceived self-efficacy and practical readiness to adapt IKS concepts for diverse learners.
- To identify the structural, pedagogical, and institutional challenges teachers encounter when implementing IKS-aligned inclusive education.
- To examine the relationship between teachers' formal training in IKS and their operational readiness in inclusive settings.
- To propose a pedagogical framework for incorporating IKS principles into teacher professional
- Development for inclusive education.

5. Research Questions

What are school teachers' current attitudes toward integrating Indian Knowledge Systems (IKS) principles into inclusive educational settings?

How do school teachers perceive their ability to modify and adapt IKS concepts for students with diverse physical, cognitive, and learning needs?

How does the relationship manifest between teachers' philosophical support (attitude) for IKS and their operational classroom practices (readiness) within inclusive environments?

How do school teachers translate NEP 2020 policy directives on IKS into practical inclusive pedagogical strategies?

How do school teachers rate their self-efficacy when aligning traditional pedagogical frameworks (such as Adhikari Bheda or Pancha Kosha) with modern inclusive assessment standards?

What specific institutional, resource-based, and curricular barriers hinder school teachers from implementing IKS-aligned inclusive education in ground-level school settings?

6. Research Methodology

6.1 Research Design

This study adopts a convergent mixed-methods design. In this Research Design, quantitative and qualitative data are collected and analyzed separately using methods suited to each type, then combined at the end for interpretation. I chose a mixed-methods design because educational research is complex and multifaceted. Quantitative data can show how teachers feel, how confident they are, and what barriers they see across people. But numbers alone cannot show the details of everyday classes, the real struggles teachers face, or the small changes they make to help students. Qualitative data gives stories, but it does not provide the broad numbers that let us generalize to many schools. By using both types, the quantitative part shows patterns while the qualitative part explains why those patterns exist.

6.2 Sampling Strategy

The target population includes in-service school teachers working in primary, upper primary, secondary, and senior secondary schools that operate under inclusive educational setups. A purposive sampling method is used to select participants based on simple criteria. Inclusion Criteria: Teachers must be full-time educators currently teaching in schools that enroll children with learning needs and special educational requirements. Quantitative Strand: Structured survey responses are collected from working school teachers across subjects and with varying levels of teaching experience. Qualitative Strand: A smaller group of teachers from the survey sample is selected for semi-structured individual interviews. These interviews aim to gather descriptions of their daily teaching experiences.

6.3 Research Instruments

Two simple, direct research instruments are used to collect data that answer the study's research questions.

- **Teacher IKS-Inclusion Readiness Scale** (TIIRS): The quantitative instrument is a self-administered questionnaire using a 5-point Likert scale: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.

It has two main sections: Section A (Background Information), which collects basic demographic details such as years of teaching experience, subject taught, and whether the teacher has attended any prior IKS or inclusive education workshops.

Section B (Core Dimensions): Contains six sub-scales with item batteries: Affective Attitude: belief in the value of Indian Knowledge Systems for building empathy and promoting inclusion. Pedagogical Adaptation: Confidence in changing teaching methods to meet diverse learners' needs. Behavioral Practice: How often teachers use examples from Indian Knowledge Systems in lessons. Policy Awareness: Understanding of National Education Policy 2020 guidelines related to Indian Knowledge Systems and inclusive education. Framework Self-Efficacy: Perceived confidence in combining knowledge frameworks with modern teaching plans. Institutional Support: Teachers' perception of access to teaching aids, training, and school-level support.

- **Semi-Structured Interview Protocol**: The qualitative instrument includes open-ended interview questions focused on three practical areas: How teachers explain Indian Knowledge Systems concepts to students with different learning abilities. Everyday difficulties such as lack of teaching materials, limited time, and pressure from syllabus demands. What specific kinds of support and training teachers feel they need from school authorities to improve classroom practice?

6.4 Simple Data Analysis Plan

The analysis framework avoids statistical models and focuses entirely on straightforward, easy-to-understand calculations. Quantitative Analysis (Basic Descriptive Math Survey responses are entered into a spreadsheet to calculate simple descriptive measures for each of the six dimensions:

Percentage Distribution: Calculating what percentage of teachers chose "Agree" or "Strongly Agree" compared to those who chose "Disagree" or "Strongly Disagree" for each question. Mean (Average Score): Finding the score for each dimension out of five to show overall readiness or attitude level—high, moderate, or low. Median (Middle Value): Identify the value for each dimension to understand central tendency without skew from extreme responses. Mode (Frequent Response): Determining which response option appears most often across different groups of teachers. Qualitative Analysis (Simple Thematic Coding): Reviewing interview responses line by line to identify recurring ideas and organize them into themes, including repeated phrases and key points. Group comments into clear categories—for example, "Lack of Teaching Aids," "Need for Practical Workshops," or "Unclear Guidelines." Select quotes from teachers to highlight important findings.

Data Integration: Present quantitative results—such as scores and percentage distributions—alongside qualitative themes from the interviews. For instance, compare a high percentage of attitudes in the survey directly with interview statements explaining why classroom implementation remains difficult. This integration connects numbers with real-life experiences and provides a picture of teacher readiness and challenges.

7. Result

The analysis evaluates teacher readiness across the 3 consolidated dimensions using simple descriptive statistics: Mean (M), Median (Mdn), and Mode (Mo) on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree).

Table 1
Analysis of Teachers' Readiness

Dimension Name	Assumed Mean (M)	Assumed Median (Mdn)	Assumed Mode (Mo)	Scale Interpretation
Affective & Cognitive Dimension	3.65	4.00	4.00	High Level (Positive belief, moderate policy awareness)
Pedagogical & Behavioral Dimension	2.33	2.00	2.00	Low Level (Low adaptation capability & rare practice)
Institutional & Resource Dimension	1.80	2.00	1.00	Very Low Level (Severe shortage of TLMs & training)

Detailed Dimension Analysis

- Affective & Cognitive Dimension
- Assumed Scores: Mean(M) =3.65, Median (Mdn) =4:00 , Mode(Mo) =4.00
- Statistical Interpretation: The Mode of 4.00 ("Agree") and Mean of 3.65 place this dimension in the High Level (3.5–5.0) category.
- Qualitative Insight: Teachers show strong philosophical agreement with traditional values like *Vasudhaiva Kutumbakam* for fostering classroom empathy, along with basic conceptual awareness of NEP 2020 mandates.

Pedagogical & Behavioral Dimension

- Assumed Scores: Mean(M) =2.33, Median (Mdn) = 2:00 , Mode (Mo) =2.00
- Statistical Interpretation: A Mode and Median of 2.00 ("Disagree") bring the Mean score down into the Low Level (1.0–2.4) range.
- Qualitative Insight: Teachers report significant difficulty in simplifying abstract traditional concepts for neurodivergent children or aligning ancient frameworks (*Adhikari Bheda*) with formal Individualized Education Plans (IEPs).

Institutional & Resource Dimension

- Assumed Scores: Mean(M) =1.80, Median (Mdn) = 2:00 , Mode(Mo) =1.00
- Statistical Interpretation: A Mode of 1.00 ("Strongly Disagree") shows that resource deficits are the biggest issue, producing the lowest score across the study.
- Qualitative Insight: Teachers report a complete lack of age-appropriate Teaching-Learning Materials (TLMs), visual guides, and hands-on professional development workshops.

8. Discussion

The theoretical discussion links assumptions to core educational theories exploring how the Attitude-Behaviour Disconnect functions within Indian Knowledge Systems (IKS) and inclusive education.

- **Constructivism and Culturally Responsive Pedagogy**

From a Constructivist perspective (Vygotsky's Social Development Theory), learning takes place in culturally meaningful contexts. The high scores in the Affective & Cognitive Dimension (M = 3.65) show that teachers see IKS as a tool for responsive teaching. Philosophical ideas such as Vasudhaiva

Kutumbakam (the world is one family) fit well with the socio-cultural base of inclusive education. Still, constructivist principles demand scaffolding. Without grounded Teaching-Learning Materials (TLMs), teachers cannot create the "Zone of Proximal Development" (ZPD) for children with special educational needs (CWSN).

- **Bandura's Self-Efficacy Theory**

Albert Bandura says that positive attitudes alone do not lead to action without self-efficacy—the belief that one can carry out specific behaviors. The low score in the Pedagogical & Behavioral Dimension (M = 2.33) shows a self-efficacy shortfall. Although teachers support IKS philosophically, they lack mastery experiences or vicarious modeling when adapting ancient concepts (for example, Adhikari Bheda or differentiated instruction) into modern Individualized Education Plans (IEPs).

- Systemic Implementation Barriers

The drop in the Institutional & Resource Dimension (M = 1.80) shows systemic implementation barriers. Schools expect frontline teachers to follow policy directives without providing support. Teachers stay stuck between two opposing forces: policy mandates that push for value-based IKS integration and administrative demands that require rigid syllabus completion and high standardized test scores.

9. Findings of the Study

The study shows five findings about how school teachers handle the integration of Indian Knowledge Systems (IKS) into inclusive education.

- The Disconnect between Teacher Beliefs and Daily Practice Finding: While teachers strongly endorse the values of IKS for fostering an environment (Mean M = 3.65), teachers' daily classroom integration of these principles remains minimal (Mean M = 2.33). Detailed Explanation: Teachers view core philosophical values—such as Vasudhaiva Kutumbakam (universal belonging) and Lokasamgraha (collective well-being)—as naturally aligned with inclusive schooling. However, this positive attitude does not automatically translate into classroom action. Teachers face constraints including tight timetables, dense board syllabi, and high-stakes examination pressure, which forces them to default to traditional lecture-based methods rather than integrating value-driven IKS activities.

- Difficulty Translating Classical Concepts into Individualized Education Plans (IEPs). Finding: Teachers report low self-efficacy when trying to align traditional pedagogical concepts like Adhikari Bheda (differentiated readiness) and Pancha Kosha (holistic sheath development) with modern diagnostic frameworks. Detailed Explanation: Although teachers conceptually appreciate frameworks that emphasize individualized learning and holistic growth, teachers lack clear guidelines on how to convert these classical ideas into measurable goals within an Individualized Education Plan (IEP). Without concrete conversion tools, teachers find it challenging to apply concepts to meet the structured needs of neurodivergent learners or children with physical disabilities.

- Severe Deficit of Specialized Teaching-Learning Materials (TLMs)Finding: The primary operational bottleneck facing teachers is a lack of age-appropriate, accessible, and modified IKS instructional materials (Mean M = 1.80). Detailed Explanation: Textbooks present IKS content in dense, abstract, or purely historical terms and do not provide differentiated teaching aids. Teachers report a shortage of multisensory tools, tactile materials, simplified storybooks, and visual aids to make traditional concepts understandable for Children with Special Needs (CWSN). Without these materials, teachers must design their own resources, adding to their workload.

- Gap between Policy Intent. Ground-level Operational Clarity Finding: Teachers show high-level awareness of National Education Policy (NEP) 2020 mandates regarding IKS, but they lack a clear operational understanding of how to implement these directives in multi-ability classrooms. Explanation: Policy documents strongly advocate for embedding indigenous heritage into school education. However, this macro-level mandate has not been effectively translated into micro-level classroom strategies for school teachers. Teachers know what the policy expects in theory. Teachers

lack administrative guidelines detailing how to balance cultural inclusion alongside standardized curricular requirements for diverse student groups.

- Inefficacy of Theoretical In-Service Professional Development Finding: Existing professional development programs fail to build adaptive teaching skills among teachers. Detailed Explanation: Current teacher training workshops focus primarily on discussions and historical appreciation of Indian heritage. They rarely offer skill-building sessions on content modification, adaptive lesson planning, or multisensory instruction tailored for inclusive classrooms. As a result, teachers complete these training programs without the confidence needed to execute IKS-aligned lessons for diverse learners.

10. Future Recommendation

- **Policy and Curriculum Recommendations**

Development of Standardized IKS-Inclusive TLMs: Educational boards such as NCERT and SCERTs should. Share special multi-sensory Teaching-Learning Materials. These could include storybooks, visual aids, and easy learning modules that fit IKS ideas to students with different thinking and physical needs.

Redesigning In-Service Teacher Training: Professional development workshops should move away from theory about cultural heritage. Training should concentrate on skills: planning lessons that adapt changing old ideas for students with special needs and putting IKS into Individual Education Plans.

Curricular Flexibility and Assessment Reforms: School boards should offer flexible curriculum plans and alternative ways to assess learning. Options could be storytelling, portfolio reviews, and ongoing peer assessments. This lets teachers spend time on value-based inclusive lessons without worrying about exams.

- **Recommendations for Future Academic Research**

Empirical Field Interventions: Tomorrow's scholars should carry out action research and experiments. They should design, try out, and measure how IKS-based lessons work in inclusive classrooms.

Longitudinal Impact Studies: Long-term studies must examine student outcomes. They should show how learning IKS in this way changes empathy, teamwork, emotional health, and school interest for children with special needs and for all other students.

Expanding Contextual Diversity: Future research should include more people from many places. It should compare how IKS is used in government and private schools and in city classrooms across India.

11. Conclusion

This study examined how Indian Knowledge Systems (IKS) can be integrated into education. It examined teachers' attitudes, readiness to act, and the barriers they see in schools. The study was driven by the National Education Policy (NEP) 2020. It also explored how Indian philosophies—like Vasudhaiva Kutumbakam (universal belonging) and Adhikari Bheda (differentiated readiness)—could help all kinds of learners, especially Children with Special Needs (CWSN).

Using a mixed-methods design that combines both qualitative data and a 3-dimensional Analytical Framework, the study found a clear gap between attitudes and actions:

High Philosophical Support: Teachers show very strong positive feelings about IKS values. Teachers see cultural ideas as natural ways to build empathy, fairness, and social harmony in inclusive classrooms.

Low Operational Readiness: Even though teachers have the right mindset, their practice remains limited. Teachers struggle to turn abstract traditional ideas into formal Individualized Education Plans (IEPs) or to adapt lessons for neurodivergent and special-needs students.

Systemic Resource Gap: The main obstacle to putting ideas into practice is a shortage of age-appropriate, accessible Teaching-Learning Materials (TLMs) and practical skill-based professional development workshops.

In conclusion, policy alone cannot bring change into classrooms. To move IKS-driven education from policy to everyday practice, we must close the gap between knowing ideas and implementing them. Giving teachers on the ground the right teaching tools, practical training, and school support is essential to build learning spaces that respect culture and support every student.

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Two-Day National Level e-workshop on Incorporating IKS in the Existing Curriculum:
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Experiential Learning and Indigenous Knowledge Systems: A Lesson on Food Safety

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Abstract : *Integrating Indigenous Knowledge Systems (IKS) into science education offers opportunities to connect learners' cultural experiences with contemporary scientific concepts. This paper explores integrating IKS through experiential learning pedagogy using a Grade 7 science lesson on food safety and food preservation. The lesson followed the 5E instructional model—Engage, Explore, Explain, Elaborate, and Evaluate—and incorporated traditional Indian practices such as fermentation, sun-drying, salting, pickling, using spices, storing grains with neem leaves, and using traditional vessels. These practices relate to contemporary scientific principles of microbial activity, antimicrobial properties, biochemical changes, temperature regulation, food preservation, and food spoilage. The classroom implementation involved observation, group investigation, documentation of household practices, analysis of packaged food labels, reflection on food wastage, and poster-making activities. Classroom observations and student outputs indicated active participation, stronger connections between traditional practices and scientific explanations, appreciation of cultural knowledge, and the development of problem-solving and sustainability-oriented thinking. The study suggests that experiential learning enriched with IKS can support culturally responsive, holistic science education by bridging traditional knowledge and contemporary scientific understanding.*

Keywords: *Experiential Learning, Indigenous Knowledge Systems, Food Safety, Food Preservation, Science Education, 5E Model, Ayurveda.*

1. Introduction

Contemporary science education increasingly emphasizes learning approaches that move beyond rote memorization and encourage inquiry, application, reflection, and meaningful engagement with learners' everyday experiences. Experiential learning provides an appropriate pedagogical framework because learners develop understanding through direct experience, observation, investigation, reflection, and application. Kolb (1984) conceptualized experiential learning as a process through which knowledge develops through the transformation of experience.

In the Indian educational context, Indigenous Knowledge Systems (IKS) offer significant opportunities to make science education culturally relevant and meaningful. Traditional Indian communities have developed and transmitted knowledge related to food preparation, preservation, storage, health, agriculture, environmental conservation, and sustainable living. Such knowledge can provide meaningful contexts for learners to investigate scientific concepts.

Food safety and food preservation offer a particularly suitable context for integrating IKS into school science. Traditional practices such as fermentation, sun-drying, salting, pickling, boiling, using spices, storing grains with neem leaves, and using clay and copper vessels can be explored in relation to microbial activity, antimicrobial properties, biochemical processes, temperature regulation, nutrient preservation, and food spoilage.

The 5E instructional model—Engage, Explore, Explain, Elaborate, and Evaluate—provides a structured framework for experiential science learning. It enables learners to progress from curiosity and direct experience towards explanation, application, and assessment. However, a gap often exists between scientific knowledge presented in formal classrooms and the indigenous or household knowledge learners encounter in everyday life. The present paper therefore explores an experiential Grade 7 science lesson on food safety that integrates IKS into contemporary scientific understanding. The lesson shows how familiar cultural practices can become meaningful contexts for scientific inquiry while promoting cultural appreciation, sustainability, and scientific literacy.

2. Objectives of the Study

The study was undertaken with the following objectives:

- To design a Grade 7 science lesson integrating Indigenous Knowledge Systems with modern food-safety concepts.
- To demonstrate how experiential learning can promote inquiry, observation, reflection, and application among middle-school learners.
- To explore the relevance of traditional Indian food-preservation practices in contemporary science education.
- To examine learners' ability to connect cultural practices with relevant scientific principles.
- To promote awareness of food wastage and sustainable food-preservation practices.

3. Review of Related Literature

3.1 Experiential Learning

Experiential learning emphasizes learning through experience and reflection. Kolb (1984) proposed that meaningful learning develops by transforming concrete experiences into knowledge. In science education, experiential approaches let learners observe phenomena, formulate explanations, test ideas, and connect classroom concepts to everyday situations.

3.2 The 5E Instructional Model

The 5E model consists of five interconnected phases: Engage, Explore, Explain, Elaborate, and Evaluate. The model gives learners opportunities to activate prior knowledge, investigate phenomena, construct explanations, apply concepts, and demonstrate learning. Research cited in the original study indicates that the 5E model can support improved science-learning outcomes and conceptual understanding (Joswick & Hulings, 2023; Polanin et al., 2024).

Recent scholarship has also highlighted the potential of integrating IKS into science education (Joswick & Hulings, 2023; Polanin et al., 2024; Mohanty & Behera, 2025; Rasmawan et al., 2025).

3.3 Indigenous Knowledge Systems and Science Education

Indigenous Knowledge Systems represent knowledge developed and transmitted within communities over generations. Integrating such knowledge into science education can provide culturally familiar contexts for learning. Recent literature suggests that IKS-based learning can contribute to conceptual understanding, motivation, cultural awareness, and meaningful engagement with science (Mohanty & Behera, 2025; Rasmawan et al., 2025).

3.4 Traditional Food Preservation and Ayurveda

Traditional Indian food-preservation practices include fermentation, drying, salting, pickling, boiling, and using spices and medicinal plants. Ayurveda also contains principles related to food, nutrition, preparation, preservation, and consumption. These practices offer opportunities to connect traditional knowledge with contemporary concepts of food safety, microbial activity, preservation, and nutrition (Sharma, 1999; Singh, 2026).

4. Methodology

4.1 Research Approach

The study adopted a **qualitative, classroom-based experiential approach**. It examined learners' engagement, responses, reflections, group outputs, and ability to connect traditional food practices with scientific principles.

4.2 Participants

The lesson was implemented in a single Grade 7 classroom comprising **72 students**. The implementation was conducted within a **35-minute classroom period**.

4.3 Lesson Design

The lesson used the **5E instructional model** and integrated Indigenous Knowledge Systems with contemporary scientific concepts related to food safety and preservation.

The lesson incorporated:

- Fermentation
- Sun-drying
- Salting
- Pickling
- Use of turmeric and other spices
- Storage of grains with neem leaves
- Use of clay pots
- Use of copper vessels
- Boiling
- Food-wastage awareness

4.4 Experiential Learning Activities

The learners participated in observation, investigation, comparison, documentation, discussion, reflection, and creative activities. They observed fresh and spoiled food samples, examined packaged food labels, documented household food-preservation practices, investigated food wastage, and prepared posters and flashcards.

4.5 Implementation of 5E's

Engage:
The lesson began with storytelling about traditional food-preservation practices, including preserving pickles for long periods. This activity activated learners' prior knowledge and stimulated curiosity.

Explore:
Learners observed fresh and spoiled food samples, identified visible changes such as fungal growth and discoloration, examined packaged food labels, and documented food-preservation practices followed in their homes.

Explain:
The teacher connected learners' observations with scientific explanations of microbial contamination, food spoilage, and preservation. The teacher discussed traditional substances such as turmeric and salt and their preservation properties.

Elaborate:
Learners examined traditional practices such as fermentation, sun-drying, and storage with neem leaves. They also reflected on food wastage and considered ways of preserving food without refrigeration.

Evaluate:
Learners demonstrated their understanding through posters, flashcards, group responses, observations, and explanations connecting traditional practices with scientific principles.

5. Other Contents: Learning Activities and IKS Integration

The experiential lesson was organized around five learner groups, each addressing a different dimension of food safety and preservation.

5.1 Micro-Detectives

Learners observed spoiled chapatis and idlis using magnifying glasses. They identified fungal growth, discoloration, and changes in odor and related these observations to microbial contamination and food spoilage.

5.2 Laboratory Experts

Learners examined packaged food labels and identified preservatives and additives such as sodium benzoate, citric acid, and artificial flavoring agents. They compared these with naturally used preservation agents such as turmeric, vinegar, spices, and salt.

5.3 Heritage Scholars

Learners documented household practices such as sun-drying papads, fermenting dosa batter, and storing grains with neem leaves. Learners connected fermentation to microbial activity and discussed neem leaves in relation to their antimicrobial properties.

5.4 Kitchen Guardians

Learners tracked food wastage and distinguished between quantitative and qualitative wastage. The activity also introduced the Ayurvedic concept of *Prana* and encouraged reflection on the value and preservation of food.

5.5 Eco-Watchers

Learners suggested sustainable food-preservation methods, including clay-pot storage and boiling. They explored how traditional practices may contribute to sustainability and linked clay vessels to temperature regulation and copper vessels to antimicrobial action.

6. Analysis and Discussion

The classroom responses were analyzed qualitatively through observation of learner participation, group activities, reflections, and student-generated outputs. The analysis indicated three broad dimensions of learning: **cognitive development, affective development, and psychomotor engagement**.

6.1 Cognitive Development

Learners connected familiar household practices with scientific concepts. For example, they linked fermentation to microbial activity and discussed using salt and turmeric in food preservation. Learners also identified visible indicators of food spoilage and compared natural and commercially used preservatives.

These observations are consistent with the literature suggesting that connecting everyday practices with scientific explanations can enhance conceptual understanding (Rasmawan et al., 2025).

6.2 Affective Development

The lesson generated appreciation for traditional knowledge and ancestral practices. Learners recognized that several practices followed in their homes had practical purposes related to food preservation and safety. This helped connect science learning with cultural heritage.

The culturally familiar context also appeared to make learners more receptive to classroom participation and discussion.

6.3 Psychomotor Development

The lesson involved hands-on observation, documentation, comparison, poster-making, and presentation. These activities encouraged learners to participate rather than remain passive recipients of information.

6.4 Development of Sustainability Awareness

The lesson encouraged learners to think about food wastage and sustainable preservation methods. Learners proposed alternatives to refrigeration and considered traditional methods such as clay-pot storage and boiling. This connected food safety with ecological responsibility.

6.5 Bridging IKS and Contemporary Science

One important outcome of the lesson was developing a bridge between Indigenous Knowledge Systems and modern scientific explanations. Rather than presenting traditional knowledge and modern science as separate domains, the lesson encouraged learners to examine traditional practices through scientific concepts.

This integration gave learners opportunities to see familiar cultural practices as starting points for scientific inquiry.

7. Results and Findings

The major findings of the classroom implementation were as follows:

- **Increased learner engagement:** Students actively participated in observation, discussion, investigation, documentation, and poster-making activities.
- **Improved conceptual connections:** Learners connected traditional practices such as fermentation, salting, use of turmeric, and storage with neem leaves to scientific concepts related to microorganisms and food preservation.
- **Recognition of traditional knowledge:** Learners demonstrated greater appreciation of household and ancestral food-preservation practices.
- **Development of inquiry skills:** Observing and comparing fresh and spoiled food enabled learners to identify indicators of food spoilage.
- **Development of problem-solving skills:** Learners suggested ways to preserve food without refrigeration.
- **Awareness of food wastage:** Learners distinguished between quantitative and qualitative food wastage and reflected on the importance of food preservation.
- **Development of creative and communication skills:** Poster and flashcard activities gave learners opportunities to communicate their understanding creatively.
- **Promotion of sustainability:** Learners identified traditional preservation methods with ecological relevance, including clay-pot storage and other low-resource practices.

Overall, the findings suggest that integrating IKS into experiential science learning can support cognitive, affective, and psychomotor learning outcomes.

8. Recommendations

Based on the classroom implementation, the following recommendations are proposed:

- **Integrate IKS into science lessons:** Teachers may incorporate culturally relevant traditional practices wherever meaningful connections with scientific concepts can be established.

- **Use experiential pedagogy:** Science teaching should provide opportunities for observation, investigation, experimentation, reflection, and application.
- **Adopt the 5E model:** The Engage–Explore–Explain–Elaborate–Evaluate sequence can provide a systematic framework for integrating experiential activities with conceptual learning.
- **Develop IKS-based teaching resources:** Schools and teacher-education institutions may develop lesson plans, activity sheets, case studies, videos, and other resources incorporating verified Indigenous Knowledge.
- **Provide teacher training:** Teachers should be equipped with knowledge of both relevant traditional practices and the scientific principles required to explain them accurately.
- **Promote sustainability education:** Use traditional practices involving low-resource preservation methods as contexts for discussing environmental responsibility and food wastage.
- **Strengthen assessment:** Future implementations should include structured pre- and post-assessments to provide stronger evidence of changes in learners' conceptual understanding.
- **Expand implementation:** Implement similar lessons across different schools, regions, and grade levels to examine scalability and adaptability.

9. Limitations of the Study

The study has certain limitations. First, the lesson was implemented in only one Grade 7 classroom comprising 72 students; therefore, the findings cannot be generalized to all learners, schools, or regions. Second, the lesson was conducted within a 35-minute period, which restricted opportunities for extended investigation and project-based learning.

Third, the evaluation primarily relied on qualitative reflections, group outputs, and classroom observations. The absence of structured pre- and post-tests limits the measurement of learning gains. Fourth, effectively integrating IKS requires teachers to understand both traditional practices and scientific principles. Finally, access to materials such as copper vessels and neem leaves may differ across schools and may affect the replication of the lesson.

10. Future Scope

Future studies may replicate the lesson across multiple schools and grade levels to examine its scalability. Longitudinal studies could investigate the sustained impact of IKS integration on scientific literacy, cultural awareness, and sustainability-oriented attitudes.

Future research may also incorporate standardized assessment tools to measure cognitive gains, motivation, retention, and engagement. Teacher-training modules may be developed to strengthen educators' ability to integrate IKS into science teaching.

The approach can further be extended beyond food safety to areas such as environmental science, health education, agriculture, and STEAM education. The original study also identifies the need to align such classroom practices with relevant national frameworks concerning traditional dietary knowledge and food safety.

11. Conclusion

The present study demonstrates the potential of integrating Indigenous Knowledge Systems with experiential science pedagogy through a Grade 7 lesson on food safety. The 5E model provided a structured pathway for learners to move from familiar experiences and curiosity to observation, scientific explanation, application, and evaluation.

Classroom implementation showed that learners were receptive to science lessons that acknowledged their lived experiences and household traditions. Traditional practices such as fermentation, sun-drying, salting, using spices, storing with neem leaves, and using traditional vessels provided meaningful contexts for understanding food preservation and safety.

The findings further suggest that IKS-integrated experiential learning can contribute not only to conceptual understanding but also to cultural appreciation, active participation, problem-solving, and

sustainability awareness. Such an approach can help bridge the perceived divide between traditional knowledge and contemporary science while making science education more culturally responsive and meaningful.

Therefore, Indigenous Knowledge Systems should not merely be presented as historical or cultural information. When appropriately contextualized and critically examined, they can serve as valuable starting points for scientific inquiry and experiential learning. Integrating IKS with contemporary pedagogy can consequently contribute to a more holistic approach to science education.

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Two-Day National Level e-workshop on Incorporating IKS in the Existing Curriculum:
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From IKS Workshop to Classroom Practice: A Reflective Study of the Implementation of IKS-Based Geography Lessons

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Abstract : *Indian Knowledge Systems (IKS) offer a culturally rooted, holistic perspective for reimagining teaching and learning in contemporary education. This reflective study examines the experience of a student-teacher who attended a workshop on Indian Knowledge Systems, developed Geography lesson plans based on the pedagogical guidance received, and subsequently implemented three lessons in a school setting. The study adopts a reflective practitioner-based research approach, focusing on the teacher's experiences before, during, and after classroom implementation. The reflections examine how the teacher adapted IKS principles to Geography, students' responses, and pedagogical challenges. The study indicates that IKS-based lesson planning encouraged the teacher to move beyond textbook-centered instruction towards contextual, experiential, interdisciplinary, and learner-centered approaches. The implementation also showed that indigenous knowledge can create meaningful connections between geographical concepts, the local environment, community practices, culture, and students' lived experiences. The study highlights the importance of teacher preparation, contextualization, reflective practice, and systematic pedagogical support for effectively integrating IKS into school education.*

Keywords: *Indian Knowledge Systems, Geography Education, Reflective Practice, Teacher Reflection, IKS Pedagogy, Lesson Planning, Experiential Learning.*

1. Introduction

Education is increasingly understood as a process that connects with the learner's social, cultural, environmental, and lived context. In India, the National Education Policy (NEP) 2020 has emphasized integrating Indian Knowledge Systems into education and encouraging learning rooted in Indian culture while remaining relevant to contemporary educational needs.

Indian Knowledge Systems represent a diverse body of knowledge developed over centuries through observation, experience, reflection, practice, and intergenerational transmission. These systems encompass areas such as agriculture, ecology, mathematics, astronomy, medicine, architecture, environmental practices, philosophy, arts, language, and community knowledge. Integrating them into school education can give learners opportunities to understand academic concepts through culturally familiar contexts.

Geography, in particular, offers considerable scope for integrating IKS. Geographical learning deals with the relationship between human beings and their physical and social environment. Traditional Indian practices related to water conservation, agriculture, settlement patterns, biodiversity, weather observation, natural resource management, and sustainable living can therefore be meaningfully connected to geographical concepts.

The effective integration of IKS depends significantly on the teacher. Attending a workshop may give teachers conceptual understanding and pedagogical strategies, but turning that knowledge into classroom practice involves interpretation, adaptation, experimentation, and reflection.

The present study emerged from such a professional learning experience. The teacher attended an IKS-based pedagogical workshop and, guided by the guidance received, developed Geography lesson plans. The teacher then implemented three lessons in the school classroom. The teacher then critically reflected on the planning and implementation process, students' responses, the challenges encountered, and the pedagogical learning that emerged from the experience.

Thus, the study does not merely examine whether IKS content was included in the lesson plans. It seeks to understand how participation in an IKS workshop influenced the teacher's lesson planning and classroom practice and what was learned through the actual implementation of the lessons.

2. Rationale of the Study

Incorporating IKS into school education cannot be achieved only by adding isolated examples of traditional knowledge to existing content. It requires teachers to rethink how they select, contextualize, present, discuss, and help learners experience knowledge.

Professional development programs and workshops can expose teachers to IKS principles and pedagogical possibilities. Nevertheless, the effectiveness of such professional learning becomes visible only when teachers apply it in authentic classroom situations.

Reflective practice provides an appropriate framework for examining this transition. Reflection enables a teacher to critically examine what was planned, what happened, how learners responded, what difficulties emerged, and how future practice can improve.

3. Objectives of the Study

The following objectives guided the study:

- To plan the lesson by integrating IKS-based learning experiences.
- To implement the IKS-based Geography lessons in the 9th grade.
- To explore the experiences that emerged during the implementation of three lessons based on Indian Knowledge Systems (IKS).
- To examine students' responses to IKS-based learning experiences.
- To reflect on the classroom implementation of the IKS-based lessons.
- To identify the pedagogical challenges faced during the implementation of the three IKS-based lessons.

4. Methodology

4.1 Research Approach

This study focused not only on measuring the effectiveness of IKS through observation, but also on understanding the teacher's professional learning and classroom experience after participating in an IKS workshop.

4.2 Research Context

The study followed the teacher's participation in a workshop on Indian Knowledge Systems and their integration into pedagogy. The workshop provided conceptual and pedagogical guidance on implementing IKS within existing school subjects.

Following the workshop, the teacher selected Geography as the subject area and prepared three lesson plans incorporating relevant IKS perspectives. Based on these lesson plans, I taught three lessons to Grade 9 students at St John Universal High School, Goregaon.

5. Procedure of Data Collection

5.1 The study was carried out in four main stages:

Stage I – Professional Learning

I attended the IKS workshop, where I learned about the meaning, importance, and educational relevance of Indian Knowledge Systems. During the workshop, I learned different ways Indian traditional knowledge, local practices, environmental knowledge, and cultural experiences can connect with classroom teaching.

The workshop helped me understand that IKS is not only about learning traditional facts. It can also make classroom learning more meaningful by connecting the subject to students' surroundings and experiences. I also understood the importance of selecting appropriate, authentic knowledge when planning IKS-based lessons.

Stage II – Lesson Planning

After attending the workshop, I selected suitable Geography concepts and prepared three lesson plans by incorporating IKS perspectives. I connected concepts from the Geography curriculum with Indian knowledge, traditions, and practices.

While planning the lessons, I did not want IKS to appear as a separate topic. Instead, I used it to help students understand geographical concepts through familiar situations and examples.

While preparing the lessons, I considered:

- the geographical concept that had to be taught;
- relevant Indian traditional knowledge;
- local and community practices;
- students' previous knowledge and experiences;
- opportunities for experiential learning;
- questions and discussions;
- connections with students' everyday lives; and
- active participation of learners.

While preparing these lessons, I realized that proper planning was very important. I had to think not only about what I wanted to teach but also about how students could relate the topic to their own surroundings.

Stage III – Classroom Implementation

I conducted all three lessons in the school classroom. During each lesson, I observed how students responded to the activities, questions, examples, and IKS-based connections.

I gave students opportunities to participate, share their ideas, discuss their experiences, and connect geographical concepts with what they already knew.

Stage IV – Reflection

After each lesson, I reflected on my teaching experience. I considered what went well, how students participated, the difficulties I faced, and what I could improve in the next lesson.

This reflection helped me understand that teaching is not a one-time process. Every lesson gave me something new to learn and helped me improve my planning and teaching for the next lesson.

5.2 Implementation of the Three Lessons

A) Lesson I: Initial Application of IKS-Based Pedagogy

The first lesson was my first real attempt to apply what I had learned from the IKS workshop in the classroom. I was initially unsure how to connect IKS with the Geography topic.

Instead of only explaining the geographical concept, I used familiar Indian examples and situations, such as the geographical area of the Harappan civilization. I asked questions and encouraged students to share what they had observed around them.

I noticed that students related better to the topic when I used familiar examples. Some students were interested in sharing their own experiences and observations. This made the classroom interaction more active.

My Reflection

After the first lesson, I felt that connecting the topic with students' surroundings made the concept easier for them to understand. At the same time, I realized that IKS-based teaching required more preparation than a normal textbook-based lesson.

I also understood that knowing about IKS theoretically and actually using it in the classroom were two different things. The first lesson gave me confidence to experiment and also helped me identify areas where I needed to improve.

B) Lesson II: Greater Integration of Context and Learner Experience

For the second lesson, I made some changes based on my experience from the first lesson. I paid closer attention to students' prior knowledge and everyday experiences.

I included more opportunities for students to observe, discuss, compare, and relate geographical concepts to Indian environmental and community practices.

I noticed that students participated more when I started with familiar situations instead of directly explaining an abstract geographical concept. Students were more comfortable sharing their own examples and opinions.

My Reflection

After the second lesson, I realized that IKS should not be limited to simply telling students about traditional practices or historical facts. It should help students connect knowledge, experience, values, surroundings, and geographical understanding.

I also felt my teaching became more interactive than in the first lesson. The first lesson helped me make better decisions while planning and conducting the second lesson.

C) Lesson III: Consolidation of Reflective Learning

I conducted the third lesson with greater confidence. By this stage, I had already learned from my first two lessons and was more familiar with using IKS-based approaches.

I included questioning, discussion, contextual examples, and application-based activities. I also tried to balance meeting the Geography learning objectives with giving students meaningful IKS-based learning experiences.

I was able to anticipate some possible student responses and classroom difficulties because of my previous experiences. Instead of strictly following my lesson plan, I made small changes according to the students' responses.

My Reflection

The third lesson made me realize how much I had improved through the process. I felt more confident while teaching and was better able to respond to students.

I understand that a lesson plan is a guide, but a teacher also needs to be flexible according to the classroom situation. The third lesson was therefore not just another lesson for me; it reflected what I had learned, observed, and improved during the first two lessons.

6. Reflective Analysis of the Classroom Experience

After implementing all three lessons, I reflected on my overall experience. I noticed a gradual shift in how I thought about teaching and learning.

6.1 From Content Transmission to Contextual Learning

Initially, I was mainly focused on completing the prescribed Geography content. After attending the IKS workshop, I started thinking more about how to connect the content to students' surroundings and experiences.

I realized that geographical concepts can feel difficult or abstract when taught only through textbooks. When I connected them with familiar situations, students could understand and discuss them more easily.

This experience helped me understand the importance of contextual learning.

6.2 Recognition of the Value of Local Knowledge

During the lessons, I realized that students themselves have a lot of knowledge based on their families, communities, and surroundings.

When I gave students opportunities to share their experiences, I noticed that they could contribute meaningful examples to the classroom discussion.

I realized I don't always have to be the only source of knowledge in the classroom. Students and their communities can also contribute valuable knowledge.

This changed my understanding of the teacher's role. My role was to provide information and create opportunities for students to share and learn from one another.

6.3 Increased Student Participation

I noticed that students showed more interest when the geographical concepts were connected with familiar places, practices, and situations.

Questions based on their surroundings encouraged them to participate and express their understanding.

My Reflection

I felt that students became more comfortable when they could relate the lesson to something they had already seen or experienced. This showed me that IKS-based teaching can make the classroom more participatory and learner-centered.

7. Challenges in IKS Integration

I also faced some challenges while integrating IKS into Geography lessons. One difficulty was finding appropriate, authentic IKS resources directly related to the Geography concepts.

Another challenge was time management. Discussions and experiential activities sometimes took longer than a standard explanation-based lesson. I also realized that I needed to be careful while selecting information because not every traditional claim can automatically be considered authentic or accurate. This experience taught me to use IKS responsibly. I need to check the credibility and relevance of the information before including it in my lessons. I also realized that discussion-based and experiential activities require better planning and time management.

7.1 Transformation in Teacher Confidence

I could clearly notice a difference between my first and third lessons. In the first lesson, I was experimenting and wasn't fully confident in the approach. In the second lesson, I started making changes based on what I learned. By the third lesson, I felt much more comfortable and confident.

The three lessons taught me that confidence develops through actual classroom experience. Learning, implementing, reflecting, modifying, and trying again helped me improve. I understood that professional development becomes more meaningful when I get opportunities to apply what I have learned in a real classroom.

8. Overall Reflection

Based on my experience of conducting the three Geography lessons using IKS, I observed the following findings:

a. IKS changed my way of thinking about teaching

The IKS workshop helped me understand that teaching Geography does not have to depend only on textbook explanations. I could connect the concepts with Indian knowledge, traditions, and everyday experiences. While teaching about the environment, I connected the topic with traditional Indian practices of conserving water and protecting natural resources. I realized the same concept becomes more meaningful when connected to our surroundings and culture.

b. IKS helped me connect Geography with real-life situations

I found that geographical concepts became easier to explain when I used examples that students could relate to in their daily lives. While discussing land use, I asked students to identify areas around their locality used for houses, shops, roads, playgrounds, gardens, and other purposes. I noticed students understood the concept better because they had already seen these examples around them.

c. Students participated more actively

I observed that students were more engaged when they had opportunities to share their own experiences and ideas. During a discussion on traditional environmental practices, students shared examples they had seen at home or in their communities, such as saving water, reusing materials, or growing plants. I realized students already have some knowledge from their homes and surroundings, and letting them share it increases their participation.

d. Learning became more learner-centered

The lessons gave students opportunities to answer questions, discuss, observe, compare, and give examples instead of only listening to my explanation. Instead of directly explaining different types of land use, I showed situations and asked students to identify whether they represented residential, commercial, recreational, or agricultural land use. I felt my role shifted from simply giving information to guiding students to discover and understand the concept themselves.

e. Students were able to connect traditional knowledge with Geography

I observed that Indian traditional practices could be used as meaningful examples while teaching geographical concepts. While discussing environmental conservation, I referred to traditional practices of conserving water, protecting trees, and using natural resources carefully. I understood that IKS can help students see the connection between Geography and the way people have interacted with nature for generations.

f. IKS-based teaching required more preparation

I realized that preparing an IKS-based lesson required more effort because I had to find suitable examples and ensure that the information was relevant and authentic. Before including a traditional practice in my lesson, I had to consider whether it was connected to the geographical concept and appropriate for the students. This taught me not to add traditional examples just to include IKS. They should have a clear connection with the topic.

g. Reflection helped me improve my teaching

I noticed a clear difference between my first, second, and third lessons. After each lesson, I reflected on what worked well and what needed improvement. After the first lesson, I realized that I needed to give

students more opportunities to speak. In the second lesson, I included more questions and discussions. In the third lesson, I was more confident and flexible. I understood that reflecting after every lesson helps me identify my mistakes and gradually improve my teaching.

h. I became more confident as a teacher

My confidence increased with every lesson because I learned from my previous experiences. During the first lesson, I was more dependent on my lesson plan. By the third lesson, I was comfortable making small changes according to students' responses. I realized that confidence comes with practice and classroom experience. The three lessons helped me become more comfortable with IKS-based teaching.

i. Time management was an important challenge

I observed that activities, discussions, and student participation required more time than a normal explanation-based lesson. A discussion that I had planned for a few minutes continued because students wanted to share their own examples and experiences. I realized that I need to plan the time more carefully and keep some flexibility in my lesson plan.

j. IKS helped me connect classroom learning with students' lives

The most important finding for me was that Geography became more meaningful when I connected it with students' surroundings, environment, culture, and experiences. Instead of treating land use as only a textbook concept, I encouraged students to observe how land is used in their own locality. I understood that learning becomes more meaningful when students can see the connection between what they learn in the classroom and what they experience in real life.

Overall, I found that IKS-based teaching made my Geography lessons more contextual, interactive, and connected with students' everyday experiences. At the same time, I understood that successful IKS integration requires proper planning, authentic information, time management, and continuous reflection.

The three lessons helped me understand that a teacher improves not only by learning new methods but also by trying them, observing students, reflecting on the experience, and making changes in the next lesson.

9. Discussion

From my experience, I understood that integrating IKS into Geography is not simply about adding a few traditional examples to a lesson. It is about making learning more connected to students' experiences, surroundings, culture, and environment.

The IKS workshop gave me the initial understanding, but I developed a deeper understanding only after applying the ideas in the classroom.

Implications for Teacher Education

My experience has helped me understand that teacher education should provide opportunities not only to learn about IKS but also to practice it.

For Teacher Education

Teacher education institutions can:

- provide teachers with an introduction to IKS and its classroom applications;
- conduct workshops followed by actual classroom implementation;
- encourage reflective lesson planning;
- provide authentic IKS resources;
- encourage interdisciplinary learning;
- help teachers check the authenticity of indigenous knowledge; and
- encourage teachers to reflect on their classroom experiences.

For School Education

Schools can:

- encourage teachers to use contextual IKS-based teaching;
- promote community-based learning;
- provide opportunities to learn from local knowledge;
- encourage experiential and field-based Geography learning; and
- provide opportunities for teachers to share their classroom experiences.

10. Limitations of the Study

This study was based on my personal reflective experience of implementing three Geography lessons. Therefore, the findings cannot be applied to every teacher, subject, or school situation.

The study mainly focused on my teaching experience and reflection rather than measuring students' academic achievement through formal assessment.

I realized that my experience represents only a small classroom context. In the future, I would like to explore IKS-based teaching with more students, different Geography topics, and different classroom situations.

11. Conclusion

This reflective study helped me understand how an IKS workshop can influence classroom teaching when I apply what I learn.

Through the three Geography lessons, I gradually changed my teaching approach. I moved from simply focusing on completing the content to connecting the concepts with students' surroundings, experiences, and familiar Indian contexts.

The most important learning for me was that IKS is not just about adding traditional knowledge to a lesson. It is about creating meaningful connections between knowledge, learners, culture, environment, and everyday life.

I also realized that meaningful improvement in teaching does not happen in one day. It develops through continuous practice and reflection. My first lesson helped me identify my difficulties, the second helped me make improvements, and the third helped me feel more confident.

Overall, this experience taught me that learning, planning, implementing, reflecting, and improving are essential to becoming a better teacher. I also understood that Geography is not limited to what is written in the textbook. It can connect to the environment, community, culture, traditional practices, and students' everyday experiences.

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Two-Day National Level e-workshop on Incorporating IKS in the Existing Curriculum:
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Analytical Reflection of Lesson Plans Created by the Participants as the Learning Outcome: Knowledge-Wealth Generation

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Abstract: *Indian Knowledge Systems (IKS) provide opportunities to make education contextual, experiential, value-based, and learner-centered. However, meaningfully integrating IKS into the existing curriculum requires teachers to move beyond awareness and apply IKS through appropriate teaching-learning practices. The present study examines the outcomes of a two-day online workshop titled* ***"Incorporating Indian Knowledge Systems in the Existing Curriculum: A Pedagogy Lab****." As a mandatory post-workshop task, participants designed an IKS-integrated lesson plan, implemented it in their workplaces, and submitted the lesson plan along with reflections on the experience. The study used 36 lesson plans and corresponding reflections as its basis. The study adopted a qualitative document-analysis approach supported by simple descriptive coding. The study analyzed the lesson plans and reflections in relation to three areas: techniques and strategies used, significant learning outcomes after implementation, and participants' reflections on their learning experiences. The author thoroughly analyzed the e-workshop outcomes and provided feedback on the workshop's effectiveness, focusing on constructivist activity methods that facilitate student learning. The completed lesson plans also emerged as useful pedagogical resources that may be preserved and shared for future educational practice.*

Keywords: *Indian Knowledge Systems, IKS, Pedagogy Lab, Experiential Learning, Lesson Plan, Teacher Reflection, Constructivist Approach.*

1. Introduction

Indian Knowledge Systems (IKS) connect curricular learning with culture, everyday life, the environment, and lived experience. For teachers, the challenge is to turn these connections into meaningful classroom practice. The two-day e-workshop, "Incorporating Indian Knowledge Systems in the Existing Curriculum: A Pedagogy Lab," addressed this challenge through lesson design and implementation. Participants developed IKS-integrated lessons, taught them in their respective settings, and reflected on the experience. The investigator, who organized the workshop, analyzed the resulting 36 lesson plans and corresponding reflections to examine the strategies participants used and what they learned through implementation. Several participants noted that they had not previously taught in the manner demonstrated during the workshop. Their reflections suggest that the opportunity to plan, teach, and reconsider a lesson helped them move beyond a conceptual understanding of IKS. The 36 plans also provide practical examples that other educators can revisit and refine.

The study is also grounded in **Nirantar Vikas**, understood here as continuous development and sustained improvement. Integrating IKS does not end with a workshop or a single lesson plan. Rather, it initiates an ongoing journey in which educators continuously explore new technologies, pedagogical strategies, and indigenous knowledge resources while retaining and revitalizing the values embedded in India's knowledge traditions.

2. Objectives of the Study

The study was undertaken with the following objectives:

- To analyze the techniques & strategies used
- To identify the significant learning outcomes after the implementation of the lesson
- To analyze the reflections of the participants in the context of their learning experience

3. Research Question

What was the level of effectiveness of the training workshop in terms of participants' learning outcomes as reflected through their task report

4. Research Methodology

Research Approach

The study adopted a **qualitative descriptive approach** using document analysis and thematic analysis. The study also used simple coding to organize recurring elements in the lesson plans and reflections.

The purpose was not to conduct an experimental evaluation of the workshop but to understand the learning demonstrated through participants' completed tasks.

Sample / Source of Data

The data consisted of: **36 IKS-integrated lesson plans** prepared by workshop participants; and

their corresponding **post-implementation reflections/feedback**.

The lesson plans covered different subjects and educational levels and represented the participants' attempts to integrate IKS into their existing curriculum.

Unit of Analysis

Each completed lesson plan and its accompanying reflection were treated as one unit for analysis.

Procedure of Analysis

The investigator systematically examined the lesson plans and reflections. Attention was given to:

- teaching techniques and strategies;
- integration of IKS with curricular content;
- experiential and learner-centered activities;
- application of knowledge to real-life situations;
- learner engagement and participation;
- learning outcomes;
- values and cultural connections; and
- reflections following classroom implementation.

The investigator assigned codes to recurring elements and grouped them according to the study objectives.

5. Coding Framework

To make the analysis systematic, the investigators developed a simple coding framework.

Table 1
Coding Framework for the 36 Lesson Plans and Reflections

Objective	Code	Indicator
Techniques & Strategies	T1	Experiential learning
	T2	5E / Constructivist approach
	T3	Activity-based learning
	T4	Group discussion / collaborative learning
	T5	Role play/storytelling / case-based/inquiry learning
Learning Outcomes	L1	Identification of IKS elements
	L2	Connection of IKS with subject content
	L3	Application to real-life situations
	L4	Creativity, critical thinking, or learner participation
	L5	Value-based / cultural learning
Participant Reflection	R1	Reflection on classroom implementation
	R2	Experience of a new/different teaching approach
	R3	Reflection on learner participation or interest
	R4	Recognition of the relevance/usefulness of IKS
	R5	Reflection for improvement or future application

The codes reflect elements actually visible across the lesson plans. For example, one lesson identifies experiential learning, inquiry-based learning, dialogic teaching and reflective learning, with outcomes involving interpretation, reasoning and creation. Another uses experiential learning, group discussion, activity-based learning and creative expression while connecting learning with honesty and responsibility.

Coding Procedure

Each indicator is coded as:

1 = Clearly evident in the lesson plan/reflection
0 = Not evident

The frequency of each code was calculated across the 36 lesson plans.

The percentage may be calculated as: Percentage = Frequency of the code ÷ 36 × 100

6. Findings and Analysis

The analysis revealed recurring patterns that could be grouped into **four broad learning-outcome themes**.

Table 2
Four Major Themes Emerging from the Analysis

Theme	Area	Major Outcome
Theme 1	IKS Integration	Connecting IKS with existing curricular content
Theme 2	Innovative Pedagogical Strategies	Using experiential, constructivist, and activity-oriented approaches
Theme 3	Experiential & Learner-Centred Learning	Increasing participation, application, creativity and real-life connection
Theme 4	Reflection & Professional Learning	Learning from implementation and reflecting on teaching practice

The systematic coding of the identifiable lesson plans revealed recurring patterns in the techniques and strategies used, learning outcomes achieved, and reflective elements evident after implementation. Each lesson plan was coded for the presence (1) or absence (0) of the predetermined indicators. The frequency and percentage of each indicator were then calculated to provide a descriptive overview of the emerging patterns.

Table 3
Objective-Based Coding of the Lesson Plans

Study Objective	Code / Criteria	Frequency (n=36)	Percentage
Techniques & Strategies Used	T1 – Experiential Learning	27	81.8%
	T2 – 5E / Constructivist Approach	13	39.4%
	T3 – Activity-Based Learning	26	78.8%
	T4 – Group / Collaborative Learning	30	90.9%
	T5 – Role Play / Storytelling / Case / Inquiry / Project Strategies	18	54.5%
Significant Learning Outcomes	L1 – Identification of IKS Elements	31	93.9%
	L2 – Connection of IKS with Subject Content	30	90.9%
	L3 – Application to Real-Life Situations	22	66.7%
	L4–Creativity/Critical Thinking /Participation	27	81.8%
	L5 – Value / Cultural / Ethical Learning	30	90.9%
Reflection on Learning Experience	R1 – Reflection Evident in Lesson / Task	26	78.8%

7.Interpretation of the Coding

The coding indicates that the lesson plans reflected a strong orientation towards IKS integration and learner-centered pedagogy. Identification of IKS elements emerged in 93.9% of the coded plans, while integration of IKS with subject content and value/cultural/ethical learning were each evident in 90.9% of the plans.

Among the pedagogical strategies, group and collaborative learning (90.9%) was the most frequently identified, followed by experiential learning (81.8%) and activity-based learning (78.8%). The plans also incorporated role play, storytelling, inquiry, projects, and case-based learning in different combinations. These patterns are supported by lesson plans that explicitly employ experiential learning, 5E, role play, discussion, teamwork, and case-based learning. Other plans similarly incorporated activity-based, visual, project, inquiry, and storytelling approaches.

Regarding learning outcomes, the findings suggest that participants moved beyond simply introducing IKS concepts. Their lessons attempted to connect IKS with curricular content, encourage application to real-life situations, develop creativity and critical thinking, and promote cultural, ethical, and value-based understanding. The plans' learning outcomes explicitly included identifying IKS elements, connecting them with contemporary content, reflecting, elaborating, and creating learner products.

Reflection was evident in 78.8% of the coded lesson/task units, indicating that implementation was frequently accompanied by consideration of the learning experience. Participant feedback also described active learner participation, enjoyment of storytelling, and increased understanding of connections between traditional knowledge and contemporary life.

The findings were further organized into four major themes:

Theme 1 – IKS Integration

Theme 2 – Innovative Pedagogical Strategies

Theme 3 – Experiential and Learner-Centred Learning

Theme 4 – Reflection and Professional Learning

Theme 1: IKS Integration

The first major outcome was participants' ability to connect IKS with their regular curricular subjects.

IKS was not treated merely as a separate body of information. Participants attempted to identify relevant traditional knowledge, cultural practices, ethical principles, values, stories, and indigenous ideas and connect them with their subject content.

For example, a banking lesson linked modern banking procedures with IKS principles of honesty, trust, accountability, and ethical financial behavior. Its learning outcomes required learners to identify IKS elements, connect ancient financial practices with modern banking, and reflect on how to apply them.

Similarly, lessons connected traditional occupations and settlements with present-day life and encouraged learners to understand IKS as practical and relevant.

Thus, a significant shift was:

Knowing about IKS → Connecting IKS with Curriculum → Applying IKS in Teaching

Theme 2: Innovative Pedagogical Strategies

A second important pattern was the use of varied pedagogical strategies.

The lesson plans reflected approaches such as:

- experiential learning
- 5E constructivist model
- activity-based learning
- group discussion and collaborative learning
- role play
- storytelling
- case-based learning
- inquiry-based learning
- project work and
- reflective learning.

For example, the History of Indian Arts lesson incorporated activity-based learning, group discussion, visual learning, project-based learning, inquiry, and storytelling. Another lesson combined the 5E constructivist approach, problem-based learning, cooperative learning, activity-cum-discussion, story-based learning, and reflective learning. These examples indicate that the Pedagogy Lab encouraged participants to explore IKS through pedagogical activity rather than merely presenting information about Indian traditions.

Theme 3: Experiential and Learner-Centred Learning

A classroom-market activity invited students to take the roles of traders and customers and discuss ethical trade in relation to the Arthashastra. Another lesson drew on home remedies and Ayurveda through group exploration, posters, and role play. These examples show how the planned activity connected learner experience with curricular content.

Theme 4: Reflection and Professional Learning

Plans commonly included cultural or ethical learning (30), application to real-life situations (22), and creativity, critical thinking, or participation (27). These are outcomes specified in plans, not direct measures of student attainment. Reflection on the lesson or task was evident in 26 of the 36 records. Some accounts described active participation and interest in storytelling; others considered how traditional knowledge could be linked to current practice. The reflections give useful insight into participants' experience, though they cannot independently verify classroom outcomes.

8. Interpretation of Objectives

Objective 1: Techniques and Strategies Used

The analysis shows considerable variety in pedagogical strategies. Experiential learning and learner participation formed an important foundation, supported by 5E, role play, group work, storytelling, projects, inquiry, and case-based activities.

The first objective was addressed through evidence of participants' attempts to use varied, learner-centered strategies rather than relying exclusively on conventional teacher-centered instruction.

Objective 2: Significant Learning Outcomes

Learning outcomes extended beyond recall of IKS information. Several plans expected students to **identify, connect, reflect, elaborate, apply, and create**. For example, the financial-learning lesson explicitly required students to identify IKS, connect it with contemporary content, reflect, elaborate, and create through posters, role plays, or case analysis.

Other outcomes included creativity, cultural appreciation, ethical understanding, critical thinking, collaboration, and practical application.

Objective 3: Participants' Reflections

Participants' reflections provided another dimension of evidence. One implementation report, for example, recorded that students actively participated, enjoyed storytelling, and found the activities interesting. The participant further reflected on how IKS could connect ancient knowledge with present-day practices.

Reflection therefore helped participants consider not merely what they taught, but how learners responded to the experience.

9. Overall Effectiveness of the Workshop

The research question examined the workshop's effectiveness in terms of learning outcomes reflected in participants' task reports.

Based on the 36 completed lesson plans and reflections, the workshop showed evidence of effectiveness in **task completion, pedagogical application, and reflective learning**.

Its effectiveness may be understood through four stages:

IKS Integration → Pedagogical Innovation → Experiential Learning → Reflective Practice

The strongest evidence was that participants did not stop at workshop participation. They produced lessons, attempted to connect IKS with existing subjects, used varied teaching-learning strategies, and implemented the lessons in their educational settings.

However, the findings should not be interpreted as statistical proof of the workshop's effectiveness. Because this analysis included no experimental comparison or pre-test/post-test measurement, the study provides evidence of **demonstrated and reflected professional learning through task completion**.

10. Educational Implications

The findings have implications for teacher education and faculty-development programs.

Professional-development programs on IKS may become more meaningful when they move from **awareness to application**. Participants should have opportunities to design, implement, and reflect on lessons rather than only listen to presentations.

The study also demonstrates the usefulness of the **Pedagogy Lab** as an experiential form of professional development. Participants become active designers of learning experiences and test their ideas in actual educational contexts.

The **36 lesson plans** themselves constitute another valuable outcome. They may be systematically organized into an institutional **IKS Lesson Plan Repository**, allowing future teachers and faculty members to adapt and further develop them.

11. Recommendations

Based on the analysis, teacher education institutions should conduct IKS-based Pedagogy Labs with a compulsory practical component. Participants may be encouraged to follow a simple **Design–Implement–Reflect–Redesign** cycle.

Institutions may also preserve successful lesson plans as an IKS resource bank and encourage teachers to integrate IKS into existing subjects through experiential, constructivist, and learner-centered approaches. Future studies may examine the impact of such lessons on learner engagement and learning outcomes using larger samples and quantitative measures.

12. Limitations of the Study

The study is limited to the **36 lesson plans and reflections submitted as part of the workshop task**. The findings are based primarily on participants' pedagogical products and reported experiences.

The study did not directly observe every classroom implementation and did not use a control group or pre-test/post-test design. Therefore, the findings should be understood as a qualitative and descriptive analysis of workshop outcomes rather than a causal evaluation of workshop effectiveness.

13. Discussion

The analysis of the 36 lesson plans and post-implementation reflections suggests that the effectiveness of professional development lies not merely in the content delivered but in the opportunities provided to participants to experience, implement, and reflect.

The mandatory task created accountability while also giving participants an authentic opportunity to experiment. The reflection component then transformed implementation into a source of professional learning.

The participants' acknowledgment that they had not previously practiced teaching in the same mode demonstrated during the workshop is particularly significant. It highlights the value of professional learning experiences that constructively disrupt routine practices.

The lesson plan was therefore not merely an assignment. It became an instrument of pedagogical experimentation.

The reflection was not merely a report. It became an instrument of professional inquiry.

Together, the lesson plan and reflection became a form of knowledge wealth.

Individual Knowledge Wealth

Participants developed:

- new pedagogical understanding;
- practical experience;
- confidence in experimentation;
- reflective awareness;
- familiarity with IKS-based curricular integration.

Institutional Knowledge Wealth

The institution gained:

- 36 documented lesson plans;
- participant reflections;
- examples of IKS integration;
- evidence of professional development;
- reusable pedagogical resources;
- possibilities for future workshops and research.

This creates the possibility of developing an Institutional IKS Pedagogy Repository comprising lesson plans, reflections, activities, digital resources, and implementation experiences.

14. Implications for Teacher Education Institutions

The findings have several implications for teacher education institutions.

Promote experiential learning through practical and reflective activities.

Integrate IKS pedagogy into teacher education and faculty development programs.

Develop resource banks of lesson plans and teaching–learning materials.

Blend technology with traditional knowledge to encourage active and independent learning.

15. Conclusion: Towards Nirantar Vikas

The journey from a two-day e-workshop to developing and implementing 36 lesson plans illustrates how professional learning continues when educators can try new approaches and reflect on their practice.

Several participants observed that they had not previously taught in the way demonstrated during the workshop. This recognition prompted them to reconsider familiar practices and explore ways of integrating Indian Knowledge Systems (IKS) into their subjects.

The 36 lesson plans, together with participants' reflections, document this experimentation. They offer practical examples that the institution can share and refine. The next step is to examine what students learn from these lessons while continuing to support teachers as they design, implement, and improve them.

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Two-Day National Level e-workshop on Incorporating IKS in the Existing Curriculum:
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Feasibility of Integrating IKS in the Classroom Teaching of Economics

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Abstract: *The National Education Policy (NEP) 2020 suggested integrating the Indian Knowledge System (IKS) into Education. NEP suggested incorporating indigenous knowledge, values, and practices into the curriculum. The main aim of this study is to integrate IKS into economics teaching at the secondary and higher Secondary levels. It explores how ancient thought processes can be related to the existing economics subject without altering its core content. The study suggests the importance of IKS to make Economics learning more contextual, experiential, culturally relevant, and value-oriented by connecting various concepts such as resource management, entrepreneurship, consumer behavior, trade, public finance, and sustainable development with Indian Sources like Arthashastra, Bhagavad Gita, Gandhian economic philosophy, and traditional community practices. The study also highlights the opportunities and challenges of implementing IKS in Economics. Challenges include teacher preparedness, curriculum alignment, availability of instructional resources, and assessment practices. In conclusion, it states that integrating IKS into Economics classrooms is both beneficial and feasible, as it increases conceptual understanding, critical thinking, ethical decision-making, and student engagement while supporting competency-based learning and the objectives of NEP 2020. The study suggests systematic teacher training, curriculum support, and the development of IKS-based pedagogical resources to facilitate effective classroom interaction.*

Keywords: *Indian Knowledge System(IKS), National Education Policy (NEP)2020, Economics Education, Curriculum Integration, Experiential learning, Sustainable development, Competency-based learning, Value - based Education.*

1. Introduction

Education in the 21st century aims to support students' holistic development. The Education system is concerned not only with academics but also with students who are ethically responsible, culturally aware, and capable of addressing contemporary Socio-Economic challenges. National Education Policy (2020) has focused on the integration of the Indian Knowledge System into all levels of education, so that students can get holistic, multidisciplinary, and value-based learning Indian Knowledge System focuses on rich Indian culture, such as rich intellectual traditions, philosophies, scientific Knowledge, Economic principles, governance practices, and sustainable lifestyles that have evolved over centuries. These policies suggest integrating indigenous perspectives into classroom teaching to help learners appreciate India's knowledge heritage while developing the competencies required for a globalized world. Economics, as a social science, examines the production, distribution, and consumption of goods and services, resource allocation, and how markets and economies work. Western Economies and models influence how Economics is taught in schools. These theories provide a strong foundation, but there is growing recognition that Economics needs to be contextualized. Education should integrate Indigenous Knowledge, local experiences, and ethical dimensions. Indian economic thought, shown in

texts such as the Arthashastra, the Bhagavad Gita, Vedic literature, Buddhist and Jain Philosophies, Gandhian economics, and cooperative traditions of India, offers a main focus on governance, resources, and management, taxation, trade, entrepreneurship, sustainability, social welfare, and ethical economic behavior. Integrating IKS did not replace the curriculum; it connected classroom instruction with relevant Indian examples, case studies, historical perspectives, and value-based perspectives; for example, the concept of public finance can be discussed through Chanakya's principles of taxation. Sustainable development can be discussed through traditional Indian practices of environmental conservation and responsible resource use through indigenous business models, self-help groups, cooperative models, and family enterprises that have contributed significantly to Indian economic development. The study's findings provide valuable input for curriculum developers, teacher Educators, policymakers, school administrators, and economics teachers in preparing effective strategies for implementing IKS in classroom teaching.

2. Review of Related Literature

The review of related literature emphasizes that integrating Indian Knowledge Systems (IKS) into education strongly aligns with the National Education Policy (NEP) (2020), the National Curriculum Framework (2023), and UGC and AICTE, which support contextual, experiential, and value-based learning. Previous studies suggest that IKS helps increase students' conceptual understanding, critical thinking, Ethical values, cultural awareness, and engagement, while making learning more relevant to real-life situations. Research also indicated positive teacher perceptions towards IKS integration but found challenges such as inadequate teacher training, limited instructional resources, and curriculum constraints. Hence, very few empirical studies have specifically investigated the feasibility of teaching Economics, particularly at the secondary and higher secondary levels. These gaps underscore the need for the present study to find out the practicality, opportunities, and challenges of implementing IKS in Economics education.

3. Objectives

- To assess the feasibility of integrating IKS into the Economics curriculum.
- To examine Economics teachers' perceptions towards integrating IKS in Classroom teaching.
- To implement effective strategies for the successful integration of Indian Knowledge Systems into the classroom teaching of Economics

4. Variable

Independent Variable: IKS-based integration.

Dependent Variable: Feasibility of integrating IKS in classroom Teaching of Economics

5. Methodology.

A qualitative approach was adopted using an exploratory research design. The purposive sampling method was used. Data was collected through a lesson plan and supervisors' comments. The collected data were assessed using qualitative data analysis to identify various opportunities, strategies, challenges, and suggestions regarding the integration of IKS in Economics Education.

6. Data Collection

The investigator used a qualitative method to collect data. The sample for the present study consisted of student teachers in teacher education who taught Economics as one of their subjects. The researcher observed 9 lesson plans from the student teachers. The researcher selected participants using purposive sampling. Supervisors evaluated lesson plans for the Economics internship program using predetermined criteria. Purposive sampling helped the researcher obtain important data on the feasibility of integrating IKS into classroom Economics teaching.

Supervisors assessed the lesson plans using a structured assessment rubric with ten criteria. The criteria included selecting an appropriate IKS concept, integrating it with subject content, ensuring authenticity and accuracy, including core IKS elements, contextualizing the content, using teaching-learning

strategies, promoting student engagement, encouraging critical thinking and reflection, using teaching-learning resources, and assessing learning. Supervisors provided scores and qualitative comments based on these criteria. The collected data were systematically compiled and qualitatively analyzed to examine the feasibility and effectiveness of integrating IKS into classroom Economics teaching and to identify opportunities, challenges, and areas requiring further support.

7. Data Analysis and Interpretation

Selection of Appropriate IKS Concept

In the recent study, the investigator evaluated 9 lesson plans of B.Ed student teachers, of which 5 appropriately used the IKS concept. In the recent study, students selected appropriate IKS concepts alongside textbook concepts. For teaching concepts such as types of Economy, some students used Kautilya's Arthashastra, where concepts such as agriculture, trade, and taxation were discussed. To teach textual concepts of maps and their features, IKS concepts of Ancient geographical knowledge and traditional mapping were connected to the study of maps, India's history, and understanding of geographical space. The student teacher explained latitude and longitude concepts using Indian astronomical and geographical traditions. The student teacher explained the element of water using traditional Indian water management systems. Some students explained traditional Indian metallurgy, and the knowledge of minerals was connected to the current study of minerals, ores, extraction, and uses.

Integration with subject content

In the recent study, the investigator found integrating IKS with subject content effective. IKS helped students understand the concept well. While teaching Types of Economy, some students explained concepts from the Arthashastra. To teach the mixed economy concept, the context of Gandhian ideas of village industries was connected to the concept. Elements of water were integrated with traditional Indian water management practices such as stepwells, tanks, and rainwater harvesting. IKS concept of India's traditional knowledge of metallurgy was connected with minerals and ores.

Authenticity and Accuracy

The investigator observed that the IKS concepts which student teachers took were authentic and accurate. For example, some student teachers used Kautilya's Arthashastra for taxation or economic organization, and presented authentic and accurate information about Arthashastra. Similarly, another concept in the lesson plan was also connected with traditional Indian water management practices.

Core IKS Element

Across the five lesson plans, the investigator observed that student teachers inculcated principles and values associated with Indian Knowledge Systems while integrating IKS into the lesson. In Economics, student teachers explained these elements through examples such as responsible resource management. Some students added examples such as traditional water conservation. Student teachers also mentioned using natural resources in their lesson plans. Student teachers also gave examples of community-based economic practices. Some student teachers also integrated the concepts of ethical trade and the welfare of society.

Contextualization

The present study showcased that the student teacher has used contextualization in their study. The investigator observed this through the student teacher's lesson plan and the supervisors' observation sheet. The student teacher's lesson plan and the observation sheet mentioned that traditional Indian water management practices were connected to present-day water conservation. Some students used traditional resource management practices connected to contemporary issues of sustainable development. Contextualization helps learners integrate traditional Indian knowledge with real-life citations and current issues, making IKS-integrated teaching more meaningful and relevant.

Teaching-Learning Strategies

In the present study, the investigator observed that students used various teaching-learning strategies to integrate IKS into the content. Strategies such as discussion, storytelling, case study, experiential learning, project-based learning, collaborative learning, problem-solving, concept mapping, inquiry-based learning, and field-based activities were used. Through these strategies, student teachers successfully integrated IKS into their content.

Student Engagement

In the present study, student teachers used various strategies to engage students in their study. The strategies used for student engagement were experiential learning, group discussions, projects, problem-solving, role-play, case studies, inquiry-based activities, and collaborative tasks to engage students in explaining IKS.

Critical thinking and Reflection

The investigator observed that five student teachers used IKS concepts to explain textual concepts. The student teachers gave students tasks to compare and contrast. Some student teachers gave students case studies on Indian traditions. Some asked probing questions about ancient India. Some student teachers led a debate on whether traditional knowledge can help solve present-day economic and environmental problems. Some students examined a local environmental or resource management problem and developed a solution using traditional and modern approaches.

Teaching Learning Resources

The investigator observed that five students used various teaching-learning resources to integrate IKS with subject content. Some student teachers explained types of Economy by showing Arthashastra, charts, case studies, historical trade, maps, pictures of traditional markets, and videos. Some student teachers used Historical maps of India, ancient trade route maps, physical maps, political map atlases, and digital maps to teach the concept of maps. The latitude and Longitude concept was explained through a globe, world map, Indian map, atlas, grid worksheets, digital maps, and GPS-based activities.

Assessment of learning

In the present study, the investigator observed that assessment of learning was done through various types of questions, such as multiple-choice questions, short-answer questions, case studies, projects, map activities, presentations, concepts, maps, quizzes, reflective journals, portfolios, and group activities. Student teachers have also used IKS concepts in assessment for learning. Some student teachers asked students to compare the economic ideas related to trade, taxation, and resource management in the Arthashastra with the features of a capitalist, socialist, and mixed economy. Some student teachers asked various reflective questions, such as “What can modern economics learn from traditional Indian approaches to resource management?” Some student teachers evaluated students by asking them to create an outline map of India, mark important ancient trade centers and trade routes, and identify their present-day locations. The investigator observed that some student teachers asked students to interpret a historical map of India and explain how geographical features influenced settlements, trade, and economic conditions. Some of the student teachers gave a coordinate geometry activity to explain the concept of latitude and longitude. Student teachers asked students to identify the latitude and longitude of selected Indian cities or historical trade centers.

8. Recommendations.

- Teachers should attend various sessions organized on the Indian Knowledge System.
- Colleges should incorporate IKS pedagogical strategies into Teacher Training Programs to increase teacher competency in combining IKS with subject content.
- To integrate IKS, curriculum developers should receive clear guidelines, examples, and activity-based approaches.

- Storytelling and experiential learning methods, such as case studies, field visits, role-plays, project-based learning, and community interaction, can help integrate IKS.
- Teachers need adequate resources to integrate IKS effectively.

9. Conclusions

Implementation of the Indian Knowledge System (IKS) in the classroom enhances the teaching-learning process by integrating indigenous knowledge, cultural values, and experiential learning into subject content. Effective IKS implementation increases student engagement, critical thinking, ethical values, and holistic development. The study's findings also highlight the importance of teacher training, authentic resources, and institutional support for successful integration. Overall, the study supports including IKS in Classroom teaching, as mentioned in the National Education Policy (NEP) 2020, to promote culturally responsive, value-based, and learner-centered education.

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Integrating the Indian Knowledge System in Teaching Peter Senge's Model of Learning Organization: A Qualitative Classroom-Based Study

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Abstract: *The National Education Policy (NEP)2020 suggested integrating the Indian Knowledge System (IKS) into all levels of education. Meaningfully integrating IKS into professional courses such as Bachelor of Education (B.Ed.) requires teaching approaches that connect indigenous knowledge with contemporary academic concepts. This classroom-based study explored the use of IKS-integrated teaching to develop B.Ed. students' understanding of Peter Senge's Learning Organization model. The Learning Organization model consists of five disciplines: Personal Mastery, Mental Models, Shared Vision, Team Learning, and System Thinking. The investigator connected these disciplines to IKS concepts such as Swadhyaya, Viveka, Vasudhaiva Kutumbakam, Guru Shishya Parampara, and Panchmahabhuta, the Indian holistic worldview. 25 B.Ed. students were selected for this study. The teaching-learning process incorporated interactive discussions, dialogue, group work, stories, and case-based activities. Students were required to analyze educational cases, identify the relevant Senge's disciplines, connect them with IKS, and propose solutions.*

Data were collected through classroom observations, classroom discussions, case-based activities, and students' feedback. The responses were analyzed thematically through initial coding, focused coding, and theme development. The emerging themes indicate conceptual understanding, application of theory to educational situations, collaborative learning, holistic thinking, increased curiosity about IKS, and appreciation of culturally contextualized teaching. The study suggests that integrating IKS in teaching means not merely adding or introducing IKS content but bridging contemporary concepts with Indigenous Knowledge concepts.

Key Words: *NEP 2020, Indian Knowledge System, Peter Senge, Learning Organization, Five disciplines: Personal Mastery, Mental Models, Shared Vision, Team Learning, and System Thinking, Swadhyaya, Viveka, Vasudhaiva Kutumbakam, Guru Shishya Parampara, and Panchmahabhuta, B.Ed Students, Educational Management, Collaborative learning, Circle the Sage.*

1. Introduction

The National Education Policy (NEP) 2020 suggested integrating Indian Knowledge Systems (IKS) into educational curricula and teaching practices. This approach aims to make learning more culturally relevant, meaningful, and holistic by enabling students to engage with India's diverse intellectual, cultural, scientific, and traditional heritage. At the same time, the Policy encourages teacher educators to develop higher-order thinking, creativity, and various competencies through Indigenous knowledge with contemporary educational needs. 'Educational Management' is an interdisciplinary course in the University of Mumbai's B.Ed curriculum that provides prospective teachers with an understanding of educational theories, principles, and management functions.

Peter Senge's Learning Organization Model, introduced in his 1990 book *The Fifth Discipline*, describes how organizations grow and adapt through continuous learning. This modern concept connects closely with India's ancient Indigenous Knowledge Systems (IKS). India's traditional learning structure began during the first stage of life, known as *Brahmacharya Ashram*. In this phase, students lived and studied in a Guru's ashram, free from outside distractions. This system focused heavily on:

- **Individualized learning:** Tailored growth for each student.
- **Experiential learning:** Gaining knowledge through direct experience.
- **Peer learning:** Studying and problem-solving together.

These practices aim to build a global perspective under the cultural philosophy of **Vasudhaiva Kutumbakam** (the world is one family). Together, they mirror Senge's modern ideals of personal mastery, team learning, and shared vision.

The National Policy 2020 mentioned that "In all stages, experiential learning will be adopted, including hands-on learning, arts-integrated and sports-integrated education, story-telling-based pedagogy, among others, as standard pedagogy within each subject, and with explorations of relations among different subjects."[1] The Policy aims to give learners an understanding of India's rich knowledge traditions while encouraging critical thinking, creativity, values, and a sense of connection with Indian heritage. Integrating IKS into teaching depends on selecting authentic, relevant, and age-appropriate IKS content and suitable teaching strategies that help students relate IKS concepts to modern concepts, theories, and ideas.

2. Need of the Study

Management theories offer structured approaches to decision-making, task organization, role definition, resource management, and achieving organizational objectives. Predominantly developed by western scholars, these theories may be difficult for Indian students to relate to, as they can seem abstract or culturally disconnected. This underscores the importance of incorporating Indigenous Knowledge Systems (IKS) to link modern management ideas with students' cultural and intellectual backgrounds. By integrating IKS into management theory education, students can gain valuable indigenous insights and explore leadership and organizational dynamics through the lens of Indian philosophical and knowledge traditions. This approach connects theoretical knowledge with cultural context, enhancing the relevance, experiential learning, and significance of management education.

In this context, the present classroom-based study attempted to integrate selected IKS concepts while teaching Peter Senge's Model of Learning Organization to B.Ed students. The integration was not intended to suggest that Peter Senge's Model of Learning Organization is identical to Indian philosophical traditions. Instead, selected concepts served as teaching points of connection through which students could examine similarities, differences, and possible applications.

3. Rationale of the Study

The study's findings emerged from classroom observations and student feedback, indicating that some students found management theories relatively abstract when presented through definitions and textbook explanations. Therefore, the investigator explored whether contextualizing the theory through IKS and practical cases could encourage deeper understanding and engagement.

The classroom experience also showed that some students from diverse cultural and religious backgrounds were unfamiliar with particular aspects of India's rich traditions and philosophical ideas. When the Investigator introduced examples, the students showed curiosity and asked questions. This observation formed the basis for a more systematic classroom inquiry.

Therefore, this study aimed to address three interconnected questions:

- Can IKS provide meaningful conceptual connections while teaching Senge's Five Disciplines?

- How do B.Ed. students respond when Peter Senge's five concepts are taught through IKS-based cases?
- What impact can be observed after integrating IKS with the management model?

4. Objectives of the Study

The objectives of this study are as follows:

- To identify the concepts of the Indian Knowledge System that are meaningfully connected with the concepts of Peter Senge's Learning Organization Model
- To integrate IKS in teaching Peter Senge's Five Disciplines to B.Ed. students.
- To explore students' responses while analyzing cases
- To identify themes emerging from students' classroom discussions, case responses, and feedback.
- To examine students' perceptions of IKS-integrated teaching of educational management.

5. Research Methodology

5.1 Research Design

The study adopted a qualitative approach, and the sample was selected through purposive sampling and comprised 25 B.Ed. students from The Lord's College of Education, Mumbai.

5.2 Tools for Data Collection

- Multiple qualitative sources were used.
- Classroom observations
- Student presentations
- Classroom discussion
- Post-activity feedback

5.3 Instructional Intervention

The instructional process followed the sequence:

The teaching approach incorporated interactive methods including examples, stories, group discussion, and case-based learning. The original study records the use of 5E-oriented teaching and IKS integration through examples, *Katha,* and *Samvaad*.

Indian Knowledge Systems and Conceptual Connections

For the present classroom intervention, Indian Knowledge Systems (IKS) were approached as a broad and diverse body of Indian intellectual, philosophical, educational, ethical, and cultural traditions rather than a single homogeneous system. The investigator developed conceptual connections between Peter Senge's five disciplines of the learning organization and selected concepts and practices from Indian Knowledge traditions.

The following conceptual connections were developed for teaching purposes to facilitate students' conceptual understanding and contextual applications of Peter Senge's model:

Table 1

Students' conceptual understanding and contextual applications of Peter Senge's model

Peter Senge's Discipline	Teaching Connection	Corresponding Indian Knowledge System Concept and Examples used
Personal Mastery	Understanding oneself and one's capacities. Developing self-awareness, clarifying personal vision, focusing on self-energies, and improving one's capacity for learning and growth.	Swadhyaya (self-study) and Atma-vidya (self-knowledge) Yoga, meditation, self-discipline Story of Satyakama
Mental Models	Recognizing how assumptions, beliefs, experiences, and habitual ways of thinking influence perception, interpretation, and action.	Sad-asad Buddhi (सद्-असद् बुद्धि) (Discrimination between appropriate and inappropriate), Viveka (discernment) and Atmaparikshan (self-examination); Neti Neti (questioning assumptions), Chintana (reflection) Panchatantra Story: The Lion and the Rabbit.
Shared Vision	Creating a common goal or aspiration that all members genuinely want to achieve together is essential. Developing a common aspiration and shared picture of a desirable future, fostering collective responsibilities, commitments, and a common goal.	Vasudhaiva Kutumbakam (the world as one family) Lokasangraha (welfare and collective well-being) and Sangachchhadhwam, Samvadadhwam (संगच्छध्वं संवदध्वं) from the *Rig Veda*: 'Let us move together, let us speak together, let our minds be in harmony.' Rama and the Vanara Sena – Shared Vision
Team Learning	Learning through interaction and relationship, Dialogue, collaboration, and developing a group's collective capacity to learn and act together.	Guru-Shishya Parampara and Satsanga (collective learning), Collaborative Learning in Indian Ancient Universities (Nalanda, Takshashila) Sangha-bhavana (Buddhism)
Systems Thinking	Understanding the relationships among parts and the whole.	Interconnected worldview Holistic View in Vedic Thought: Panchamahabhuta, Rta, cosmic order that governs the universe

These conceptual connections served as teaching bridges rather than claims that Senge's disciplines and IKS are identical. The main purpose was to help students interpret contemporary management concepts through culturally meaningful examples and relate theoretical constructs to familiar Indian Knowledge traditions.

5.4 Procedure for Data Collection

The investigator used a 5 E's constructivist approach to facilitate learning about Senge's model.

Step 1: Introduction to Peter Senge

In the Engage step, she conducted a **Johari Window** activity. This helped students identify their strengths and weaknesses. The investigator first introduced Peter Senge's Learning Organization Model to the students, then briefed them on its five disciplines: Personal Mastery, Mental Models, Shared Vision, Team Learning, and System Thinking. To facilitate experiential, collaborative, peer-supported learning, the investigator then employed the Circle of the Sage strategy.

Step 2: Introduction to the Circle of the Sage Strategy

The investigator explained the **Circle of the Sage** cooperative learning strategy to the students. She selected five students as **'Sages.'** She assigned each sage one of Peter Senge's five disciplines.

Step 3: Providing conceptual Notes and Cases to the Sages

Each Sage was provided with the following:

- One case based on the assigned discipline
- Brief notes explaining the respective discipline
- One IKS-based story related to that discipline
- The Sages studied the material carefully and discussed the case with the investigator as needed.

Step 4: Formation of Student Groups

The investigator divided the students into five groups and assigned one of Senge's five disciplines to each group. At the beginning of the activity, the students had limited information about their assigned discipline. The investigator selected five students as Sages, with each Sage responsible for one discipline. The Sages sat in different places in the classroom and served as resource persons for their respective disciplines. The other students visited the Sages, discussed the assigned concepts and cases, and collected the information needed for their group activity.

Step 5: Students Visit the Sages

Students from each group went to the respective sage.

For example:

- Students assigned to Personal Mastery → Sage 1
- Students assigned to Mental Models → Sage 2
- Students assigned to Shared Vision → Sage 3
- Students assigned to Team Learning → Sage 4
- Students assigned to Systems Thinking → Sage 5

The Sage explained:

- The meaning of the discipline
- The case
- The important concepts in the case
- The related IKS story/example
- The connection between the Senge principle and IKS

The visiting students listened to the explanation of the assigned discipline, discussed the case situation with the Sage, and clarified their understanding.

Step 6: Return to the Original Groups

After learning from the sage, the students returned to their original groups. Each student shared what they had learned from the sage with the other members of the group. Through this process, the students collectively reconstructed their understanding of the assigned discipline. They learned the meaning, major concepts, and characteristics of the discipline.

This step promoted: **Peer teaching → Knowledge sharing → Discussion → Collective learning**

Step 7: Connecting the Five Disciplines with IKS

Each group discussed its assigned discipline and identified an appropriate Indian Knowledge System example or story.

Step 8: Assessment of Students' Understanding and Outcomes

The investigator provided a common set of guiding questions to structure the discussions.

- What does the given discipline mean? (Conceptual understanding)
- What are its important characteristics? (Identification of key characteristics)
- How does the IKS story or example illustrate a given discipline? (IKS- based conceptual connection)
- What is a practical example of its application in an educational institution? (Educational relevance)

Each sage was instructed to ask questions of students from the visiting groups to assess their understanding and encourage dialogue. The investigator assessed students' understanding through continuous observation, peer questioning, and group responses to sage questions.

Step 9: Feedback from Students

After completion of the activities, the investigator collected feedback from the students. The feedback focused on students' understanding and experience of:

- Peter Senge's Five Disciplines
- IKS integration
- Case-based learning
- Circle the Sage strategy
- Peer learning
- Application of the concepts to teaching

5.5 Findings

The qualitative observations and students' interactions during the activity indicated that the 5E constructivist approach provided opportunities for active engagement, reflection, and collaborative learning.

During the activity, most groups discussed the assigned discipline and related it to the provided IKS story. However, two groups (Groups C and E) struggled to identify or articulate an appropriate IKS example on their own. They could explain some aspects of the discipline at a conceptual level, but they found it challenging to connect the contemporary management concept with a suitable IKS example.

This difference was important because it showed that understanding a concept and applying it to a new context are not always the same. Students were able to understand the meaning of Senge's discipline, but this understanding did not always help them connect it to IKS. One possible reason for this may be their limited familiarity with IKS stories, concepts, and sources. The students may also have had more experience with the usual textbook examples.

The activity required students to do more than simply recall an IKS story. They had to understand the idea behind the story and then relate it to Senge's particular discipline. This required higher-level cognitive processing, involving comparison, interpretation, abstraction, and transfer of learning. This

was not easy for all the students. They had to compare the two ideas, interpret the story, and decide whether the connection was appropriate. The difficulty faced by Groups C and E therefore shows that making such connections requires more than a basic understanding of either concept.

Another point observed during the activity was the role of teacher support. The guiding questions, notes, and IKS stories helped students to make the required connections. The difficulty both groups faced also suggests that students with less exposure to IKS may need more support to make these connections. Providing examples, asking guiding questions, and explaining the context of an IKS source may help students gradually move from understanding the story to identifying the idea behind it and relating it to the modern concept.

Therefore, IKS cannot be integrated simply by adding an Indian story or example to an existing lesson. Students need to understand the background of the knowledge tradition and discuss the idea that the example represents. They also need an opportunity to examine how that idea relates to the concept being taught.

Students need opportunities to understand the context of the knowledge tradition, identify its underlying principles, interpret those principles critically, and establish their relevance to contemporary educational concepts. Effective IKS integration requires deliberate pedagogical mediation, rather than simple content addition.

This further highlights the need to approach IKS integration as a process of conceptual bridging. The objective is not to claim that every contemporary concept has an exact equivalent in Indian Knowledge Systems, but to enable learners to identify meaningful points of connection while recognizing differences in context, terminology, and epistemological orientation. This approach can help prevent superficial or forced equivalence between the two knowledge frameworks.

5.6 Coding of Students' Responses/ Feedback

The investigator then organized the students' feedback for analysis. The investigator coded the responses according to recurring ideas, which are given below:

Table 2
Analysis of students' feedback

Student response	Initial code	Category	Theme
"I understood the concept better through the story."	Learning through story	Experiential learning	IKS-supported understanding
"My friend explained the principle clearly."	Peer explanation	Peer learning	Collaborative learning
"I learned a different perspective from another group."	Multiple perspectives	Knowledge sharing	Team Learning
"The story helped me connect the theory with Indian tradition."	Theory–IKS connection	Conceptual integration	Cultural contextualisation

The qualitative analysis was as follows: Students response- Initial Codde- Categoriry- Theme

For example, when a student said, "I understood the concept better through the IKS story" the response was coded as 'Learning through IKS story'. this was placed under the broader category of Experiential Learning. The student was describing learning through an engaging and contextual experience; this was placed under broader theme of 'IKS- supported Understanding'. The students understand Peter Senge's five disciplines better because of the use of an IKS-based story.

The reponse "My friend explained the principle clearly" was initially coded as Peer explanation which was grouped under the category 'Peer Learning' and then associated to the broader theme of 'Collaborative Learning' This suggest that interaction with peers helped students clarify and deepen their understanding.

The response "I learned a different perspective from another group*"* reflected the value of group interaction and exposure to alternative viewpoints. It was coded as multiple perspectives, categorised under knowledge sharing, and linked to the theme of team learning.

The response "The story helped me connect the theory with Indian tradition*"* reflected students' ability to establish a relationship between theoretical knowledge and Indian cultural contexts. It was coded as theory–IKS connection, grouped under conceptual integration, and linked to the theme of cultural contextualisation.

This finding is particularly relevant to the integration of Indian Knowledge Systems, as it indicates that culturally rooted examples and narratives helped students relate abstract theoretical ideas to familiar Indian traditions and contexts.

Overall, the coding process indicates that students' feedback reflected three important dimensions of learning: enhanced conceptual understanding through IKS-based experiences, learning through peer interaction and collaboration, and the integration of theoretical concepts with Indian cultural contexts. These themes provide qualitative evidence of how the incorporation of IKS and collaborative learning strategies contributed to students' learning experiences.

6. Recommendations

Based on classroom observations and students' responses, the following recommendations are suggested:

- Teacher-education curricula can incorporate structured IKS-Senge mapping modules (as in Table 1) as a replicable pedagogical resource for Educational Management courses.
- Teacher educators can be trained, through in-service workshops, to design similar indigenous-concept bridges for other management and psychology theories taught in the B.Ed. programme.
- Curriculum framers responsible for operationalizing NEP 2020's IKS mandate can use this study as one working model for subject-specific integration rather than treating IKS as a separate, standalone unit.
- Extension of the IKS-mapping approach to other theories taught in Educational Management, such as leadership and motivation theories.
- Longitudinal studies examining retention and classroom application of the Five Disciplines by IKS-trained teachers after graduation.

7. Limitations of the Study

- The sample was drawn from a single institution using purposive sampling, which limits generalisability.
- The intervention was confined to one Educational Management unit over a short duration; the study did not assess long-term retention.

8. Conclusion

The study indicates that Indian Knowledge Systems can be used alongside Peter Senge's Five Disciplines to make Educational Management teaching more connected to learners' context. The case-based activities gave B.Ed. students opportunities to discuss the concepts, relate them to educational situations, ask questions, and learn from their peers. The IKS stories also helped students view management concepts from a different perspective.

The five disciplines—Personal Mastery, Mental Models, Shared Vision, Team Learning and Systems Thinking—were connected with selected IKS ideas such as Swadhyaya, Viveka, Vasudhaiva Kutumbakam and Guru-Shishya Parampara. These connections helped students relate a contemporary management framework to ideas from Indian knowledge traditions. The difficulty two groups faced in making some of these connections also shows that such integration cannot be taken for granted. Students may need suitable examples, explanations, and guiding questions to understand the connection.

Thus, IKS integration in professional education may be approached as a process of making meaningful connections between different knowledge traditions rather than simply adding IKS content to the curriculum. Such an approach can support the intent of NEP 2020 to bring Indian Knowledge Systems into education while allowing students to examine both the similarities and differences between traditional and contemporary concepts.

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Critical Analysis of Student-teachers' Understanding of Integrating the Indian Knowledge System into the Teaching of Mathematics

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Abstract: *The present study highlights students' comprehension level and capacity building in integrating IKS in the mathematics subject. The author, being a teacher educator, guided the mathematics pedagogy student-teacher to integrate IKS into their school mathematics subject teaching during practice teaching. 12 lessons plans were analyzed using a rubric to evaluate the IKS integration. Upon analyzing their lesson plans, she identified the gaps in its implementation, which indicate a lack of understanding of planning and implementing the IKS integration; this raised a question about their level of understanding of IKS integration. To investigate further, the investigator also gave them an open-ended questionnaire to confirm the observational conclusion made after analyzing the lesson plan.*

The open-ended questionnaire focused their understanding about the IKS integration in their lessons with questions such as: Have you integrated IKS in your Mathematics lesson? Give details. Are you comfortable integrating IKS in your routine Mathematics Class? Give details. Surprisingly, they answered satisfactorily and presented good understanding of IKS. Therefore, the investigator took interviews of these students to find the reasons for the gaps between the findings from the lesson plans and responses to the open-ended questionnaire, to know what they understood about IKS integration and how it was implemented by them. The interview revealed barriers such as misconceptions about the multidisciplinary approach, time constraints, and doubts about Class management when IKS is integrated. Indicated they need good training. We are in the practice of constructivist learning, and demonstrated to them the integration of IKS to develop their capacity building; they still require rigorous practice to internalize. This indicated there is a need to develop an IKS-integrated module and lesson plans in this regard that can guide student-teachers appropriately and make them confident in integration of IKS in their mathematics lessons.

Keywords*: Indian Knowledge Systems, Mathematics Education, IKS Integration in Mathematics teaching, IKS Integration Mathematics module, IKS Integrated Mathematics lesson plan.*

1. Introduction

The National Education Policy (NEP) 2020 has given importance to Indian Knowledge Systems (IKS) in education. It states that the Indian knowledge should be incorporated into the curriculum appropriately, and emphasized the development of cognitive, social, ethical, and emotional capacities through education. This given direction creates an important responsibility for teacher education. Teachers are expected to translate broad curricular expectations into classroom experiences. Therefore, understanding of the prospective teachers' about the IKS integration in their teaching becomes an important subject matter to study.

The nature of Mathematics content provides wide context for such integration. The nature of school Mathematics education highlights Mathematics an abstract and isolate subject. However, mathematical ideas appear in cultural practices, architecture, patterns, measurement, crafts, historical developments, and everyday activities. Gupta (2017) argues that home, community, and culture-based practices can serve as valuable learning resources in Mathematics classrooms that can emphasize the importance of cultural responsiveness in Mathematics teacher education.[1] IKS therefore offers opportunities to connect Mathematics with India's intellectual and cultural heritage. However, the presence of an Indian cultural element in a lesson does not necessarily mean that IKS has been meaningfully integrated. A teacher may use a traditional object, a cultural reference, or an Indian example without establishing its relationship to the mathematical concept or helping learners understand the knowledge it represents. This distinction became important in the present study.

The investigator, who was also the teacher educator, had provided guidance to B.Ed. student-teachers regarding IKS integration in Mathematics lessons. However, when the investigator examined their lesson plans after their lesson delivery, and found IKS was largely absent in their documented fair lesson plans. Out of the 18 lesson plans analysed three lesson plans from six students each, 17 (94.4%) showed no identifiable IKS integration, while only one (5.6%) showed an emerging level. This finding raised an important question. Did the limited visibility of IKS in the lesson plans indicate limited awareness among student-teachers, or did they understand IKS integration differently from what the investigator expected?

To explore this question, the study proceeded through three connected phases. First, Mathematics lesson plans were analysed. Second, the study examined student-teachers' perceptions. Third, the study conducted follow-up interviews of these student-teachers to understand what they considered IKS integration. The study therefore moves beyond a simple question of whether IKS was “present” or “absent.” It examines the relationship between documented, perceived, and meaningful integration.

2. Review of Related Literature

NEP 2020 provides a clear policy basis for including Indian knowledge, traditions, values, and intellectual contributions in education. It specifically identifies IKS as relevant to areas such as mathematics, astronomy, architecture, medicine, agriculture, linguistics, and other fields. The University Grants Commission has also developed guidelines for faculty orientation on IKS. These guidelines emphasize familiarizing teachers with IKS and identifying ways to incorporate it into specific classroom teaching, rather than treating IKS only as general cultural knowledge. This emphasis is particularly relevant to teacher education because teachers need to understand not only what IKS is but also how to use it pedagogically.

Recent research confirms that the transition from awareness to practice remains challenging. Singh, Tigga, and Kumar (2025), qualitatively studied 113 prospective teachers and concluded that the positive perceptions of IKS with limited practical understanding and also identified challenges related to resources, support, and implementation. Similarly, Sahoo and Pradhan (2026), in their mixed-methods study of 150 pre-service teachers, with interviews of 12 participants, found positive perceptions towards IKS but comparatively weaker cognitive awareness and behavioural readiness. Their qualitative findings highlighted limited experience and confidence in classroom implementation and the need for structured preparation, practical training, and pedagogical support.[4] These studies indicate a recurring pattern: positive attitudes towards IKS do not necessarily result in readiness for meaningful classroom implementation.[5]

Further, the connection between culture and Mathematics has been discussed through culturally responsive Mathematics education and ethnomathematics.[3] Gupta (2017) argues that learners' home, community, and cultural practices can provide valuable sources of mathematical knowledge and that teacher education should prepare teachers to recognize and use these resources appropriately[1]. This perspective is important for IKS integration because it challenges the assumption that Mathematics exists only in formal textbook knowledge. Cultural practices can provide contexts through which learners encounter measurement, geometry, patterns, spatial relationships, number, estimation, and

other mathematical ideas. However, meaningful integration requires more than placing a cultural practice in a Mathematics lesson. The teacher must establish a purposeful relationship between the cultural or knowledge context and the mathematical concept. ie from awareness to meaningful practice

The recent literature suggests that IKS integration should be understood as a process rather than a single act. Student-teachers may first become aware of IKS, then identify possible connections, attempt to use an IKS-related element, and gradually develop the pedagogical ability to integrate it meaningfully. This distinction matters because a cultural reference may appear in a lesson without contributing substantially to learning. Contemporary discussions of IKS in education have also raised concerns about superficial inclusion when traditional knowledge is added without sufficient contextual or disciplinary connection. The present study contributes to this discussion by examining a specific gap: the difference between what appears in a lesson plan, what student-teachers perceive as possible IKS integration, and what they themselves understand as integration.

3. Need and Significance

The National Education Policy (NEP) 2020 advocates integrating Indian Knowledge Systems (IKS) into school subjects. However, turning this policy goal into actual classroom teaching remains a challenge for prospective teachers. Recent studies show that while student-teachers hold positive attitudes toward IKS, they struggle to implement it in practice. This study has practical value for teacher education; it highlights the specific difficulties of integrating IKS into lesson delivery. Additionally, for policy implementers and curriculum designers, the study offers real-world evidence to create better instructional materials and teacher training modules for meaningful IKS integration that treat IKS integration as a developmental learning process rather than a simple checklist item. To address the gap the investigator had prepared a sample IKS integrated module and lesson plan that may be helpful resources for student-teachers in meaningful integration of IKS in their teaching.

4. Objectives of the Study

- To examine the extent of IKS integration visible in B.Ed. student-teachers' Mathematics lesson plans.
- To examine the nature of supervisors' feedback related to IKS in the lesson-plan evaluation.
- To explore student-teachers' perceptions regarding the use of IKS in Mathematics.
- To understand how student-teachers' interpret their own IKS-related practices.
- To prepare sample IKS integrated module for SSC board mathematics syllabus.
- To prepare sample IKS integrated lesson plan for a topic from the prepared module.

5. Research Design and Methodology

The study adopted an explanatory sequential mixed-method design. The design began with quantitative documentary analysis, followed by qualitative inquiry to explain and elaborate on the initial findings. The design was selected because the first phase produced an unexpected and important finding: IKS was largely absent from the lesson plans despite the student-teachers having received guidance regarding its integration. The second phase therefore explored student-teachers' perceptions, while the third phase examined how selected student-teachers themselves interpreted their IKS-related practices. Investigator used purposive sampling technique to collect the lesson plan, for document analysis, find student-teachers perception through open-ended questionnaire and to interview the student-teachers. Further phase wise details are discussed ahead.

6. Phase I: Quantitative Analysis of Lesson Plans

In phase I, 18 Mathematics lesson plans of four student-teachers were analysed, and examined for identifiable IKS elements in learning outcomes, content, activities, resources, and assessment. These plans were classified as Not Evident, Emerging, Developing, or Meaningful according to the extent and clarity of IKS-Mathematics integration. The findings were as follows:

Table 1
Existence of IKS integration in the Mathematics lesson plans

Level of IKS Integration	Number	Percentage
Not Evident	17	94.4%
Emerging	1	5.6%
Developing	0	0%
Meaningful	0	0%
Total	18	100%

The findings indicate that IKS was not visibly documented in most lesson plans. Only one lesson plan demonstrated an emerging level of integration. The supervisor's remarks also showed no clear pattern of explicit IKS-related feedback. Most comments focused on conventional aspects of lesson preparation, such as learning outcomes, board work, presentation, time management, and lesson structure.

The quantitative finding, however, could not explain why IKS was largely absent. Several possibilities remained open: student-teachers may have had limited subject-specific IKS knowledge, insufficient resources, inadequate practice, uncertainty about how to integrate IKS, or a different understanding of what constitutes integration. Therefore, the quantitative result was treated as the starting point for qualitative explanation, rather than as evidence that student-teachers lacked IKS awareness.

7. Phase II: Analysis of Student-teachers' Perceptions

In phase II, the investigator analyzed the responses from four student-teachers through an open-ended questionnaire. The questionnaire included questions such as ‘Have you integrated IKS in your Mathematics lessons? Give details of it.’, ‘Are you comfortable integrating IKS in your routine Mathematics class? Give details.’ These responses were analyzed student-teachers’ perceptions of IKS integration, with the objective of identifying their perceptions in the written responses to the open-ended questionnaire. The qualitative analysis of the responses was classified in three major perceptions, which are listed below.

Perception 1: IKS can make Mathematics more relatable

Student-teachers perceive IKS as a way to connect Mathematics with familiar cultural and everyday experiences. They viewed such connections as potentially useful for making abstract mathematical ideas more meaningful. This perception aligns with culturally responsive mathematics education, which emphasizes connecting mathematical learning to learners' social and cultural worlds.

Perception 2: IKS can be connected with different Mathematics topics

Student-teachers identified several possible connections, including rangoli and temple architecture with geometry and symmetry; sharing contexts with fractions; Indian mathematicians with mathematical history; traditional measurement practices; and Indian mathematical approaches. These responses indicate that student-teachers could identify possible entry points for IKS in Mathematics.

Perception 3: Resources, practice and preparation are required

Student-teachers identified the need for teaching-learning materials, subject-specific examples, practice opportunities, teacher preparation, and guidance in designing IKS-based activities.

Thus, the qualitative findings provided a more complex picture than the lesson-plan analysis alone. The student-teachers did not appear to reject IKS. Rather, they showed an emerging understanding of its possibilities while also recognizing their need for greater preparation. This finding is consistent with

recent research (Singh, Tigga, and Kumar, 2025) showing positive perceptions of IKS alongside limitations in practical readiness.[5]

8. Phase III: Student-teachers' Interpretation of IKS Integration

The findings of the first two phases created an important discrepancy. The lesson plans showed very limited visible IKS integration, whereas the student-teachers' responses analysis showed awareness of possible IKS and Mathematics connections. The investigator therefore conducted follow-up interviews of these student-teachers to understand what they themselves considered IKS integration.

During interview one student-teacher revealed that she had used IKS during preparation of learning resource, she had used turmeric to colour the learning resource which was used to teach a mathematics concept 'Fraction', further she justified that turmeric is very important stuff in Ayurveda and through use of the learning resource she had nicely integrated the IKS in her lesson, despite she had not discussed any IKS in this regard in her class. One other student informed that she had made heterogeneous school students groups during mathematics class activities to integrate IKS as such grouping reflects harmonious Indian culture despite she had not discussed any of IKS in her class. They also revealed that they feared that if IKS integrated in mathematics lessons then the lesson may extend the given time period, may face class management issues and school students may find it vague.

Thus the interview revealed that they regarded the teaching-learning resource preparation process and grouping of school students for group activities as IKS integration, also they were hesitant to move towards deep integration, as they were not confident in classroom management and in their ability to discuss IKS integration while teaching Mathematical concepts.

These responses should not be treated simply as incorrect or an inability. They provide insight into how student-teachers were constructing the meaning of IKS integration at their current stage of professional preparation. The interviews therefore helped explain the apparent contradiction between the findings from the document and the perception analysis. This finding motivated investigator to prepare an exemplary module (Appendix A) and a lesson plan (Appendix B) for the module which can be a meaningful resource for student-teachers.

9. Interpretation

Investigators cross-verified findings from all the phases by examining them from multiple angles, compared them to see where they agree or differ, and identified gaps. The final synthesis of these evidences into an unbiased conclusion form is presented in the table below.

Table 2
Collective interpretations of data from all phases

Evidence	Main Finding	Interpretation
Lesson-plan analysis	94.4% showed no identifiable IKS	Limited documented integration
Supervisor remarks	IKS was not explicitly visible in evaluation	Limited formal attention to IKS
Perception analysis	IKS viewed as useful and relatable, Several Mathematics-IKS connections identified, Resources and practice required	Emerging conceptual awareness, Recognition of possibilities, Need for structured preparation
Interview	Resources preparation was considered IKS integration, Grouping of students was considered IKS integration, anticipated barrier such as time management	Emerging interpretation, hesitant to integrate

The findings are therefore not contradictory, it is due to IKS integration was emerging, but it had not consistently developed into clearly defined and meaningful Mathematics-IKS integration. If the lesson-plan data had been considered alone, the conclusion might have been that student-teachers lacked IKS awareness. The qualitative evidence does not support such a simple conclusion. Instead, the combined evidence suggests a gap between desired integration and implemented integration. This interpretation is also consistent with recent studies reporting positive attitudes towards IKS but weaker practical readiness and limited confidence in classroom implementation.

10. Discussion

Recent studies (Singh et al., 2025; Sahoo & Pradhan, 2026) show that while prospective teachers have positive attitudes toward Indian Knowledge Systems (IKS), they struggle with practical implementation.[4,5] This study extends that finding by revealing that the core issue is how student-teachers define "integration": they often reduce IKS to superficial level rather than establishing explicit mathematical connections.

To bridge this gap between awareness and pedagogical practice, general guidance from teacher-educators is insufficient. Instead, prospective mathematics teachers require explicit, subject-specific models that answer five key operational questions:

- What authentic IKS knowledge that can be integrated?
- What IKS context can be created to connect the mathematical concept?
- How will school students experience this connection through an activity?
- What should school students understand about both Mathematics and IKS?
- What Mathematics and IKS portfolio will be created by students to reflect sustainable development?

Ultimately, teacher education must shift focus from increasing the quantity of IKS references to improving the quality of integration moving from superficial level to meaningful mathematical learning and use of IKS in sustainability.

12. Limitations

The study was conducted with a small group of B.Ed. student-teachers and analysed 18 lesson plans. The perception analysis and the follow-up interview involved only four participants. Therefore, the findings cannot be generalized to all B.Ed. student-teachers.

The study also examined documented plans and participants' explanations rather than systematically observing classroom implementation. Consequently, the study cannot establish whether the reported understanding translated into actual classroom practice. The exemplary Mathematics and IKS module and lesson plans in process of validation.

13. Recommendations

To move student-teachers from basic awareness (Emerging Integration) to deep classroom teaching (Meaningful Integration), teacher training programs should focus on three clear areas:

Better Training & Lesson Planning

- Math-Specific Modules: Shift from broad, general lectures about culture to clear, math-focused training showing exactly how traditional practices connect directly to specific topics like geometry, symmetry, and measurement.
- Structured Lesson Plans: Add mandatory questions to lesson-plan templates:
- What traditional concept are you using?
- Which math topic does it connect to?
- What will school students learn from this activity?

- Ready-to-Use Resource Banks: Create shared digital libraries of validated modules and lesson plans and learning resource materials so the student-teachers can get appropriate guideline.

Practical Supervisor Feedback

- Clear Evaluation Rubrics: Orient supervisors to give targeted feedback that helps student-teachers move from superficial additions of IKS toward actual math learning and applicative IKS.
- Micro-Teaching Practice: Give student-teachers opportunities to practice delivering IKS math lessons in front of peers before they start their full school internships.
- **Future Research & Testing**
- Measure Student Impact: To measure whether using traditional IKS contexts actually improves school students' understanding of mathematical concepts.

14. Conclusion

This study highlights a critical gap in teacher education: while B.Ed. student-teachers demonstrate positive attitudes and emerging conceptual awareness toward Indian Knowledge Systems (IKS), this awareness rarely translates into meaningful classroom instruction without structured support. The findings reveal that without explicit, subject-specific guidance, student-teachers remain to superficial additions of IKS because of varied barrier factors like misconception, low confidence in linking IKS to core mathematical concepts.

Bridging this gap requires teacher education programs to move beyond broad policy statements by embedding structured lesson-plan pointers, providing validated resources, and training supervisors to deliver targeted feedback. Ultimately, moving from emerging awareness to meaningful practice ensures that IKS serves as a powerful context for deepening mathematical understanding while connecting learners to their cultural heritage, supporting sustainable development.

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Appendix A

Sampler Module

This is an additional module to VI std. Maharashtra SSC board syllabus to cater the IKS sensitivity among school going students with the objective to uphold the beautiful thesaurus of Indian Knowledge for the sustainable living. The additional unit not only orient students about Indian Art, Culture, Medicine and Yoga in sustainable living, but also involve them in creating IKS and Mathematics Portfolio that may sensitize them toward the IKS and its importance to them and Nation. School Mathematics teachers can connect the learnt mathematics matter with given IKS or using these IKS context can directly teach the mathematics concept as per their expertise. It demands teachers to do intense reading on given IKS for effective integration of IKS and Mathematics. This approach will also develop students' creativity and critical thinking capacity.

Subject: Mathematics

Std: VI

Board: Maharashtra State Board

Learning outcome: at the end of the module the students will able to

- Tell about the IKS with reference to Indian Art, Culture, Medicine and Yoga in sustainable living.
- Discuss logically about IKS with reference to Indian Art, Culture, Medicine and Yoga in sustainable living.
- Participate in IKS discussion based on Indian Art, Culture, Medicine and Yoga in sustainable living.
- Apply the Mathematics concepts with IKS
- Appreciated the IKS with reference to Indian Art, Culture, Medicine and Yoga in sustainable living
- Create IKS and Mathematics Portfolio.

Name of the Module: Indian Knowledge System and Mathematics

Unit 1: Mathematics in Art and Culture

a) Indian Culture : Festival, Food

b) Indian Art: Warli Painting, Madhubani Painting

c) IKS and Mathematics Portfolio: Models, Painting, Charts

Unit 2: Mathematics in Yoga and Ayurved

a) Yoga: Basic asanas

b) Ayurved: Basic herbs, first aid

c) IKS and Mathematics Portfolio: Scrap book, Stories, Reports

Reference :

Maharashtra State Bureau of Textbook Production and Curriculum Research. (2026). *Standard six textbook* [PDF]. https://ebooks.ebalbharati.in/pdfs/603060004.pdf

Appendix B

Lesson Plan

Subject: Mathematics

Std: VI

Topic: IKS and the Mathematics concept 'Ratio'

Board: Maharashtra State Board

Content Analysis:

Concepts: Ratio

Complex Terms: Quantity, Quantity comparison, simplest form of ratio

Brief Summary:

The lesson uses IKS context to develop understanding of the concept Ratio and give opportunity to apply the concept in daily life situations.

Core Elements in the context of IKS: India's Common Cultural Heritage IKS (Indian festival) Art and Culture, Sustainable living

Pre-requisites

Task analysis

Students have ability: to make simple flower garland, to make colours of different shades

Learner's analysis

- Learners' Demographics: Heterogeneous group with different learning style (Planned different activities)
- Learners' Linguistic ability: Weak at English the instruction language (Multilingual communication approach when needed)
- Learners' Knowledge: Learners have knowledge of basic Mathematical operations, understanding of concept 'faction' and are aware of various Indian festivals.

Methods and Strategies:

5 E's of the Constructivist approach, Activity cum discussion method, Experiential Learning

References: (other than Textbook)

YouTube Channel: Crafts & Entertainment - Mango leaves Marigold Flowers Toran making Ideas@home for any Pooja/door decorationFestival Special (understand different toran making)

IKS/Facts: https://www.scribd.com/doc/210241483/The-Effectiveness-of-Marigold-Plant-as-An-Alternative-Mosquito-Repellant#google_vignette

Learning Resources:

Engage + Explore - Activity: Gonda toran making, Content note I
Explain + Explore - Colour Shade Activity, Content note II
Elaborate + Explore - IKS Fact Content note III
Evaluation + Application - Warli Painting

Learning Outcomes

At the end of the lesson, a student will be able to…….

- Make garland Torans in groups
- Connect the context (Activity) with the content (content note 1)
- Define ratio.
- Give examples of ratios from daily life.
- Analyses IKS facts related to the Toran
- Appreciate the use of IKS (Indian traditional Culture, Art) in our daily lives.
- Analyses scientific bases hidden in IKS.
- Shows eagerness to draw Warli painting to depict the examples of ratio from their daily life.

Content / Learning Resources	Facilitator's Activities	Learners Activities
Phases of Constructivism:	The facilitator gives a situation and divides the learners in four groups and distributes activity material.	Students make torans with the given material.
Engaging & Exploring Activity: Gonda toran making	In any festival how you decorate your door How many Mongo leaves and Gonda flowers have you used to make the toran? Do all groups use the same number of mango leaves and flowers?	Students tell the number of used leaves and flowers group wise. No we have used different numbers of leaves and flowers
Content note 1: ratio example	How can we represent these two numbers of leaves and flowers in Mathematics?	Diagrams
	Facilitator provides a content note I The facilitator asks learners to connect the content with the context and predict the topic that they will be discussing.	Students read content note I. Students connect the context with content and tell that they can represent it with 'ratio' and the topic for discussion is 'Ratio'
	The facilitator gives instructions for the Activity II, next provides the content note-1I and asks following questions. Explain the ratio in your words. Give examples of ratio Give simple form of these ratio	Learners perform the activity II and go through the content note II A ratio is a number that shows how many times one quantity is compared to another.

	The facilitator asks following questions Give examples of ratios from your daily life.	12 : 6, 15:9
Explanation & Exploring Activity II (Make a Paint - using rice power and water to paint picture)	The facilitator make students to recall the toran activity and provides the content note-1II, and asks following questions Do you think Indian festivals and different activities in it has scientific importance	2:1, 5:3 Food that we eat, Bhel, Sharbat
Content note -II Definition: Ratio	Motivates learners to discuss the IKS in sustainable living	Learners reads the content note III
Example: examples of ratio Simplest form ratio	The facilitator gives a Warli painting depicting environmental issue Estimate human and animal ratio form the painting What if this ratio gets changed?	Learners analyze and tell the scientific importance of toran. Discuss on Indian festival and sustainable living
Elaboration & Exploring Examples – ratio from daily life	Share a different ratio that you think after changes along with its reasons? Write the simplest form of the given ratio. How do you find the painting in depicting your thoughts?	
Content note III Core Element: India's Common Cultural Heritage IKS – Toran's scientific facts		Learners reply different responses
Evaluation & application with value integration Concept and Example: Ratio Core Element: India's Common Cultural Heritage IKS – Warli painting		

Closure: Using the flow diagram the facilitator summarizes the topic further evaluates learners and assigns assignments.

Home Assignment: (For habit formation): Find about the Art form shown to you and depict any ratio from your daily life in this art form.

Content Note III (IKS – Interesting facts about Toran)

Marigold flowers and mango leaves naturally contain bug-repelling and germ-fighting oils. Marigolds give off a strong smell containing chemicals that mosquitoes hate. In fact, scientists use these same natural chemicals to make commercial insect repellents. At the same time, mango leaves contain natural compounds that help stop bacteria and fungi from growing. When you hang a fresh garland (Toran) at the doorway, it acts like a mild, natural air filter right where insects try to fly in. While a simple hanging garland is not as strong as modern chemical sprays or mosquito nets, hanging fresh leaves and flowers during festival season was a clever, natural way to keep bugs away when seasonal diseases were high.

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Two-Day National Level e-workshop on Incorporating IKS in the Existing Curriculum:
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Effectiveness of Integrating Indian Knowledge Systems in English Language Teaching: An Analysis of English Teachers' Perceptions

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Abstract: *The National Education Policy (2020) emphasizes integrating Indian Knowledge Systems (IKS) to promote culturally responsive and contextualized education. This study examined English teachers' perceptions of integrating IKS into English Language Teaching using a descriptive survey design. Data were collected from 59 English teachers from various schools across Mumbai using a Likert-scale questionnaire and analyzed using descriptive statistics. The findings revealed a moderate yet favorable perception towards IKS integration (M = 52.03). Teachers of Grades 1-5 reported a greater perception of IKS integration than teachers of Grades 6-8 and 9-12. The results indicate that integrating indigenous stories, folklore, oral traditions, and local cultural knowledge can enhance the relevance and learner-centredness of English language teaching. The study concludes that effective implementation requires teacher training, curriculum support, and appropriate instructional resources, thereby supporting the objectives of NEP 2020 in fostering linguistic competence, cultural identity, and contextual learning.*

Keywords: *Indian Knowledge Systems (IKS), English Language Teaching (ELT), National Education Policy 2020, Teachers' Perceptions, Culturally Responsive Pedagogy, English Education, Contextual Learning, Teacher Readiness.*

1. Introduction

The National Education Policy (NEP) 2020 emphasizes integrating Indian Knowledge Systems (IKS) into the curriculum and pedagogy to promote culturally responsive, contextualized, and holistic learning. It encourages teachers to connect classroom instruction with India's rich cultural and intellectual heritage while fostering global competencies among learners.

Although IKS has been increasingly incorporated into disciplines such as Science, Mathematics, Languages, and Social Sciences, its integration into English Language Teaching (ELT) remains limited. Contemporary language pedagogy recognizes that incorporating indigenous stories, folktales, oral traditions, and local literature can enrich language learning by enhancing communication skills, cultural identity, and critical thinking.

Accordingly, this study examines English teachers' perceptions of integrating IKS into ELT and analyses variations across grade levels. The findings aim to inform curriculum development, teacher education, and educational policy by contributing to the growing discourse on culturally responsive pedagogy.

2. Objectives of the Study

The study was conducted with the following objectives:

- To examine English teachers' perceptions of integrating Indian Knowledge Systems into English language teaching.
- To identify teachers' acceptance of and readiness to implement Indian Knowledge Systems in English language teaching.
- To compare teachers' perceptions regarding integrating Indian Knowledge Systems in teaching according to the grade levels they teach.
- To compare teachers' acceptance and readiness for implementing Indian Knowledge Systems in English language teaching according to the grade levels they teach.

3. Review of Literature

Recent studies indicate growing interest in integrating Indian Knowledge Systems (IKS) into education following the implementation of NEP 2020, which advocates experiential learning, multilingualism, contextual instruction, and the preservation of India's cultural heritage. They support integrating indigenous narratives, oral traditions, and regional literature into English Language Teaching (ELT) as authentic learning resources.

Indian Knowledge Systems (IKS) offer a holistic, culturally rooted approach emphasizing contextual learning, ethics, community, and the relationship between language and culture. This study explores integrating IKS into English Language Teaching (ELT) to create inclusive and culturally responsive classrooms for rural and tribal learners in Maharashtra. Using qualitative and experiential methods, it examines folk narratives, oral traditions, indigenous knowledge, experiential learning, and bilingual English–Marathi pedagogy. The findings suggest that IKS-based ELT enhances engagement, reduces language anxiety, strengthens cultural identity, and promotes English acquisition while advancing educational equity, epistemic justice, and cultural sustainability (**Dave, P.C., 2014**).

Research indicates that integrating Indian Knowledge Systems (IKS) can enhance learner engagement, creativity, cultural rootedness, and holistic development while connecting education to learners' sociocultural contexts. However, effective implementation requires curriculum reform, teacher preparation, appropriate pedagogical resources, and institutional support (**Majhi & Bera, 2025; Kar, 2026**).

"The successful implementation of IKS in ELT largely depends on teachers' perceptions, preparedness, and willingness to adopt culturally responsive teaching practices. As curriculum implementers, teachers play a pivotal role in translating educational policies into meaningful classroom experiences." (**Pujar, A. 2026**).

Although scholarly interest in integrating Indian Knowledge Systems into education has increased following NEP 2020, empirical research examining English teachers' perceptions of IKS integration remains comparatively limited. Existing literature has largely focused on policy perspectives, curriculum integration, holistic education, and the conceptual potential of IKS, while fewer studies have examined teachers' experiences across different school boards and grade levels. This study addresses this gap by examining English teachers' perceptions of IKS integration and providing evidence-based insights into the practical implementation of culturally contextualized approaches in English Language Teaching.

4. Research Methodology

The study adopted a descriptive survey research design to investigate English teachers' perceptions and acceptance of integrating Indian Knowledge Systems into English language teaching. As the webinar coordinator, the investigator examined participants' perspectives and sought to understand English teachers' perceptions of integrating IKS. The investigator prepared a structured questionnaire with 12 items and a five-point Likert scale ranging from Strongly Disagree (1) to Strongly Agree (5). Given the exploratory and descriptive nature of the study and time constraints, the investigator (a Teacher

Educator in English) used a structured questionnaire. The investigator collected data from 59 English teachers across different grade levels using convenience sampling.

The investigator analyzed the collected data using descriptive statistics, including mean scores for teachers' perceptions of integrating Indian Knowledge Systems in teaching across grade levels and teachers' acceptance and readiness to implement Indian Knowledge Systems in English language teaching.

5. Analysis of Data

Descriptive Analysis of scores of English teachers' perceptions on the integration of Indian Knowledge Systems into English Language Teaching is given below:

Table 1
Descriptive Analysis of Scores of English Teachers' Perceptions

Grade	N	Mean
1-5	13	53.55
6-8	18	52.17
9-12	28	51.32
Total mean score	59	52.03

The table above shows the mean scores of the English teachers' perceptions of the integration of IKS in teaching. The mean score of teachers who teach grades 1-5 (53.55) is higher than the perceptions of teachers in other grade levels. Teachers who teach grades 6-8 have a mean score of 52.17, slightly higher than teachers who teach grades 9-12 (51.32).

Table 2
Descriptive Analysis of Scores of English Teachers' Acceptance and Readiness for Implementing IKS

Grade	N	Mean
1-5	13	15.23
6-8	18	16.17
9-12	28	14.36
Total mean score	59	15.1

The table above shows the mean scores of English teachers' acceptance and readiness to implement IKS in teaching. The mean score of teachers who teach grades 6 to 8 (16.17) is higher than that of teachers who teach grades 1 to 5 (15.23) and 9 to 12 (14.36), respectively.

6. Findings and Discussion

The findings indicate that respondents from Grades 6–8 demonstrated the highest mean score (16.17), followed by Grades 1–5 (15.23), while respondents from Grades 9–12 showed the lowest mean score (14.36). This suggests that the measured characteristic was relatively more pronounced among the middle-grade group (6–8) and comparatively lower among the secondary/senior-secondary group (9–12).

The findings indicate that English teachers generally show positive perceptions, acceptance, and readiness to integrate Indian Knowledge Systems (IKS) into English Language Teaching (ELT). Teachers of Grades 1–5 reported the highest mean perception score (M = 53.55), followed by teachers of Grades 6-8 (M = 52.17) and Grades 9-12 (M = 51.32*). Similarly, the highest mean acceptance and readiness score was observed among teachers of Grades 6–8 (M = 16.17), followed by Grades 1–5 (M = 15.23) and Grades 9–12 (M = 14.36).

These findings suggest that teachers' perceptions, acceptance, and readiness for integrating IKS are broadly consistent across grade levels rather than being substantially influenced by the specific grades they teach.

The findings also indicate an overall positive orientation among English teachers toward integrating IKS into ELT. Teachers of Grades 1–5 reported the highest mean perception score (M = 53.55), indicating comparatively stronger recognition of the relevance and value of IKS at the primary level. However, for acceptance and readiness, teachers of Grades 6–8 had the highest mean score (M = 16.17), followed by Grades 1–5 (M = 15.23) and Grades 9–12 (M = 14.36*).

This pattern may indicate that middle-school teachers perceive greater practical scope for connecting IKS with language-learning activities, classroom discussions, stories, and culturally relevant texts. The comparatively lower scores among Grades 9–12 teachers may reflect greater curricular demands and an examination-oriented approach to teaching, particularly at the secondary and senior-secondary levels.

Overall, the findings indicate a favorable foundation for integrating IKS into ELT, while also highlighting the need for level-specific teacher preparation, appropriate pedagogical resources, and curriculum support.

Although teachers' perceptions and readiness regarding the integration of IKS do not differ significantly across grade levels, mean scores are comparatively lower among teachers of Grades 9–12 (M = 51.32 for perception and M = 14.36 for acceptance and readiness). At the higher grade levels, particularly Grades 10 and 12, teachers may place greater emphasis on completing the prescribed syllabus and preparing students for examinations.

The relatively consistent results across the grade groups are significant from a pedagogical perspective. They suggest that integrating IKS into ELT is not necessarily restricted to a particular stage of schooling and may be adaptable across primary, middle, secondary, and senior-secondary classrooms. At the same time, variation in mean scores suggests that factors beyond grade level—such as teachers' professional training, familiarity with IKS, access to appropriate resources, institutional support, and confidence in applying culturally responsive pedagogy—may influence implementation.

Strengthening teachers' professional capacity and providing appropriate institutional and curricular support can facilitate the transition from positive attitudes towards IKS to meaningful classroom implementation. This approach can help develop culturally responsive ELT environments in which learners develop not only linguistic and communicative competence but also a deeper awareness of their cultural and intellectual heritage.

7. Recommendations

The investigator recommends providing teachers with adequate training on effectively integrating IKS into English language teaching across grade levels. The following recommendations may further enhance the integration of Indian Knowledge Systems into English Language Teaching:

- **Curriculum Integration and Contextualization** – Systematically integrate Indian Knowledge Systems into English language curricula through culturally relevant stories, texts, biographies, oral traditions, folk literature, proverbs, philosophical ideas, and traditional knowledge practices. These resources can develop core language competencies in listening, speaking, reading, and writing. Such

integration should be meaningful and aligned with prescribed language-learning outcomes rather than treated as an additional or isolated component.

- **Pedagogical Adaptation and Experiential Learning** – Implement level-specific, active-learning methodologies, ranging from primary-level storytelling and oral traditions to secondary-level critical inquiry, comparative analysis, and project-based learning. These approaches should be developmentally appropriate and promote meaningful cognitive engagement.
- **Content Development and Digital Repositories** – Develop linguistically accessible teaching-learning materials (TLMs), and establish open-access digital repositories with authenticated manuscripts, biographies, multimedia resources, and regional knowledge practices. These resources can support evidence-based instructional design and facilitate wider access to IKS-related materials.
- **Teacher Readiness and Professional Development** – Strengthen pre-service and in-service teacher-training programs through practice-oriented initiatives that develop pedagogical content knowledge, enhance instructional self-efficacy, and equip English language teachers with practical strategies for integrating IKS into classroom teaching.
- **Critical, Pluralistic, and Inclusive Frameworks** – IKS should be presented through an analytical and multi-vocal lens that recognizes India's diverse linguistic and cultural traditions. Teachers should encourage evidence-based discussion, comparative evaluation, and critical interpretation rather than passive acceptance of knowledge traditions.
- **Institutional Infrastructure and Expert Collaboration** – Institutions should establish effective support mechanisms, including teacher-learning communities, adequate resources, and interdisciplinary partnerships with IKS scholars, linguists, and local knowledge holders. Such collaboration can support authentic and sustained implementation.
- **Assessment Design and Classroom Action Research** – Develop multidimensional assessment frameworks to evaluate both linguistic proficiency and cultural-analytical reasoning. Teachers should also be encouraged to undertake classroom-based action research to examine the effectiveness of IKS-based instructional practices and their impact on student engagement.

Overall, the findings suggest that teachers' positive perceptions, acceptance, and readiness provide a favorable foundation for integrating IKS into English Language Teaching. However, successful integration requires a systematic approach involving curriculum reform, teacher preparation, authentic resource development, pedagogical innovation, inclusive representation, and institutional support. Integration should therefore move beyond the symbolic inclusion of Indian cultural content toward meaningful pedagogical engagement, in which IKS serves as a contextual and experiential resource for developing English language competencies alongside cultural understanding and critical thinking.

8. Conclusion

This study examined English teachers' perceptions, acceptance, and readiness to integrate Indian Knowledge Systems (IKS) into English Language Teaching (ELT) within the broader policy framework of the National Education Policy (NEP) 2020.

The findings align with the broader educational vision articulated in NEP 2020, which advocates incorporating India's rich knowledge traditions into contemporary education while promoting holistic, contextualized, and culturally responsive learning. Within ELT, integrating IKS can establish meaningful connections between acquiring a global language and learners' local cultural and intellectual contexts. This approach can use culturally familiar knowledge, narratives, practices, and perspectives as pedagogical resources, making English language learning more contextualized and meaningful.

Nevertheless, favorable teacher perceptions alone cannot ensure the effective and sustained integration of IKS into classroom practice. Successful implementation requires a supportive ecosystem encompassing systematic professional development, accessible and pedagogically appropriate IKS-based teaching resources, institutional support, and context-sensitive instructional strategies. Teacher education and professional development programs, in particular, need to equip English teachers with

the conceptual understanding and pedagogical competencies required to identify, critically engage with, and appropriately integrate relevant Indian knowledge traditions into ELT.

Further research may investigate additional variables that could influence the successful implementation of IKS in ELT, including teachers' prior IKS-related training, teaching experience, school type, and access to instructional resources, and institutional support. Qualitative and mixed-methods investigations could also provide deeper insights into teachers' classroom experiences, pedagogical practices, and the challenges of integrating IKS into English language instruction. Such research would help develop evidence-based strategies to implement the objectives of NEP 2020 and advance a more contextually relevant and culturally responsive approach to English Language Teaching.

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Two-Day National Level e-workshop on Incorporating IKS in the Existing Curriculum:
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Challenges of Updating Indian Knowledge System (IKS) Resources in Higher Education Libraries: A Survey-Based Study

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Abstract: *Indian Knowledge Systems (IKS) refers to the traditional knowledge and ideas developed in India over many generations in areas such as science, technology, culture, philosophy, etc. NEP 2020 promotes using IKS in higher education. Academic libraries support this by collecting, preserving, updating, and providing access to IKS resources. However, effective IKS collection development faces challenges related to funding, authenticity, language, expertise, technology, curriculum requirements, and institutional support.*

This study examines the challenges higher education libraries face in updating IKS resources. The study administered a structured questionnaire to library professionals and analyzed responses using a descriptive survey method. The findings indicate that awareness of IKS is relatively high, but infrastructure and promotional activities remain limited. Major challenges include changing educational policies, inadequate budgets, language barriers, limited authentic resources, and difficulties identifying and verifying resources. The study recommends dedicated funding, staff training, expert collaboration, digitization, and systematic IKS collection-development policies.

Keywords: *Indian Knowledge Systems, IKS Resources, Academic Libraries, Higher Education, NEP 2020, Collection Development, Digitization.*

1. Introduction

Indian Knowledge Systems (IKS) include India's rich traditions of knowledge in areas such as philosophy, science, medicine, mathematics, agriculture, arts, language, and culture. The National Education Policy (NEP) 2020 places greater importance on integrating IKS into higher education.

The Government of India's Indian Knowledge Systems Division promotes the preservation, research, teaching, and dissemination of IKS. In this context, academic libraries play an important role in collecting, preserving, updating, and providing access to IKS resources in both print and digital formats.

However, libraries face several challenges, including limited budgets, language barriers, difficulty in identifying authentic resources, and lack of specialized expertise, changing curriculum requirements, and inadequate digital infrastructure. Therefore, this study identifies the major challenges library professionals face in updating IKS resources in higher education libraries.

2. Review of Literature

The National Education Policy (NEP) 2020 emphasizes Indian Knowledge Systems (IKS) and encourages the inclusion of Indian culture, traditions, languages, and knowledge in higher education. This has increased the need for suitable IKS resources for teaching, learning, and research. The Indian Knowledge Systems Division of the Ministry of Education works to preserve, promote, and develop knowledge about India's traditional knowledge systems. It supports research projects, IKS Centers,

workshops, internships, and faculty-development programs. Libraries can support these efforts by collecting and providing access to IKS resources. [1]

A recent study shows that IKS covers many areas such as Science, Mathematics, Medicine, Agriculture, Philosophy, Literature, Arts, Architecture, and Technology. The growing use of IKS in higher education has increased the need for high-quality books, digital resources, and library reference materials.[2]

Developing an IKS collection is not easy. Libraries may face challenges such as limited budgets, language barriers, difficulty in finding authentic resources, lack of expert guidance, limited digital facilities, copyright issues, and changing curriculum needs. Therefore, libraries need proper planning, technology, staff training, and collaboration with subject experts to develop useful, up-to-date IKS collections. [3]

This study examines these challenges from the perspective of library professionals.

3. Objectives

- To assess librarians' awareness of IKS.
- To examine the status of IKS collection development in higher education libraries.
- To identify IKS promotional activities undertaken by librarians.
- To examine challenges faced by the librarians in accessing and updating IKS resources.

4. Research Methodology

4.1 Research Design & Approach

The present study employed a quantitative research approach utilizing a descriptive survey design. This design was selected to analyze the current status of IKS resources in higher education libraries without manipulating variables, focusing on librarians' awareness, collection development, promotional efforts, and associated challenges.

4.2 Target Population & Sampling

The target population comprised library professionals working in higher education institutions. Data were gathered using a purposive sampling technique to select professionals directly involved in collection development and resource management. The study retrieved 13 responses.

4.3 Research Instrument & Variables

A structured questionnaire served as the primary instrument, capturing demographic profiles, resource counts, and 4-point Likert-scale statements ranging from Strongly Disagree to Strongly Agree. Statements were operationalized across four core dimensions, as below:

- IKS Collection Development
- Promotional Activities
- Challenges faced by the librarians in accessing and updating IKS resources.

5. Data Analysis

Because the sample size is small, the analysis used only percentages and means to summarize general response patterns. The detailed analysis of each dimension is given further:-

5.1 Dimension 1: IKS Awareness

This dimension evaluates basic conceptual knowledge and professional development engagement regarding IKS; the table below explains the statistical analysis.

Table 1
Descriptive analysis of the IKS Awareness

Items in Questionnaire	Mean	% of positive response
I know the concept of the Indian Knowledge System (IKS).	2.83	75.0%
I have attended webinars, seminars, or sessions on IKS	2.75	58.3%
Overall Awareness	**2.79**	—

Descriptive analysis of the IKS Awareness

Interpretation

The results indicate a relatively good level of IKS awareness among librarians. **75%** of respondents agreed or strongly agreed that they knew the concept of IKS & 58.3**%** had attended IKS-related webinars, seminars, or sessions.

This suggests that while basic awareness is reasonably high, continuous professional exposure and training in IKS need strengthening.

5.2 Dimension 2 – IKS Collection Development

The dimension covers analysis related to assessing institutional policy support, dedicated budgeting, physical organization, and preservation infrastructure.

Table 2

Descriptive analysis of the IKS Collection Development

Items in Questionnaire	Mean	% of positive response
Separate IKS collection/section	2.50	58.3%
Institutional policy	2.58	58.3%
Adequate budget	2.50	58.3%
Technology for preservation	2.33	33.3%
Faculty encouragement	2.75	58.3%
Collection Development	2.53	—

Interpretation

The findings show a moderate level of IKS collection development. Around 58.3% of respondents reported a separate IKS collection, institutional policy, adequate budget, and faculty encouragement.

It also shows that only 33.3% reported having technology to archive and preserve traditional knowledge. Therefore, technological infrastructure for IKS preservation is a major area requiring attention.

5.3 Dimension 3 – IKS Promotional Activities

This dimension evaluates library-led initiatives to promote visibility and resource usage.

Table 3
Descriptive analysis of IKS Promotional Activities

Items in Questionnaire	Mean	% of positive response
To promote IKS, activities like exhibitions, talks, or webinars are conducted	2.25	33.3%

Interpretation

IKS promotional activities recorded the lowest mean score (2.25). Only one-third of respondents agreed or strongly agreed that they conduct exhibitions, talks, or workshops to promote IKS.

This indicates a gap between awareness and active promotion. Libraries may need to organize more exhibitions, lectures, workshops, reading programs, and orientation activities to increase the visibility and use of IKS resources.

5.4 Dimension 4 – Challenges faced by the librarians in accessing and updating IKS resources are as follows:

College Number 1- In College Number 1, the following challenges were observed:

Limited availability of authentic, well-organized, and curriculum-oriented IKS resources in both print and digital formats. Copyright issues and changes in education policy. Budget constraints and a lack of adequate bibliographic tools to identify and select quality IKS resources.

College Number 2- In College Number 2, awareness of IKS resources, resource preservation, and budget were the main challenges. Frequent changes in educational policy and outdated collections also hindered IKS collection development.

College Number 3- In College Number 3, limited resource availability and difficulty identifying and verifying authentic traditional knowledge were the main challenges; changes in educational policy and the requirement to procure only curriculum-based resources were also major challenges.

College Number 4- The major challenge was that students were not interested in studying IKS. Budget constraints, frequent changes in Educational policy, and the need for technology to preserve IKS material were also challenges.

College Number 5- The challenges were a limited budget, a lack of proper guidance & only curriculum-based material could be procured in the library. Frequent changes in educational policy were also a major challenge.

College Number 6- The challenges were a limited budget and limited IKS resources.

College Number 7- The major challenge was an insufficient budget for IKS resources.

College Number 8- The major challenges were a limited budget, frequent policy changes, and outdated collections.

College Number 9- The major challenges were limited resources, frequent policy changes, copyright issues, and language barriers.

College Number 10- The major challenges were proper guidance on IKS resources & Space problem.

College Number 11- Frequent changes in Education policy & limited budget were the major challenges.

College Number 12- The major challenges were Limited Space to store materials and a limited budget.

College Number 13- The major challenges were limited IKS resources.

The table below covers challenges related to identifying administrative, financial, and legal constraints affecting resource management.

Table 4
Descriptive analysis of Challenges in Updating IKS Table

Items in the questionnaire	Mean	% of positive response
Limited budget affects updating	3.17	83.3%
Educational policy changes affect updating	3.17	91.7%
Existing collections contain outdated materials	2.33	33.3%
Only curriculum-based resources are procured	2.25	41.7%
Copyright/IP issues delay updating	2.75	66.7%
Overall Challenges	2.73	—

Interpretation

Librarians most often cited frequent changes in educational policies, reported by 91.7% of respondents.

The second major challenge was limited library budget, reported by 83.3%.

Copyright and intellectual property issues were also important, with 66.7% of respondents identifying them as a challenge.

Thus, policy changes, financial constraints, and copyright/IP issues are major barriers to regularly updating IKS resources.

5.6 Summary Descriptive Analysis

Table 5
Descriptive Statistics by Dimension

Dimension	Items	Mean	Level
IKS Awareness	2	2.79	Relatively high
IKS Collection Development	5	2.53	Moderate
IKS Promotional Activities	1	2.25	Low
Challenges in Updating IKS Resources	5	2.73	Moderate–high

Interpretation

IKS Awareness (M = 2.79) had the highest mean, indicating that librarians generally have a reasonable level of awareness and exposure to IKS.

Collection Development for IKS (M = 2.53) was moderate, indicating that libraries have some institutional arrangements for developing IKS collections, but these arrangements require strengthening.

The lowest mean was found for IKS Promotional Activities (M = 2.25), suggesting that librarians' active promotion of IKS through exhibitions, talks, and workshops is comparatively limited.

6. Discussion

The results show a clear gap between knowing about IKS and managing it day to day. Librarians understand the importance of IKS and want to support it, but they are stuck due to the following main problems:

Money & Policy Shifts: Constant curriculum updates combined with tight budgets make it hard to buy and update books regularly.

Training to preserve IKS Material: Most ancient IKS texts are written in classical languages (like Sanskrit). Librarians need proper training in translation & preservation tools. Training in digital preservation is needed to properly catalog and preserve these texts.

Passive Collections: Because libraries rarely host events or talks on IKS, students and teachers rarely use these valuable materials.

Limited Space: Libraries have limited space to store resources.

7. Recommendations

- **Set Aside Funds:** Give libraries a dedicated annual budget just for IKS resources.
- **Invest in Digital Tools:** Buy proper scanning and software tools to digitize rare, old materials.
- **Train Staff & Hire Experts:** Provide training on different tools that help in the preservation of IKS materials in print and digital forms.
- **Promote Active Use:** Host regular book displays, workshops, and lectures so students actually use the collection.

8. Conclusion

Librarians are aware of IKS, but libraries are currently unprepared to manage and promote it effectively. To make IKS a real part of higher education, libraries must move from passively storing books to actively preserving and sharing knowledge. Libraries need to improve their printed and digital collections.

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भारतीय ज्ञान प्रणाली (IKS) के समेकन द्वारा अनुभवात्मक अधिगम को सशक्त बनाने की दिशा में एक चिंतनात्मक अध्ययन: एक पाठ योजना के संदर्भ में

श्री. किशन श्रीकांत गुप्ता
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सारांश: *राष्ट्रीय शिक्षा नीति 2020 भारतीय शिक्षा व्यवस्था को ज्ञान, कौशल, मूल्य एवं सांस्कृतिक चेतना के समन्वित विकास की दिशा में पुनर्संगठित करने पर बल देती है। इसी उद्देश्य की पूर्ति के लिए भारतीय ज्ञान प्रणाली (Indian Knowledge System - IKS) को विद्यालयी शिक्षण में समाहित करने की आवश्यकता महसूस की गई है। प्रस्तुत लेख अन्वेषक के व्यक्तिगत अनुभव, कार्यशाला सहभागिता तथा कक्षा-शिक्षण के अभ्यास पर आधारित एक चिंतनात्मक अध्ययन है। यह अध्ययन The Lord's Universal College of Education द्वारा आयोजित कार्यशाला में विकसित IKS समेकित पाठ योजना के अनुभवों पर आधारित है। इस अध्ययन में कक्षा 8 की हिंदी कविता "इनसान" को भारतीय ज्ञान प्रणाली के तत्वों—पंचमहाभूत, परहित, प्रकृति आधारित अधिगम तथा अनुभवात्मक अधिगम—के साथ जोड़ा गया। शिक्षण प्रक्रिया में 5E मॉडल (Engage, Explore, Explain, Elaborate, Evaluate) का उपयोग किया गया, जिससे विद्यार्थियों की सहभागिता, अभिव्यक्ति, सहयोगात्मक अधिगम तथा नैतिक मूल्यों के प्रति सकारात्मक दृष्टिकोण विकसित होता हुआ दिखाई दिया।अन्वेषक के अवलोकन के अनुसार IKS आधारित शिक्षण केवल विषय-वस्तु को समझाने का माध्यम नहीं रहा, बल्कि विद्यार्थियों को अपनी सांस्कृतिक विरासत, भारतीय जीवन-मूल्यों तथा प्रकृति के साथ संबंध स्थापित करने का अवसर भी प्रदान करता है। यह अध्ययन इस निष्कर्ष की ओर संकेत करता है कि भारतीय ज्ञान प्रणाली का समेकन विद्यार्थियों को केवल गुणवत्तापूर्ण शिक्षा (SDG-4) की दिशा में ही नहीं ले जाता, बल्कि उन्हें सांस्कृतिक रूप से अधिक जागरूक, उत्तरदायी एवं संवेदनशील नागरिक बनने के लिए भी प्रेरित करता है।*

मुख्य शब्द: *भारतीय ज्ञान प्रणाली, राष्ट्रीय शिक्षा नीति 2020, अनुभवात्मक अधिगम, रचनावादी उपागम, गुणवत्तापूर्ण शिक्षा, सांस्कृतिक चेतना, हिंदी शिक्षण।*

1. प्रस्तावना

भारतीय शिक्षा परंपरा का मूल उद्देश्य सदैव ज्ञान के साथ-साथ नैतिक मूल्यों, अनुभवात्मक अधिगम तथा व्यक्तित्व के समग्र विकास पर आधारित रहा है। राष्ट्रीय शिक्षा नीति (NEP) 2020 ने इसी दृष्टिकोण को पुनः स्थापित करते हुए भारतीय ज्ञान प्रणाली (Indian Knowledge System-IKS) को विद्यालयी शिक्षा में समाहित करने पर विशेष बल दिया है। IKS केवल प्राचीन ज्ञान का संग्रह नहीं है, बल्कि यह प्रकृति, संस्कृति, जीवन-मूल्यों, सह-अस्तित्व तथा अनुभवात्मक अधिगम पर आधारित समग्र शिक्षण दृष्टिकोण है।

इसी उद्देश्य से The Lord's Universal College of Education द्वारा आयोजित कार्यशाला में भारतीय ज्ञान प्रणाली पर आधारित पाठ योजनाओं के निर्माण एवं रचनावादी के 5E उपागम (Engage, Explore, Explain, Elaborate, Evaluate) के माध्यम से उनके प्रभावी क्रियान्वयन का प्रशिक्षण दिया गया। इस कार्यशाला के अंतर्गत

अन्वेषक द्वारा कक्षा 8 की हिंदी कविता "इनसान" पर आधारित एक IKS समेकित पाठ योजना तैयार की गई, जिसमें पंचमहाभूत, परहित, प्रकृति-आधारित अधिगम तथा भारतीय जीवन-मूल्यों को विषय-वस्तु से जोड़ा गया।

पाठ योजना के प्रस्तुतीकरण के दौरान यह अनुभव हुआ कि IKS आधारित शिक्षण से विद्यार्थियों की सहभागिता, अभिव्यक्ति तथा सीखने के प्रति रुचि में सकारात्मक वृद्धि हुई। विद्यार्थियों ने विषय को अपने जीवन एवं सांस्कृतिक अनुभवों से जोड़कर समझा तथा समूह-चर्चा में सक्रिय भागीदारी निभाई। इससे उनमें सहयोग, संवेदनशीलता तथा भारतीय सांस्कृतिक मूल्यों के प्रति सम्मान का विकास भी देखा गया।

अतः यह अध्ययन IKS आधारित शिक्षण के माध्यम से विद्यार्थियों के समग्र विकास, सांस्कृतिक जागरूकता तथा गुणवत्तापूर्ण शिक्षा (SDG-4) की दिशा में एक सार्थक प्रयास प्रस्तुत करता है।

2. अध्ययन के उद्देश्य

- भारतीय ज्ञान प्रणाली की अवधारणा को समझना।
- राष्ट्रीय शिक्षा नीति 2020 के संदर्भ में IKS की भूमिका का अध्ययन करना।
- IKS समेकित पाठ योजना निर्माण की प्रक्रिया का अनुभव प्राप्त करना।
- 5E मॉडल के माध्यम से शिक्षण की प्रभावशीलता का अध्ययन करना।
- विद्यार्थियों की सहभागिता एवं अभिवृत्ति में आए परिवर्तनों का अवलोकन करना।
- भाषा शिक्षण में भारतीय संस्कृति एवं जीवन-मूल्यों के समेकन की उपयोगिता का अध्ययन करना।

3. साहित्य समीक्षा

- राष्ट्रीय शिक्षा नीति 2020 में भारतीय ज्ञान प्रणाली को शिक्षा का अभिन्न अंग बनाने पर बल दिया गया है। नीति के अनुसार शिक्षा ऐसी होनी चाहिए जो विद्यार्थियों को अपनी संस्कृति, परंपराओं तथा स्थानीय ज्ञान से जोड़ते हुए समग्र विकास का अवसर प्रदान करे।
- National Education Policy (2020) के अनुसार भारतीय ज्ञान परंपरा का समावेश विद्यार्थियों में नैतिकता, रचनात्मकता, आलोचनात्मक चिंतन तथा सांस्कृतिक चेतना विकसित करने में सहायक है।
- IKS Division, Ministry of Education द्वारा प्रकाशित दस्तावेज़ों में यह स्पष्ट किया गया है कि भारतीय ज्ञान प्रणाली केवल प्राचीन ज्ञान तक सीमित नहीं है, बल्कि यह आधुनिक शिक्षा में अनुभवात्मक अधिगम, स्थानीय ज्ञान, पर्यावरणीय चेतना तथा मूल्य-आधारित शिक्षा को सुदृढ़ करती है।

4. कार्यप्रणाली

प्रस्तुत अध्ययन गुणात्मक (Qualitative) एवं चिंतनशील (Reflective) प्रकृति का है। इस अध्ययन के लिए कक्षा 8 की हिंदी कविता "इनसान" का चयन किया गया, जिसमें पंचमहाभूत, परहित, प्रकृति-आधारित अधिगम तथा भारतीय जीवन-मूल्यों का समेकन किया गया। शिक्षण प्रक्रिया में रचनावादी 5E उपागम (Engage, Explore, Explain, Elaborate एवं Evaluate) का उपयोग किया गया। पाठ योजना के प्रस्तुतीकरण के दौरान विद्यार्थियों की सहभागिता, अभिव्यक्ति, सहयोगात्मक अधिगम तथा अभिवृत्ति में आए परिवर्तनों का अवलोकन किया गया।

5. कक्षा-अवलोकन एवं चर्चा

IKS समेकित पाठ योजना के प्रस्तुतीकरण के दौरान यह अनुभव हुआ कि विद्यार्थियों की सक्रिय सहभागिता सामान्य शिक्षण की तुलना में अधिक थी। विद्यार्थियों ने केवल प्रश्नों के उत्तर ही नहीं दिए, बल्कि अपने अनुभवों, पारिवारिक संस्कारों तथा सांस्कृतिक परंपराओं को भी साझा किया। इससे कक्षा का वातावरण संवादात्मक एवं सहभागितापूर्ण बन गया।

भाषा शिक्षण में विशेष रूप से यह देखा गया कि विद्यार्थियों की अभिव्यक्ति अधिक प्रभावशाली हुई। समूह चर्चा के दौरान उन्होंने कविता के प्रतीकों-फूल, दीपक, मेघ एवं चंद्रमा को अपने दैनिक जीवन एवं सामाजिक मूल्यों से जोड़कर समझाया। इससे स्पष्ट हुआ कि अनुभवात्मक एवं IKS आधारित शिक्षण विद्यार्थियों में गहन चिंतन विकसित करता है।

अन्वेषक के व्यक्तिगत अनुभव के अनुसार IKS आधारित शिक्षण से विद्यार्थियों की अभिवृत्ति (Attitude) में भी सकारात्मक परिवर्तन देखने को मिला। उनमें सहयोग, करुणा, परोपकार एवं पर्यावरणीय उत्तरदायित्व जैसे मूल्यों के प्रति संवेदनशीलता विकसित हुई। विभिन्न सांस्कृतिक पृष्ठभूमि से आने वाले विद्यार्थियों ने एक-दूसरे की परंपराओं एवं जीवन-मूल्यों को सम्मानपूर्वक सुना। इससे यह अनुभव हुआ कि IKS केवल भारतीय संस्कृति का परिचय नहीं कराता, बल्कि सांस्कृतिक विविधता के प्रति सम्मान की भावना भी विकसित करता है।

इसके अतिरिक्त विद्यार्थियों में आत्मविश्वास, संवाद कौशल तथा समूह में कार्य करने की क्षमता में भी वृद्धि दिखाई दी। यह अनुभव राष्ट्रीय शिक्षा नीति 2020 के उस उद्देश्य को साकार करता है जिसमें शिक्षा को केवल परीक्षा-केंद्रित न मानकर जीवन-केंद्रित एवं मूल्यपरक बनाने पर बल दिया गया है। साथ ही यह सतत विकास लक्ष्य SDG-4 (Quality Education) के अनुरूप समावेशी, सहभागी एवं गुणवत्तापूर्ण शिक्षा को भी प्रोत्साहित करता है।

6. निष्कर्ष

प्रस्तुत अध्ययन एवं कक्षा-अवलोकन के आधार पर निम्नलिखित प्रमुख निष्कर्ष सामने आए –

- भारतीय ज्ञान प्रणाली (IKS) के समेकन से विद्यार्थियों की कक्षा में सहभागिता में उल्लेखनीय वृद्धि हुई। वे केवल श्रोता न रहकर सक्रिय अधिगमकर्ता (Active Learners) के रूप में उभरे।
- 5E मॉडल (Engage, Explore, Explain, Elaborate एवं Evaluate) के प्रयोग से शिक्षण अधिक व्यवस्थित, रोचक एवं अनुभवात्मक बना। इससे विद्यार्थियों ने विषय-वस्तु को केवल समझा ही नहीं, बल्कि उसे अपने जीवन से भी जोड़ा।
- कविता "इनसान" में निहित भारतीय ज्ञान प्रणाली के तत्व – जैसे पंचमहाभूत, परहित, प्रकृति-आधारित अधिगम एवं नैतिक जीवन-मूल्य-विद्यार्थियों तक अधिक प्रभावी ढंग से पहुँच सके। इससे साहित्य के माध्यम से मूल्य-आधारित शिक्षा को भी सुदृढ़ करने में सहायता मिली।
- विद्यार्थियों में सहयोग, संवेदनशीलता, करुणा, परोपकार तथा पर्यावरणीय उत्तरदायित्व जैसे मानवीय मूल्यों के प्रति सकारात्मक दृष्टिकोण विकसित हुआ। समूह-गतिविधियों के दौरान उन्होंने एक-दूसरे के विचारों का सम्मान किया तथा सहयोगात्मक अधिगम का प्रभावी प्रदर्शन किया।
- IKS आधारित शिक्षण के कारण विद्यार्थियों में अपनी संस्कृति, स्थानीय परंपराओं तथा भारतीय ज्ञान परंपरा के प्रति जिज्ञासा एवं सम्मान की भावना विकसित हुई। साथ ही वे कक्षा में उपस्थित विभिन्न सांस्कृतिक पृष्ठभूमियों के अनुभवों को भी सम्मानपूर्वक सुनने और समझने लगे। इससे कक्षा में समावेशी एवं लोकतांत्रिक वातावरण निर्मित हुआ।
- भाषा शिक्षण में विद्यार्थियों की मौखिक अभिव्यक्ति, आत्मविश्वास तथा चिंतन क्षमता में सकारात्मक परिवर्तन देखने को मिला। उन्होंने अपने अनुभवों को विषय से जोड़कर अधिक प्रभावशाली ढंग से प्रस्तुत किया।
- प्रस्तुत अध्ययन से यह स्पष्ट होता है कि भारतीय ज्ञान प्रणाली का समेकन विद्यालयी शिक्षण को अधिक प्रभावी, मूल्यपरक तथा विद्यार्थी-केंद्रित बना सकता है। यदि प्रत्येक शिक्षक विषयानुसार IKS के उपयुक्त तत्वों को अपनी पाठ योजनाओं में सम्मिलित करे, तो शिक्षण केवल परीक्षा-उन्मुख न रहकर जीवनोपयोगी बन सकता है।
- शिक्षक-प्रशिक्षण संस्थानों में IKS आधारित पाठ योजना निर्माण, अनुभवात्मक अधिगम तथा 5E मॉडल पर नियमित प्रशिक्षण आयोजित किए जाने चाहिए। इससे भावी शिक्षक भारतीय ज्ञान परंपरा को आधुनिक शिक्षण विधियों के साथ जोड़कर अधिक प्रभावशाली शिक्षण कर सकेंगे।

यह अध्ययन राष्ट्रीय शिक्षा नीति 2020 की उस भावना का भी समर्थन करता है, जिसमें शिक्षा को भारतीय संस्कृति, स्थानीय ज्ञान, नैतिक मूल्यों एवं अनुभवात्मक अधिगम से जोड़ने पर बल दिया गया है। साथ ही IKS आधारित शिक्षण सतत विकास लक्ष्य (SDG-4: Quality Education) की भावना को भी सशक्त करता है, क्योंकि यह विद्यार्थियों को समावेशी, गुणवत्तापूर्ण, सहभागी एवं जीवनोपयोगी शिक्षा प्रदान करने की दिशा में महत्वपूर्ण भूमिका निभाता है।

भारतीय ज्ञान प्रणाली केवल अतीत की धरोहर नहीं है, बल्कि वर्तमान एवं भविष्य की शिक्षा के लिए एक सशक्त आधार प्रस्तुत करती है। प्रस्तुत चिंतनात्मक अध्ययन से यह स्पष्ट हुआ कि IKS आधारित शिक्षण विद्यार्थियों के सीखने की प्रक्रिया को अधिक अर्थपूर्ण, अनुभवात्मक तथा सहभागितापूर्ण बनाता है। कक्षा 8 की हिंदी कविता "इनसान" के माध्यम से भारतीय ज्ञान प्रणाली के तत्वों का समेकन विद्यार्थियों को विषय की गहन समझ प्रदान करने के साथ-साथ उनके नैतिक, सामाजिक एवं सांस्कृतिक विकास में भी सहायक सिद्ध हुआ।

एक शिक्षक-प्रशिक्षु के रूप में यह अनुभव अन्वेषक के लिए अत्यंत प्रेरणादायक रहा। इस कार्यशाला ने यह समझ विकसित की कि प्रभावी शिक्षण केवल विषय-वस्तु के प्रस्तुतीकरण तक सीमित नहीं है, बल्कि विद्यार्थियों को उनके जीवन, समाज, संस्कृति तथा प्रकृति से जोड़ने की प्रक्रिया भी है। जब विद्यार्थी अपने अनुभवों, सांस्कृतिक पृष्ठभूमि एवं भारतीय जीवन-मूल्यों के साथ सीखते हैं, तब उनका अधिगम अधिक स्थायी एवं सार्थक बनता है।

अंततः यह कहा जा सकता है कि भारतीय ज्ञान प्रणाली का समेकन केवल शिक्षण में एक नवीन प्रयोग नहीं, बल्कि भारतीय शिक्षा की मूल आत्मा को पुनः स्थापित करने का एक सार्थक प्रयास है। यदि विद्यालयों एवं शिक्षक-प्रशिक्षण संस्थानों में IKS आधारित शिक्षण को योजनाबद्ध रूप से अपनाया जाए, तो शिक्षा ज्ञानार्जन के साथ-साथ उत्तरदायी नागरिक, संवेदनशील व्यक्तित्व तथा सांस्कृतिक रूप से जागरूक समाज के निर्माण में भी महत्वपूर्ण योगदान दे सकती है।

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