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INDIGENOUS KNOWLEDGE SYSTEM FOR SUSTAINABLE FUTURE

SPONSORED BY ICSSR

INTERNATIONAL CONFERENCE PROCEEDINGS

PART-1



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Dr Abhilasha Gautam

Editors

Dr Jyoti Tiwari

Dr Saidalavi Kundupuzhakkal

Mr Karthikeyan P

ARMY INSTITUTE OF EDUCATION

Plot M-1, P-5, Sector- Chi, Greater NOIDA

Affiliated to Guru Gobind Singh Indraprastha University, New Delhi

Awarded 'A' Grade by NAAC & JAC | NCTE Recognized

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Institute under the aegis of Army Welfare Education Society (AWES)

**Indigenous Knowledge System
for
Sustainable Future**

INTERNATIONAL CONFERENCE

SPONSORED BY ICSSR, NEW DELHI



ICSSR

Indian Council of Social Science Research

INDIGENOUS KNOWLEDGE SYSTEM FOR SUSTAINABLE FUTURE

Chief Editor

Dr. Abhilasha Gautam

Editors

Dr. Jyoti Tiwari

Dr. Saidalavi K

Mr. Kathikeyan P



Kalindi Prakashan

**kalindiprakashan@gmail.com
Aira Bujurg, Azamgarh, U.P.**

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KALINDI PRAKASHAN

Aira Bujurg, Azamgarh. U.P

Mo. : +91 9140270320; +91 9453904139

Email: kalindiprakashan@gmail.com

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INTERNAL QUALITY ASSURANCE CELL (IQAC), AIE

organises

INTERNATIONAL CONFERENCE

SPONSORED BY ICSSR, NEW DELHI



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Indian Council of Social Science Research

On

‘Indigenous Knowledge System for Sustainable Future’

(21 Feb 2024)

Venue: Seminar Hall, AIE Campus (Hybrid Mode)

ABOUT THE INSTITUTE

Nestled in the heart of Greater Noida, the Army Institute of Education (AIE) stands tall as a beacon of academic excellence, nurturing the dreams of aspiring educators with a unique mission. Established in 2003 under the aegis of the Army Welfare Education Society (AWES), AIE proudly caters to the wards and dependents of our nation’s brave soldiers, instilling in them the values of service and dedication while equipping them with the tools to shape young minds.

Beyond its noble purpose, AIE boasts an impressive academic lineage. Affiliated to the esteemed Guru Gobind Singh Indraprastha University (GGSIPU) and recognized by the National Council for Teacher Education (NCTE) and the Rehabilitation Council of India (RCI), it offers a rigorous Bachelor of Education (B.Ed.) program, alongside a specialized B.Ed.

program in Learning Disability. This recognition signifies the institute's unwavering commitment to quality education, equipping its graduates with the knowledge and skills to excel in the dynamic field of education.

But AIE goes beyond mere academics. Recognizing the importance of holistic development, it fosters a vibrant learning environment that nurtures not just intellectual prowess, but also emotional intelligence, leadership skills, and social responsibility. Its state-of-the-art infrastructure, coupled with dedicated faculty, creates a platform for students to explore their potential and emerge as well-rounded educators.

Technology plays a pivotal role in AIE's pedagogy. The institute actively promotes the use of Information and Communication Technologies (ICT) in teaching and learning, preparing its graduates to effectively navigate the ever-evolving digital landscape. This forward-thinking approach ensures that AIE's graduates are not only adept in traditional teaching methods but also equipped to integrate technology seamlessly into their classrooms, fostering a more engaging and interactive learning experience for their students.

The success of AIE's graduates speaks volumes about its quality standards. With a commendable 100% placement record, its alumni are making a significant impact in schools across the country, shaping young minds and contributing to the nation's future. This remarkable achievement is a testament to the institute's commitment to providing not just theoretical knowledge, but also practical skills and exposure that prepare its graduates for the realities of the teaching profession.

AIE's commitment to its students extends beyond academics and career prospects. It fosters a strong mentor-mentee relationship, providing personalized guidance and support throughout their academic journey. This nurturing environment ensures that each student feels valued and empowered to reach their full potential.

ABOUT INDIAN COUNCIL OF SOCIAL SCIENCE RESEARCH (ICSSR)

Indian Council of Social Science Research (ICSSR) was established in the year of 1969 by the Government of India to promote research in social sciences in the country.

ICSSR provide grants for projects, fellowships, international collaboration, capacity building, survey, publications etc. to promote research in social sciences in India.

Documentation center of ICSSR - National Social Science Documentation Centre (NASSDOC) - provides library and information support services to researchers in social sciences.

ICSSR has developed ICSSR Data Service to serve as a national data service for promoting powerful research environment through sharing and reuse of data among social science community in India.

RELEVANCE OF THE THEME

Indigenous knowledge system consists of knowledge, beliefs, traditions and practices developed by local communities. Indigenous Knowledge also referred to a body of observations, oral and written knowledge, innovations, practices, and beliefs that promote sustainability and the responsible stewardship of cultural and natural resources through relationships between humans and their landscapes. Indigenous Knowledge cannot be separated from the people inextricably connected to that knowledge. It applies to phenomena across biological, physical, social, cultural, and spiritual systems. Indigenous Peoples have developed their knowledge systems over millennia, and continue to do so based on evidence acquired through direct contact with the environment, long-term experiences, extensive observations, lessons, and skills. Lakhs of manuscripts, shastras, oral traditions, folk songs, stories, art forms, handicrafts, skills covering all domains of life is reflected through this knowledge.

Currently world is facing challenges like wars and military conflicts, climate change, human rights violation, poverty, global health issues and many more. There is a universal need for a knowledge system of values and thoughts that has the possibility of creating world a better place. Indigenous knowledge system has power to create sustainable future. Bringing Indian Indigenous Knowledge Systems in the centre stage of education, NEP 2020 clearly mentioned on its page 5 that “The rich heritage of ancient and eternal Indian knowledge and thought has been a guiding light for this Policy” The NEP2020 recommends that knowledge from ancient India, the indigenous ways of learning, the knowledge traditions, would be covered in all disciplines at both school and higher education levels, Thus, education needs to incorporate the domain of indigenous knowledge.

This International Conference is an initiative to provide a platform to educationists, policy makers, research scholars, teacher educators, educational administrators & school teachers to deliberate upon the need of Indigenous knowledge system for sustainable future and to make our nation a knowledge super power as rightly expected in the vision of NEP2020.

OBJECTIVES

The International Conference is an educational endeavour:

- To build a comprehensive perspective about the need, relevance and essence of Indigenous Knowledge system.
- To address the challenges in applying Indigenous knowledge system in education.
- To create a platform for sharing knowledge and dialogue on the need of Indigenous knowledge system for sustainable future.
- To consider and deliberate on the inflection of the Indigenous knowledge system as proposed in NEP 2020.
- To delineate on Indigenous knowledge system to achieve sustainable development goals.
- To discuss the recent trends and current innovations in the field of education.

LEARNING OUTCOMES

After attending the Conference, the participants will be able to-

- Develop a thorough perspective on the necessity, relevance, and core aspects of Indigenous Knowledge System (IKS).
- Analyse the significance of integrating IKS into various domains, including education.
- Identify and address the challenges associated with the application of Indigenous Knowledge System in educational settings.
- Propose effective solutions to overcome obstacles and promote the integration of IKS in education.
- Evaluate the implications of the National Education Policy (NEP) 2020 on the infusion of Indigenous Knowledge System in educational practices.
- Engage in thoughtful deliberations to understand how NEP 2020 aligns with or challenges the principles of IKS.
- Delineate strategies to leverage Indigenous Knowledge System for achieving Sustainable Development Goals (SDGs).
- Formulate connections between IKS principles and specific SDGs, demonstrating an understanding of their interdependence.
- Investigate recent trends and innovations in the field of education, with a specific focus on the integration of Indigenous Knowledge System.
- Discuss the potential impact of emerging trends on educational practices and the role of IKS in fostering innovation.

MANAGEMENT COMMITTEE

PATRON	: LT GEN BHAVNISH KUMAR, VSM GOC, Delhi Area & Patron AIE
CHAIRMAN	MAJ GEN SUMIT MEHTA, VSM COS, Delhi Area & Chairman AIE
CONFERENCE CHAIR	: DR ABHILASHA GAUTAM Principal, AIE
CONFERENCE CONVENER	: DR JYOTI TIWARI Assistant Professor AIE
CONFERENCE CO-CONVENERS:	DR SAIDALAVI KUNDUPUZHAKKAL Assistant Professor AIE MR KARTHIKEYAN P Assistant Professor, AIE

ORGANIZING COMMITTEE

- ❖ **COL ABHAY RAJVANSHI (RETD)**, Registrar & HoA, AIE
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- ❖ **MS SHWETA DAS** (Asst Prof, AIE)

TECHNICAL SUPPORT

- ❖ **MR CHINTAN KAPOOR** (Asst Prof, AIE)
- ❖ **MR MANOJ KUMAR** (Computer Lab Attd, AIE)

SUB THEMES

1. *Contribution of Indian Knowledge System (IKS) towards Indigenous Knowledge*
2. *Relevance of Indigenous Knowledge in current scenario*
3. *Preservation of Indigenous Knowledge*
4. *Indigenous Knowledge for World Peace and Harmony*

5. *Role of Indigenous Knowledge for quality Education*
6. *Indigenous Technology and Innovation*
7. *Indigenous Knowledge and Environmental sustainability*
8. *Role of Indigenous Leaders in Youth Empowerment*
9. *Indigenous Cultural Heritage*
10. *Indigenous Knowledge and NEP 2020*
11. *Indigenous Knowledge and Sustainable Development Goals*
12. *Any other theme related to the theme of the International conference*

IMPORTANT TIMELINES

Abstract Submission	:	Sunday, 28 Jan 2024
Full Paper Submission	:	Monday, 05 Feb 2024
Conference Date	:	Wednesday, 21 Feb 2024

ABSTRACT AND FULL PAPER SUBMISSION

Abstracts and full papers are invited on the identified sub themes of the conference (abstract should not exceed 300 words and full paper should not exceed 3500-4000 words) in MS Word font 12 (Times New Roman for English and Kruti Dev for Hindi) 1.5 spacing and should be sent to the Seminar Convener/ Co-Conveners through email at conference.aieindia@gmail.com

CONFERENCE PROCEEDINGS

The papers presented in the Conference shall be selected based on plagiarism check and peer review process by expert committee after which the authors are required to incorporate the suggestions before final publication in the form of a book with ISBN No. **Proceedings part 1 will be released on the day of the Conference, Proceedings part 2 will be released after the conference.**

Category of Delegate	Registration Fee
Faculty (Paper Presenters)	₹1000*
Research Scholar/Students (Paper Presenters)	₹ 800*
Teachers (Paper Presenters)	₹ 800*
Participants	₹ 500
<i>Separate registration fee is applicable for co-authors as per their category*</i>	

REGISTRATION LINK: <https://forms.gle/yzrRYUZuWnep2ySZ9>

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For further details, please contact:

DR. JYOTI TIWARI

(Asst Prof, AIE) **Convener**

Mob. No.- 7597352039

DR SAIDALAVI KUNDUPUZHAKKAL

(Asst Prof., AIE) **Co-Convener**

Mob. No. - 9560513091

MR. KARTHIKEYAN P

(Asst Prof., AIE) **Co-Convener**

Mob. No.- 9894529472

Student Coordinators-

NIRMAL SINGH, B.Ed. Batch 2022-24

RIYA PANWAR, B.Ed. Batch 2022-24

ASHISH YADAV, B.Ed. Batch 2022-24

AAKASH KUMAR, B.Ed Batch 2023-25

NOTE

1. *Registration Fee includes publication charges also.*
2. *Proceedings part 1 will be released on the day of the Conference. Thus all the presenters are requested to follow the paper submission guidelines.*
3. *Conference will be held in hybrid mode. Only outside Delhi/NCR presenters and foreign presenters are requested to join in the online mode.*
4. *Kindly send full papers along with the Plagiarism Report with the similarity index of 10% or below.*
5. *Co- authors need to register separately to get certificate and copy of conference proceedings.*



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‘INDIGENOUS KNOWLEDGE SYSTEM FOR SUSTAINABLE FUTURE’

(21 Feb 2024)

PROGRAMME SCHEDULE-TENTATIVE

TIME	EVENTS
0900-1000 hrs	Registration
1000-1215 hrs	INAUGURAL SESSION
1000-1010hrs	Invocation & Lamp Lighting
1010-1020hrs	Felicitation of Guests
1020-1025 hrs	Release of Conference Proceedings
1025-1035hrs	Welcome Address by Dr Abhilasha Gautam, Principal AIE
1035-1045 hrs	Opening Address by Lt Gen Bhavnish Kumar, VSM, GOC Delhi Area & Patron AIE
1045-1100 hrs	Keynote Address by Prof Dr Radhe Shyam Sharma, OSD, Delhi School of Climate Change & Sustainability, University of Delhi, Delhi
1100–1120 hrs	Keynote Address by Dr Vinnaras Nithyanatham, Dean and Associate Professor, Department of Education, DMI St. John The Baptist University Mangochi, Malawi South East Africa (Online)
1120-1140 hrs	Address by the Guest of Honor Ms Kesang Yangzom Sherpa, IRS, Member Secretary, NCTE
1140-1200 hrs	Address by the Chief Guest
1200-1205 hrs	Vote of Thanks by Col Abhay Rajvanshi, Registrar & HoA, AIE

1205–1210hrs	National Song
1210–1215hrs	Group Photograph
1215-1300 hrs	Lunch Break
1300–1500hrs	TECHNICAL SESSIONS III & IV (OFFLINE)
1300-1500 hrs	Technical Session III – Resource Person & Chair: Prof Dr Rainu Gupta , Dean School of Education, Sanskriti University, Mathura Technical Session IV- Resource Person: Dr Niradhar Dey , Associate Professor School Education IGNOU, New Delhi
1430–1445hrs	Welcome Tea for Valedictory Session Guests
1500-1700hrs	VALEDICTORY SESSION
1500-1505 hrs	Felicitation of Guests
1505-1510 hrs	Welcome Address by Dr Abhilasha Gautam, Principal, Army Institute of Education, Greater NOIDA
1510-1520 hrs	Opening Address by Maj Gen Sumit Mehta, VSM, COS Delhi area and Chairman, AIE
1520-1530 hrs	Keynote Address by Beatriz Lucia Salvador Bizotto, Professor, Unifacvest University Center, Brazil
1530-1550 hrs	Valedictory Address by Prof Dr Rainu Gupta, Dean School of Education, Sanskriti University, Mathura
1550-1610 hrs	Address by Eminent Speaker Maj Gen A K Chaturvedi, AVSM, VSM
1610-1615 hrs	Report of the National Seminar by Mr Karthikeyan.P, Conference Co-convener, Assistant Professor, AIE
1615-1625hrs	Vote of Thanks by Dr Jyoti Tiwari, Conference Convener Assistant Professor, AIE
1625-1640 hrs	Certificate Distribution
1640-1645 hrs	National Anthem
1645-1700 hrs	Group Photograph
1100 hrs Onwards	TECHNICAL SESSIONS I & II (ONLINE)
	Technical Session I- Resource Person & Chair: Dr Sivachandiran Sivaraju , Deputy Dean of Studies in International Training Institute, Lae Campus, Papua New Guinea Technical Session II – Keynote Address: Prof Joy Sen , Professor, Architectural and Regional Planning, Indian Institute of Technology(IIT), Kharagpur Resource Person & Chair: Prof Dr Rita Arora , Former Professor & Dean at University of Rajasthan, Jaipur, Director School of Education at Jaipur National University

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‘INDIGENOUS KNOWLEDGE SYSTEM FOR SUSTAINABLE FUTURE’



(21 Feb 2024)

PROGRAMME SCHEDULE TECHNICAL SESSION 1 (ONLINE)

Venue- Computer Lab

In-charge- Mr Karthikeyan P, Asst Prof, AIE & Ms Saswati Mahapatra, Asst Prof, AIE

TIME	EVENTS
1100-1105 hrs	Invocation & Lamp Lighting
1105-1110 hrs	Welcome Address by Session In-charge
1110-1400 hrs	Paper Presentations
1400-1430 hrs	KeynoteAddress&SessionChairRemarksbyDrSivachandiran Sivaraju, Deputy Dean of Studies in International Training Institute, Lae Campus, Papua New Guinea
1430-1435 hrs	Vote of Thanks

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(21 Feb 2024)

PROGRAMME SCHEDULE TECHNICAL SESSION 2 (ONLINE)

Venue- Staffroom Spl. Ed.

In-charge- Dr Saidalavi K, Asst Prof, AIE & Ms Devika Naithani, Asst. Prof, AIE

TIME	EVENTS
1100-1105 hrs	Invocation & Lamp Lighting
1105-1110 hrs	Welcome Address by Session In-charge
1110-1140 hrs	Keynote address Prof Joy Sen, Professor, Architectural and Regional Planning, Indian Institute of Technology(IIT), Kharagpur
1140-1420 hrs	Paper Presentations
1420-1440 hrs	Concluding Remarks by Technical Session Chair Prof (Dr) Rita Arora, Former Professor & Dean at University of Rajasthan, Jaipur, Director School of Education at Jaipur National University
1440-1445 hrs	Vote of Thanks

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‘INDIGENOUS KNOWLEDGE SYSTEM FOR SUSTAINABLE FUTURE’



(21 Feb 2024)

PROGRAMME SCHEDULE TECHNICAL SESSION 3 (OFFLINE)

Venue- Seminar Hall

In-charge- Dr Azkia Khan, Asst Prof, AIE

TIME	EVENTS
1300-1310 hrs	Invocation
1310-1315 hrs	Welcome Address by Session In-charge
1315-1415 hrs	Paper Presentations
1415-1430 hrs	Concluding Remarks by the Resource Person & Chair of the Technical Session Prof(Dr) Rainu Gupta, Dean School of Education, Sanskriti University, Mathura
1430-1435 hrs	Vote of Thanks

	<h2 style="margin: 0;">ARMY INSTITUTE OF EDUCATION</h2> <p style="margin: 0; font-size: small;"> Affiliated to Guru Gobind Singh Indraprastha University, New Delhi Awarded 'A' Grade by NAAC & JAC NCTE Recognized Approved by RCI ISO Certified Institute 'Institute under the aegis of Army Welfare Education Society (AWES)' Plot M-1, P-5, Sector- Chi, Gr. NOIDA Ph. : 0120-2343741/ 42 e-Mail: aie@awesindia.edu.in www.aie.ac.in </p>	
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‘INDIGENOUS KNOWLEDGE SYSTEM FOR SUSTAINABLE FUTURE’

(21 Feb 2024)

PROGRAMME SCHEDULE TECHNICAL SESSION 4 (OFFLINE)

Venue- Conference Hall

In-Charge- Ms Komal Choudhary, Asst Prof, AIE

TIME	EVENTS
1300-1310 hrs	Invocation
1310-1315 hrs	Welcome Address by Session In-charge
1315-1415 hrs	Paper Presentations
1415-1430 hrs	Concluding Remarks by the Resource Person & Chair of the Technical Session Dr Niradhar Dey, Associate Professor, IGNOU, New Delhi
1430-1435 hrs	Vote of Thanks

Prologue

In the intricate interplay of tradition and advancement, the heartbeat of humanity echoes through the ages, carrying the profound wisdom of indigenous knowledge systems. As we embark on this intellectual journey through the conference proceedings, we find ourselves immersed in a tapestry woven with the threads of cultural richness, environmental stewardship, and the promise of a sustainable future. I welcome you all to the prologue of the conference proceedings on the theme “Indigenous Knowledge System for Sustainable Future.” Here, we embark on a voyage that transcends disciplinary boundaries, inviting you to traverse the landscapes of ancient traditions, contemporary challenges, and the synergies that emerge when the two converge.

The pages that follow encapsulate the collective efforts of scholars, researchers, practitioners, and visionaries who have dedicated their work to understanding, preserving, and celebrating indigenous knowledge. These proceedings serve as both a chronicle of the diverse indigenous wisdom that graces our world and a roadmap for navigating the complexities of our shared global challenges. In the embrace of these proceedings, anticipate encountering narratives that weave through the intricate relationship between indigenous communities and their environments. From sustainable agricultural practices rooted in ancestral insights to the preservation of languages that carry the essence of cultural identity, each contribution resonates with the heartbeat of sustainable coexistence.

As you delve into the rich array of papers, presentations, and discussions, envision a collective effort to bridge the gap between the ancient and the modern, the traditional and the innovative. Our authors explore the intersections of indigenous knowledge with contemporary issues such as climate change, biodiversity conservation, sustainable development and IKS offering a nuanced perspective on the path towards a harmonious and equitable future. In the spirit of fostering dialogue, understanding, and collaboration, we invite you to engage deeply with the insights shared within these pages. Let this prologue be your guide as you navigate the myriad voices, perspectives, and solutions that emerge from the crossroads of indigenous knowledge and a sustainable tomorrow.

May the proceedings not only inform but also inspire, sparking conversations, collaborations, and actions that ripple through academia, policy, and community engagement. Together, let us embark on a collective journey toward a future where the wisdom of indigenous knowledge stands as a beacon, guiding us to a sustainable, harmonious, and resilient world.

With gratitude for your presence on this transformative journey,

Dr. Jyoti Tiwari
Convener
International Conference



ले. जनरल भवनीश कुमार, वी एस एम

जनरल आफिसर कमांडिंग

Lt Gen Bhavnish Kumar, VSM

General Officer Commanding

Tele : 011-25694282,

ASCON : 36100 (O) 36101 (R)

मुख्यालय दिल्ली एरिया

पिन - 900106

द्वारा 56 ए पी ओ

HQ Delhi Area

PIN - 900 106

C/o 56 APO

MESSAGE FROM THE PATRON

1. As we step forward to the era of Advancement, it is with great reverence that we come together to honour the profound wisdom deeply embedded within our indigenous cultures, wisdom that has sustained communities and ecosystems for generations.
2. Army Institute of Education, in its effort to promote invaluable contributions of indigenous people, who possess a deep understanding of their environments and the interconnectedness of all living beings, has embarked on this journey together, with Indian Council of Social Studies in order to amplify indigenous voices, integrating their wisdom into our policies, practices, and innovations. By embracing indigenous knowledge systems, we not only safeguard our Nation for future generations but also foster cultural diversity, social justice, and environmental harmony.
3. I, commend the organizing team for this multifaceted gathering and hope that this conference serves as a catalyst for collaboration, learning, and collective action towards a more just, equitable, and sustainable world.

“Jai Hind”

Station : Delhi Cantt-10

Date : 14 Feb 2024



(Bhavnish Kumar)

Lt Gen

General Officer Commanding



मेजर जनरल सुमित मेहता, वीएसएम
चीफ ऑफ स्टाफ

Maj Gen Sumit Mehta, VSM

Chief of Staff

Mil (ASCON) - 36008 (O)

- 36009 (R)

Civ Tele - 011-25692239 (O)

मुख्यालय दिल्ली एरिया
पिन - 900106

मार्फत 56 सेना डाकघर

Headquarters Delhi Area

PIN - 900 106

c/o 56 APO

MESSAGE OF COS, HQ DELHI AREA AND
THE CHAIRMAN, AIE

As we commemorate the foundation day of our esteemed institution, the Army Institute of Education, it is with immense pride and confidence that I extend my heartfelt greetings to all of you participating in the ICSSR-sponsored International Conference on "**Indigenous Knowledge System for Sustainable Future.**"

The choice of theme for this conference is timely as also pivotal in shaping the discourse surrounding sustainable development, education, and the preservation of indigenous wisdom. Indigenous knowledge deeply rooted in cultural practices and traditions, has proven to be a reservoir of wisdom that holds valuable solutions to contemporary global challenges.

The conference proceedings, comprising the invaluable research papers and articles contributed by each one of you, will undoubtedly serve as a cornerstone in the foundation of knowledge and bridge the gap between tradition and progress. I commend the dedication and effort that the organizing team has invested in curating a platform that brings together scholars, researchers, and practitioners to exchange insights, share experiences, and contribute to the discourse on Indigenous Knowledge System for sustainable development.

I am confident that this event will serve as a catalyst for meaningful discussions and collaborations, paving the way for innovative solutions that draw from the wealth of indigenous knowledge. May the conference be a resounding success, fostering a spirit of inquiry, dialogue, and collective action.

JAI HIND!

Prof. (Dr.) Mahesh Verma

MDS, MBA, PhD, FDSRCS (Eng).
FDSRCS (Edin) FDS RCPSCG (Glas)

Vice Chancellor

Padma Shri Awardee
Dr. B. C. Roy Awardee



GURU GOBIND SINGH
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UNIVERSITY



MESSAGE

गुरु गोविंद सिंह इंद्रप्रस्थ विश्वविद्यालय
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Guru Gobind Singh Indraprastha University

Sector - 16 C, Dwarka, New Delhi - 110078

Tel : +91-11-25302104, 25302105

Fax : +91-11-28035243

E-mail : vc@ipu.ac.in, dpmaids@gmail.com

dvermamahesh@gmail.com

Web : www.ipu.ac.in

GGSIU/VCO/2024
5th February, 2024

The significant improvement in development indicators such as health status, education, reduction in poverty, technology, etc, comes along with the increased pressure on natural resources. The question of sustainability haunts the world, more so the developing countries who are subject to the rampant exploitation of their rich natural resources.

There is therefore a universal need for a knowledge system of values and thoughts that has the possibility of creating a better world.

The indigenous communities all over the world have inherently developed knowledge systems that help them to make judicious utilization of the available resources. This enables enhanced sustainability of the environment, the environment from which they derive their basic necessities. The indigenous knowledge system has the power to create a sustainable future. There is so much to learn, to imbibe from the indigenous people and their knowledge systems.

In this context, I am very happy that an ICSSR sponsored international conference on 'Indigenous Knowledge System for Sustainable Future' is being organised by our affiliate institute, Army Institute of Education (AIE). AIE, renowned for its dedication to quality teacher education, serves as a beacon of excellence within the GGSIPU family.

This conference, held on the occasion of AIE's foundation day, marks a significant milestone in our collective pursuit of knowledge and its application for a better tomorrow. The theme of the conference resonates deeply with the pressing challenges of our times. It is crucial to turn to the wisdom and practices embedded within the indigenous communities. These time-tested knowledge systems offer invaluable insights into living in harmony with nature, building resilient societies, and ensuring a just and equitable future for all.

The conference has provided a very meaningful platform to educationists, policy makers, research scholars, teacher educators, educational administrators & school teachers to deliberate upon the need and merits of the Indigenous Knowledge system. I am confident that the conference would have also helped in developing meaningful collaborations between all the educators, practitioner's, researchers and communities committed to a better and more equitable world.

The papers and articles presented in this volume represent a treasure trove of knowledge and perspectives from scholars and experts across diverse disciplines. I am confident that the insights shared here will spark meaningful dialogue, inspire innovative solutions, and pave the way for a more sustainable future.

I appreciate that AIE has taken the initiative of holding an international conference on such a relevant subject. I commend the organizers and participants of this conference for their dedication and commitment to this important and relevant dialogue.

May the deliberations of this conference inspire us to embrace the wisdom of the past and build a brighter future for generations to come. My best wishes to AIE for more such successful educational endeavors in the future!

Prof. (Dr.) Mahesh Verma



Maj Gen P R Murali, VSM (Retd)

Managing Director
Tele : 26152667
Fax : 26151564 / 26152642
ASCOS : 35257
E-mail : md.aweshq@awesindia.edu.in

Army Welfare Education Society (AWES)
202, Shankar Vihar
Delhi Cantt - 110010



MESSAGE

Greetings!

Indigenous knowledge, deeply rooted in traditional practices and wisdom, offers valuable perspectives on sustainable living, environmental conservation and community resilience. As we are observing complex global challenges, the wisdom embedded in indigenous knowledge systems are becoming relevant and increasing on daily basis. The International conference organized by Army Institute of Education aims to explore, celebrate, and amplify these indigenous perspectives, fostering collaboration and mutual learning.

I am delighted to extend warm and heartfelt congratulations to AIE team for organizing an International Conference with a focus on the theme "Indigenous Knowledge System for Sustainable Future". This conference will serve as a platform for scholars, researchers, and practitioners to engage in meaningful discussions and exchange insights on the crucial role of indigenous knowledge in shaping a sustainable future.

I hope that this event will be a catalyst for innovative ideas. By acknowledging the importance of Indigenous knowledge systems, I extend my sincere gratitude to all participants, presenters and sponsors for their invaluable contributions to this endeavor.



DMI-ST. JOHN THE BAPTIST UNIVERSITY

(Run by Fathers of MMI, Sisters of DMI and Collaborators)

Dean,

Department of Education,
Mangochi, Malawi. P.O. Box No: 406,
Phone: +265 984596323

Email: profvinnaras.n@gmail.com, www.dmisjbu.edu.mw

Prof. Dr. Vinnaras Nithyanantham
Dean & Associate Professor
Department of Education
DMI-St John the Baptist University
Mangochi, Malawi, Central Africa.



On behalf of ICSSR sponsored International Conference on 'IKSSF' organizing committee, I am delighted to welcome all the experts and academics from around the world to Greater Noida in India for the International Conference on 'Indigenous Knowledge System for Sustainable Future' that will take place on 21st February, 2024 by Internal Quality Assurance Cell (IQAC), AIE.

While much inspiration and evolution are going on the day that's too during this sustainable era the topic is the need of the day. It will be a great pleasure to join with the doctors, Teaching professionals, and research scholars from around the globe. As the global level understanding and facts that say Indigenous knowledge refers to understandings, skills, and philosophies developed by local communities with long histories and experiences of interaction with their natural surroundings, the conference could be an effective one in delivering the most authentic and supportive care to our mother Nation.

As an academician, I want to welcome you to the wonderful, dynamic, and international conference. A sincere thanks to you the organizing committee for selecting the topic in this critical era of the indigenous world.

Prof. (Dr.) Vinnaras Nithyanantham



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Lae Campus
Steamships Property,
Sletjford Street, Building 03,
Sect 30, Lot #01, Unit #01
PO Box 618, Lae,
Morebe Province,
Papua New Guinea
Telephone: +675 472 2790
Mobile: +675 7342 8032
Email: enquires.lae@iti.ac.pg

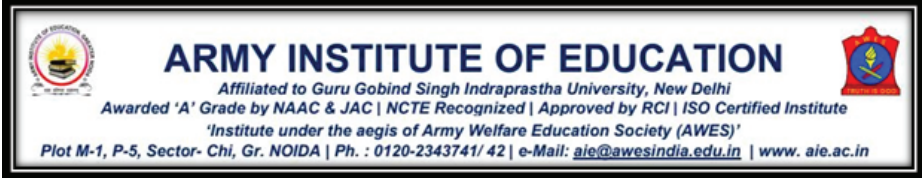
Dr.Sivachandiran Sivaraju,
Deputy Dean of Studies,
Lae Campus,
Lae, Morobe Province,
Papua New Guinea.



The International Conference on "Indigenous Knowledge System for Sustainable Future" fosters cross-silo collaboration to create multifarious opportunities for vibrant researchers, enthusiastic students, and participants who thirst for learning about indigenous knowledge and its impact on a sustainable future. Our country is affluent with eternal instinctive knowledge and etiquette. This conference will allow educationists, policymakers, and administrators to implement and execute the holy grail effectively for the nation's sustainable development. In the contemporary era, there will be a need for the collaboration of artificial intelligence technology with indigenous knowledge in the Indian education system. This platform must draw determined participants who aspire to pursue their research in the Indigenous Knowledge System with the hybrid technology.

For the researchers, "The road to success must be filled with obstacles. Others give up and turn around, but you push your way through." Furthermore, I want to thank the Army Institute of Education's management for prioritizing this topic, and I trust this conference will yield more research work. I trust the diligent efforts made by the organizing committees will be the grand success of this conference, and my best wishes to all participants to make this conference one of the most successful events.

Dr.Sivachandiran Sivaraju



Col. Abhay Rajvanshi (Retd)
Registrar & HOA
Army Institute of Education, Greatr NOIDA

It is with great pleasure and enthusiasm that I extend my warmest greetings to all contributors and attendees of the international conference on “Indigenous Knowledge System for Sustainable Future” held at Army Institute of Education sponsored by ICSSR.

I am sure insightful discussions, presentations, and exchanges of ideas surrounding the crucial theme of leveraging indigenous knowledge systems will pave the way for a sustainable future. It is inspiring to see educators, researchers, and practitioners from diverse backgrounds coming together to explore the intersection of traditional wisdom and contemporary challenges.

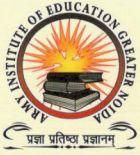
As the registrar of this institute, I am honoured to introduce the publication of proceedings from this significant event. These research papers encapsulate the wealth of knowledge shared and generated during the conference, serving as a valuable resource for academics, policymakers, and practitioners committed to advancing sustainable development through the lens of indigenous wisdom.

I would like to express my deepest gratitude to all authors for their invaluable contributions, as well as to the organizing committee, reviewers, and support staff for their dedication in ensuring the success of this conference and the subsequent publication of proceedings.

May this compilation of research papers serve as a catalyst for ongoing dialogue, collaboration, and action towards harnessing indigenous knowledge systems for a more equitable, resilient, and sustainable future for all.

Warm regards,

(Col Abhay Rajvanshi)



Dr. Abhilasha Gautam
Principal

Tele: 0120-2343742

Mob: 9953925354

Email: aie@awesindia.edu.in

Army Institute of Education (AIE)

(NAAC Accredited & ISO Certified Institute)

Plot M-1, Pocket P-5, Sector Chi-2

Gautam Budh Nagar

Greater Noida (UP) - 201306

Message from the Principal, AIE

1. It is with immense pride and joy that I present the proceedings of the International Conference on 'Indigenous Knowledge System for Sustainable Future,' hosted by the Army Institute of Education on 21 Feb 2023.
2. First and foremost, I am deeply grateful to the Honourable Management of our college, Lt Gen Bhavnish Kumar, VSM (GOC, Delhi Area & Patron AIE), Maj Gen Sumit Mehta (COS, Delhi Area & Chairman AIE), Maj Gen P R Murali (VSM) Retd. (MD,AWES) for consistently fostering a culture of intellectual exploration and encouraging us to delve into unconventional solutions. Special thanks to ICSSR for sponsoring this important event. Their support has been instrumental in bringing together diverse minds and facilitating impactful dialogue.
3. I would also like to express my heartfelt gratitude to our esteemed Vice Chancellor of GGSIPU, Prof. (Dr.) Mahesh Verma, for being a constant source of guidance and mentorship. Your commitment to academic excellence inspires us all. To the Member Secretary of NCTE, Ms Kesang Yangzom Sherpa, I offer my sincerest thanks for your unwavering support and inspiring leadership.
4. Our national and international guests and resource persons played a pivotal role in making this conference a success. Their insightful presentations and engaging discussions sparked fruitful collaborations and ignited new ideas. To all of you, I extend my deepest appreciation.
5. Finally, this conference would not have been possible without the dedication of our research scholars. The quality of your papers has enriched the discourse and set the stage for further investigation. The release of the first part of these proceedings represents an encouraging step towards realizing our shared vision of a sustainable future.
6. Let these proceedings serve as a testament to the power of collective dialogue and shared knowledge. May the insights shared here inspire further research, collaboration, and action towards a sustainable future for all.

"JAI HIND"

Abhilasha Gautam

Date: 16 Feb 2024

Place: Greater Noida

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Chapter-1

Leveraging Indigenous Knowledge with Indian Knowledge System: A Case Study

Dr. Sapna Sah

Associate Professor, Noida College of Physical Education, G.B. Nagar (U.P.)

Abstract

This scholarly article investigates the intricate convergence of Indigenous Knowledge (IK) and the traditional Indian Knowledge System (IKS) with the intention of assessing their capacity to collaborate in solving present-day issues. By employing a case study methodology, this research examines the incorporation of Indigenous Knowledge into the Indian Knowledge System as a whole, with the ultimate goal of utilising their collective wisdom to promote sustainable development. The investigation commences by examining the historical origins and foundational tenets that form the basis of the Indian Knowledge System and Indigenous Knowledge. Following this, a comprehensive case study is provided that examines a community-driven endeavour that adeptly combines contemporary methodologies with age-old customs, thus demonstrating the versatility and durability of Indigenous Knowledge in the specific context of India. The results of our study emphasise the importance of collaborative strategies that acknowledge and capitalise on the distinct advantages of each knowledge system. The implications of this integration for various sectors, such as healthcare, agriculture, and environmental conservation, are examined in the paper. We provide empirical evidence and qualitative analysis to illustrate how the integration of Indigenous Knowledge and the established Indian Knowledge System has the capacity to improve ecological sustainability and community well-being. This study adds to the current body of knowledge on knowledge integration by advocating for policymakers, researchers, and practitioners to acknowledge the significance of integrating formal knowledge systems with indigenous wisdom in order to achieve comprehensive and inclusive development.

Keywords: *Indian Knowledge System, Healthcare, Agriculture, Sustainable Development*

1. Introduction

Indian culture is a complex fabric that is deeply ingrained with an ancient and profound Indigenous Knowledge System (IKS), which has been developed and preserved for millennia. This extensive repository of knowledge encompasses the combined understandings, customs, and methodologies of various indigenous societies spanning the subcontinent. The Indian Indigenous Knowledge System, which is firmly grounded in the cultural, spiritual, and ecological ethos of the region, serves as evidence of how humans and nature can coexist in harmony. Fundamentally, the Indian IKS embodies a comprehensive outlook on existence, placing significant emphasis on the interdependence of every element in the cosmos. It is manifested in architecture, medicine, spirituality, agriculture, astronomy, and architecture, among other fields. Frequently, these native practices are intricately intertwined with regional traditions, folklore, and oral customs, which have been transmitted across generations. The Indian IKS is distinguished by its resilience and adaptability, which enable communities to survive and navigate in a variety of ecological environments. Oral transmission of knowledge frequently fosters a sense of community and shared identity. Furthermore, it demonstrates a profound comprehension of the natural environment, as evidenced by its adoption of sustainable methodologies that place biodiversity preservation and the welfare of forthcoming generations at the forefront.

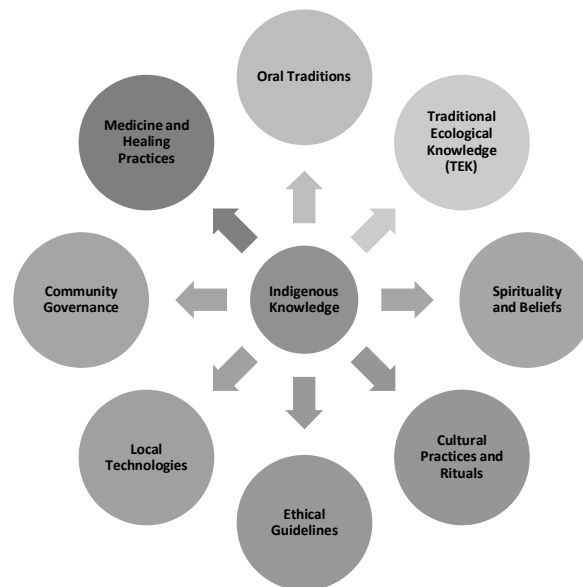


Figure 1: Main components of Indigenous Knowledge

1.1 Significance of Leveraging Indigenous Knowledge

2. The utilisation of Indigenous Knowledge (IK) holds great importance in the present era, given that it signifies a reservoir of wisdom and customs that have developed throughout successive generations within distinct cultural environments. Indigenous knowledge, which is frequently ingrained in traditional ways of life and regional ecosystems, provides distinctive perspectives on community welfare, environmental conservation, and sustainable lifestyles. Acknowledging and capitalising on the valuable insights contained within this knowledge not only ensures the preservation of culture but also provides the means to tackle urgent worldwide issues. Fundamentally, Indigenous Knowledge embodies a comprehensive and interrelated comprehension of the global landscape. It incorporates a wide array of disciplines, such as medicine, ecology, agriculture, and social organisation, all of which are united by the pursuit of human-nature harmony. The oral transmission of this knowledge fosters a sense of community and collective identity.

By harnessing the potential of Indigenous Knowledge, societies can derive advantages from time-honored approaches to addressing natural disasters, fostering resilience, and adjusting to environmental changes. Furthermore, it is critical to promote biodiversity conservation and sustainable resource management through the utilisation of indigenous knowledge. Indigenous societies have devised sophisticated methodologies to harness natural resources in a manner that preserves the intricate equilibrium of ecosystems. By incorporating these methodologies into modern strategies, one can make a significant contribution to the worldwide endeavour to mitigate climate change, safeguard endangered species, and ensure the sustainability of critical ecosystems. Indigenous knowledge, apart from its ecological importance, possesses tremendous social and cultural worth. It cultivates a sense of continuity and pride by embodying the identity and heritage of individual communities. Recognising and integrating this knowledge into prevailing dialogues constitutes a progressive stride towards redressing past inequities, fostering the agency of Indigenous communities, and advancing inclusiveness in the formulation of policies.

3. Indian Indigenous Knowledge System

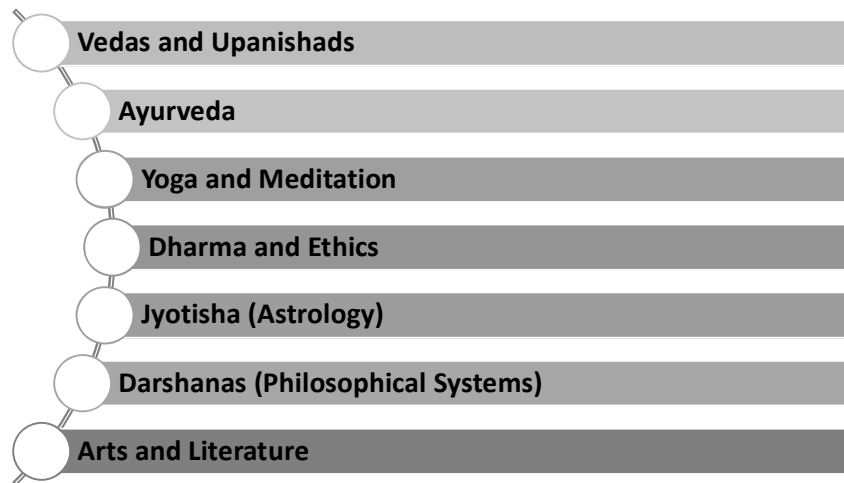


Figure 2: Main components of Indian Knowledge System

3.1 Historical Context

3.2 An exploration of the historical backdrop surrounding the Indian Indigenous Knowledge System (IKS) reveals an intriguing narrative of cultural development and age-old knowledge that has influenced the varied fabric of the subcontinent. The IKS, which has its origins in ancient customs and has been cultivated by indigenous populations throughout India, demonstrates a deep comprehension of the complex relationship that exists among humanity, the environment, and spirituality. The Indian IKS is steeped in antiquity, as evidenced by its origins in the Vedic scriptures, epics, and texts. These antiquated sources function as fundamental pillars, encapsulating the comprehensive perspective that is emblematic of indigenous knowledge. The Vedas provide profound understandings in various fields, including astronomy, Ayurveda (traditional medicine), and Vrikshayurveda (the study of plants), thereby exemplifying the all-encompassing character of indigenous knowledge. Over the course of history, a succession of dynasties and empires, such as the Mauryas, Guptas, and Mughals, exerted significant influence and fostered the development of indigenous knowledge traditions.

3.3 Core Principles and Practices

3.4 Conducting an investigation into the Fundamental Principles and Practices of the Indian Indigenous Knowledge System (IKS) is tantamount to venturing into the profound essence of a civilization that is intricately

entwined with the environment. The IKS, which has its origins in antiquity and has been cultivated by various communities throughout the subcontinent, represents a collection of foundational principles and tried-and-true methods that illustrate a comprehensive comprehension of the interdependence of all living things, the environment, and existence itself. The fundamental principle of the Indian IKS is a deep reverence for the natural world, which transcends its mundane utility as a resource and acknowledges it as a dynamic, interdependent entity with which humanity is inextricably connected. The principles underscore a commitment to equilibrium, sustainability, and harmony, placing significant emphasis on the necessity of coexisting with the natural environment instead of attempting to dominate it. This paradigm is deeply ingrained in numerous domains of indigenous knowledge, such as spirituality, medicine, astronomy, and agriculture.

The IKS places significant emphasis on its community-centric approach. Oral traditions frequently serve as a means of transmitting knowledge, thereby cultivating a sense of communal identity and shared accountability. Constraints and customs are profoundly ingrained within the cultural tapestry of various regions, accommodating local ecological systems and catering to the particular requirements of communities. The communal element guarantees the perpetuation of wisdom throughout successive generations, thereby establishing a robust structure for sustainable lifestyles. The Indian IKS incorporates a wide range of practices that are tailored to specific contexts in order to resolve the distinct challenges presented by various geographical and climatic conditions. These practices, which include traditional medicinal systems like Ayurveda and agroecological methods that prioritise soil health and biodiversity, are evidence of the resourceful ways in which communities have adapted to their environments over the centuries. Amid the forces of globalisation and modernization, the Core Principles and Practices of the Indian Indigenous Knowledge System remain relevant in the present day and serve as a repository of traditional wisdom.

3.5 Role in Sustainable Development

An examination of the contribution of the Indian Indigenous Knowledge System (IKS) to sustainable development reveals a rich tapestry of cultural fortitude, profound ecological insight, and an enduring strategy for reconciling the human condition with the environment. Drawing upon time-honored customs, the IKS possesses the capacity to direct present-day endeavours towards sustainable development by providing an original and all-encompassing vantage point on intergenerational harmony, community

welfare, and environmental preservation. Amid the contemporary global predicament characterised by climate change, biodiversity depletion, and the pursuit of sustainable lifestyles, the IKS assumes the role of a repository of invaluable information. By delving into the function of the IKS in the context of sustainable development, a multitude of information is unveiled that may serve as a guide for humanity towards a more harmonious and balanced coexistence with the planet.

4. Case Study: Leveraging Indigenous Knowledge

5. The utilisation of indigenous knowledge is a dynamic process that is profoundly ingrained in the specific contexts and environments of various cultures across the globe. This investigation examines the complex fabric of knowledge, customs, and methodologies that have been laboriously nurtured by indigenous populations for numerous generations. As we traverse this terrain, it becomes evident that harnessing indigenous knowledge represents not only a preservation endeavour but also a paradigm shifter with far-reaching consequences for sustainable development, cultural pluralism, and a more comprehensive international discourse. Indigenous knowledge is frequently influenced by the sociocultural, ecological, and geographical milieu of its birthplace. It is indicative of a profound comprehension of the surrounding environments. The specificity, adaptability, and relevance of this knowledge are enhanced by the unique environments in which it flourishes. Ranging from the Arctic tundra to the Amazon rainforests, and in the case we are investigating, the expansive and varied landscapes of India, indigenous knowledge emerges from a deep-seated affinity for the land and its resources. When considering the utilisation of indigenous knowledge, the environment and context become critical factors in identifying the intricate ways in which communities interact with their immediate environment. This investigation functions as a request for recognition of the profound understandings ingrained in the knowledge systems of indigenous populations and for recognising their immeasurable impact on the formation of a more sustainable, inclusive, and harmonious global community.

4.1 Determination of Elements of Indigenous Knowledge

This case study offers a comprehensive examination of the intricate procedure involved in acknowledging, comprehending, and capitalising on the abundant traditional wisdom present in a particular cultural milieu. Through an emphasis on the identification of components of indigenous knowledge, we unveil a narrative that transcends mere preservation,

demonstrating the critical role that these components play in tackling present-day issues and promoting sustainable development. Within the diverse fabric of indigenous societies, knowledge is not a fixed entity; rather, it is an active and dynamic force that is intricately interwoven into routine activities, ceremonial observances, and engagements with the environment. Indigenous knowledge elements are identified by sifting through the complexities of culture, which are frequently transmitted orally, in folklore, through personal experience, and through traditional practices. This case study functions as an encouragement to delve into the intricacies of indigenous knowledge, acknowledging its capacity for profound change and promoting a constructive discourse between conventional wisdom and contemporary resolutions.

4.2 Assimilation into Present-Day Initiatives

This investigation presents itself as a fluid storyline, illuminating the smooth integration of contemporary frameworks for sustainable development with the abundant traditional knowledge of indigenous communities. The case study investigates the complex interplay between traditional methods and modern obstacles, demonstrating the profound impact that can result from incorporating indigenous knowledge into ongoing endeavours. In light of urgent global challenges including climate change, biodiversity depletion, and the pursuit of sustainable development, the significance of indigenous knowledge grows substantially. Traditional knowledge, which is firmly grounded in a profound comprehension of regional ecosystems and cultural circumstances, possesses the means to devise inventive resolutions that align with the fundamental values of fortitude, equilibrium, and concord. The primary objective of this case study is to examine how indigenous knowledge components can be incorporated into ongoing initiatives, encompassing sectors such as community development, healthcare, environmental conservation, and agriculture. This study examines the potential benefits of identifying and integrating these components into modern projects, with a particular focus on sustainability and efficacy. It recognises the bounty of knowledge and understanding that are inherent in indigenous practices. The process of integration entails the reconciliation of disparities between conventional and contemporary methodologies, promoting a cooperative discourse that upholds the independence of indigenous communities.

6. Challenges and Solutions

This investigation delves into the ever-changing intersection of modern initiatives and traditional wisdom, revealing the intricacies, challenges,

and inventive resolutions that arise during the integration of indigenous knowledge. The case study illuminates the intricate interplay between tradition and advancement, scrutinising how obstacles can be converted into prospects for revolutionary transformation. As integral elements in the worldwide endeavour to achieve sustainable development, indigenous knowledge recognition and incorporation have emerged as crucial components. Nevertheless, this integration is not devoid of challenges. This case study critically examines the complex obstacles encountered when attempting to benefit from indigenous knowledge. These obstacles encompass concerns related to cultural sensitivity, power relations, and the possible dangers of commodification or misappropriation. The case study sheds light on situations in which ingenious collaboration, active involvement of the community, and flexible strategies have enabled the achievement of successful integration.

As we examine this case study, we uncover a narrative that surpasses theoretical discourse by providing practical perspectives on the obstacles and resolutions faced in the practical implementation of utilising indigenous knowledge. This study examines the transformative capacity that arises when policymakers, researchers, and communities work together to integrate traditional knowledge into modern initiatives, thereby making a contribution towards a more sustainable and harmonious future.



Figure 3: Prospects Outcome of Indigenous Knowledge with Indian Knowledge System

Table 1: Integration of Indigenous Knowledge with Indian Knowledge System

Aspect	Indigenous Knowledge	Indian Knowledge System
Oral Traditions	Passed down through generations orally (stories, myths)	Similar emphasis on oral traditions (Vedas, Upanishads)
Spirituality and Beliefs	Deep connection between knowledge, spirituality, and nature	Intrinsic link between philosophy, religion, and daily life
Traditional Ecological Knowledge (TEK)	In-depth understanding of local ecosystems and sustainable practices	Harmony with nature and ecological wisdom in Ayurveda, agriculture
Medicine and Healing Practices	Traditional healing methods using local plants and holistic approaches	Ayurveda as a comprehensive system of natural healing

Cultural Practices and Rituals	Cultural practices shaping daily life and preserving identity	Rituals deeply rooted in cultural and religious traditions
Ethical Guidelines	Ethical principles guiding behaviour and community values	Dharma as a foundational concept for ethical living
Local Technologies	Development and use of technologies adapted to specific environments	Ancient Indian contributions in mathematics, astronomy, and metallurgy
Community Governance	Communal decision-making processes and respect for elders	Governance structures embedded in cultural values and traditions
Land and Territory	Strong connection between communities and ancestral lands	Sacredness of land and its connection to cultural identity
Adaptation and Resilience	Dynamic and adaptable knowledge system responding to changes	Philosophies emphasizing adaptability and resilience in the face of challenges

7. Impact Assessment

7.1 Measuring Success: Social, Environmental, and Economic Indicators

7.2 Commencing a reflective inquiry, we undertake a comprehensive examination of the complex domain titled “Measuring Success: Social, Environmental, and Economic Indicators Using Indigenous Knowledge Systems.” This case study examines the complex process of evaluating the effects of integrating indigenous knowledge into modern initiatives. Through an examination of social, environmental, and economic indicators, our objective is to attain a holistic comprehension of success as it pertains to the ever-evolving relationship between progress and tradition. Amidst an international context that places utmost importance on sustainable development, the incorporation of indigenous knowledge systems becomes a critical approach. Nevertheless, success in this particular context is not quantified by traditional metrics but rather by adopting a comprehensive approach. This case study aims to elucidate the intricate facets that contribute to achievement, acknowledging the interdependence of economic resilience, environmental sustainability, and social well-being. An analysis of social indicators reveals the profound and far-reaching consequences for communities, encompassing cultural conservation, social unity, and the agency of indigenous perspectives. Through the assessment of the social impact of utilising indigenous knowledge, valuable insights can be obtained regarding the manners in which conventional practices foster community resilience and welfare. Concurrently, the case study critically examines environmental indicators, providing insights into the ways in

which the integration of indigenous knowledge impacts the equilibrium of ecosystems, preservation of biodiversity, and sustainable administration of resources. By utilising indigenous knowledge in this manner, one can attain a holistic comprehension of the ways in which it can be applied to promote environmental stewardship and tackle present-day issues like climate change. In addition, the economic indicators provide valuable insights regarding the potential for indigenous knowledge integration to foster sustainable livelihoods and enhance economic resilience. This investigation recognises the sustainable economic potential of indigenous agricultural methods, handicrafts, and environmentally conscious businesses. However, among these factors to be taken into account is the difficulty of defining success in the particular circumstances of various communities. This case study elucidates the intricacies associated with formulating indicators that demonstrate reverence for indigenous values, respect cultural diversity, and adhere to international sustainability objectives. This prompts contemplation regarding the ethical ramifications of measurement frameworks, with the aim of guaranteeing that success metrics are not only pertinent but also considerate of the varied aspirations and values held by indigenous communities. As we examine this case study, we commence an exploration to grasp the intricate facets of achievement in the utilisation of indigenous knowledge systems. This statement urges a reevaluation of traditional evaluation methods in favour of a holistic outlook that considers the interconnectedness of economic, social, and environmental welfare in the context of indigenous knowledge.

7.3 Community Engagement and Empowerment

8. Delving into the complex facets of “Leveraging Indigenous Knowledge System-Measuring Success: Community Engagement and Empowerment,” we undertake a nuanced investigation. This case study delves into the intricate interplay between modern initiatives and traditional wisdom, with an emphasis on the critical metrics of community empowerment and engagement. Through an analysis of the profound effects on communities, our objective is to reveal the intricate strands that establish the efficacy of incorporating indigenous knowledge systems. In the ongoing worldwide effort to achieve sustainable development, the acknowledgment and integration of indigenous knowledge have emerged as critical factors. Nevertheless, the authentic indicator of achievement transcends traditional indicators and instead focuses on the empowerment of indigenous communities. This case study explores the intricate landscape of comprehending the ways in which

the utilisation of indigenous knowledge enhances community empowerment and engagement, thereby promoting cultural vitality, resilience, and self-determination. Community engagement is an essential metric for assessing the extent and scope of the partnership between external organisations and indigenous communities. Through an analysis of the significant incorporation of indigenous perspectives, the safeguarding of cultural independence, and the courteous interchange of information, this particular case study illuminates the profound capacity for genuine collaborations to effect change. By adopting empowerment as a guiding principle, this investigation attains a critical success factor. This case study investigates the positive impacts of incorporating indigenous knowledge on the socio-economic welfare of communities. It highlights how such integration promotes sustainable livelihoods, safeguards cultural heritage, and cultivates a sense of pride and identity among indigenous populations. In addition, the case study addresses the difficulties associated with ensuring that indicators of community empowerment and engagement are contextually appropriate and culturally sensitive. This prompts contemplation regarding the ethical implications of power dynamics, promoting discourse that upholds the autonomy and agency of indigenous communities as they determine their own futures. As we commence this case study, we uncover a narrative that surpasses conventional measures of success, encouraging a more profound comprehension of the profound impact that can result from harnessing indigenous knowledge. This analysis delves into the ways in which authentic community involvement and empowerment not only establish criteria for achievement but also pave the way towards a future that is more sustainable, inclusive, and culturally diverse.

9. Future Prospects

9.1 Scaling Up: Potential for Replication

9.2 We commence a forward-thinking investigation by examining the subject matter of “Leveraging Indigenous Knowledge System: Scaling Up: Potential for Replication.” This case study delves into the realm of possibilities, scrutinising the capacity of indigenous knowledge systems to bring about significant changes and assessing the viability of expanding prosperous initiatives to a wider scope. Our objective as we contemplate the future is to examine the correlation between progress and tradition, and to determine how the utilisation of indigenous knowledge can serve as a driving force for sustainable development on a global scale. Amidst

the growing recognition of the critical need for sustainable solutions, the incorporation of indigenous knowledge systems presents a tremendous opportunity. The primary emphasis of this case study is the potential for expanding the influence of indigenous wisdom beyond its original local contexts in order to tackle worldwide issues. This expedition acknowledges the immense value of knowledge contained within time-honored customs and their capacity to mould a future characterised by greater sustainability and harmony. The investigation into the concept of scaling up commences with the identification and evaluation of endeavours that have exhibited efficacy in harnessing indigenous knowledge. Potential initiatives may include sustainable agricultural practices, community-based conservation initiatives, and healthcare models that are grounded in traditional therapeutic systems. Our objective is to analyse these prosperous undertakings in order to extract the fundamental components that contribute to their efficacy and evaluate their capacity to flexibly operate in various ecological and cultural environments. As we commence this case study, we manoeuvre through the convergence of tradition and advancement, investigating the routes that culminate in a future where the worldwide application of indigenous knowledge systems' capacity for profound change is actualized. This statement functions as an appeal to consider a future in which the practicalities of the present harmonise with the sagacity of the past, thereby cultivating an entirely sustainable and all-encompassing course for the human race.

9.3 Policy Implications

10. With an eye towards the future, we undertake an investigation into the subject matter of "Policy Implications of Scaling Up the Leveraging Indigenous Knowledge System." This case study explores the transformative potential of integrating indigenous knowledge systems on a larger scale and identifies the policy implications that may stimulate this paradigm shift. It presents a journey into the future through this analysis. Our objective is to examine the interrelation between policy and tradition in an effort to discern the principles that bind indigenous knowledge to worldwide approaches to sustainable development. In a time when comprehensive and long-lasting resolutions are of the utmost importance, the incorporation of indigenous knowledge systems into policy frameworks becomes a crucial pathway. This case study examines the potential for scaling up effective models in order to influence national and international policies by expanding the influence of indigenous wisdom beyond local contexts. This expedition acknowledges the immense value of knowledge contained within time-honored customs

and their capacity to mould a future characterised by greater sustainability and harmony. The examination of policy implications commences with the identification of endeavours that have effectively utilised indigenous knowledge and the evaluation of their compatibility with current policies or their need for novel policy frameworks. Through a critical examination of these prosperous undertakings, our objective is to extract the fundamental components that contribute to their efficacy and assess the potential for incorporating them into more extensive policy frameworks. In commencing this case study, we examine the convergence of policy and tradition, investigating the trajectories that culminate in a future where the profound capacity of indigenous knowledge systems is not only acknowledged but also ingrained within the framework of international governance. This statement extends an invitation to consider a future in which policy imperatives and traditional wisdom harmonise, thereby promoting a trajectory for humanity that is genuinely inclusive and sustainable.

11. Conclusion

This concluding chapter serves as a retrospective and reiteration of the pivotal discoveries that have influenced our comprehension of the ever-evolving correlation between progress and tradition. Our investigation commenced with a recognition of the immense importance of indigenous knowledge systems (IKS) in the varied cultural environments they govern. Deeply ingrained in cultural heritage, these knowledge systems embody the accumulated wisdom of indigenous populations, providing an all-encompassing and interrelated perspective on existence, the natural world, and spiritual matters. Subsequently, we initiated a sequence of case studies, with each one shedding light on a distinct aspect of harnessing indigenous knowledge. Through the process of discerning fundamental components, confronting obstacles, and devising resolutions, we traversed the intricate landscape that arose when incorporating conventional knowledge into modern organisations. We reflected on a prospective scenario in which indigenous wisdom is not only acknowledged but also incorporated into worldwide approaches to sustainable development, thereby promoting a symbiotic relationship between tradition and advancement. As we summarise our principal discoveries, we emphasise the profound capacity for change that is inherent in indigenous knowledge systems. It is acknowledged that achieving successful assimilation necessitates the careful maintenance of cultural authenticity while simultaneously adjusting to modern challenges. The case studies demonstrated the adaptability, resilience, and applicability

of indigenous knowledge in tackling urgent global challenges by offering inventive resolutions grounded in wisdom that spans centuries. In summary, this investigation underscores the significance of continuous cooperation, regard, and ethical deliberations throughout the process of harnessing indigenous wisdom. Promoting inclusive policy formulation, fostering the empowerment of indigenous communities, and engaging in a reciprocal exchange of perspectives are all essential measures in advancing a future where the invaluable contributions of traditional wisdom harmonise with the imperatives of sustainable development. Our investigation is, at its core, an appeal to acknowledge the profound wisdom contained within indigenous knowledge systems. We do so not merely as repositories of tradition, but also as beacons that illuminate the path to a future characterised by greater harmony, inclusivity, and sustainability.

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Chapter-2

Science Pedagogy Content Knowledge of Prospective Teachers

Dr. K.Sathya

Assistant Professor in Education, KRP College of Education, Pachampalayam,
Sankari West, Namakkal

Abstract

Pedagogy content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult the conceptions or preconceptions that students of different ages and backgrounds bring with them to the learning of those must frequently thought topics and lessons. The content of pedagogy refers to the pedagogical knowledge, skills of teachers use to impart the specialized content of their subject area. The knowledge that teachers come to have the most faith in and use most faith in and use most faith in and use most frequently to guide their teaching is what works for them not necessarily what theory or research states. The sample constitutes 1578 prospective teachers from the government, aided and self financing colleges. The researcher used science pedagogy content knowledge developed by pilot study. For data collection the result revealed that mean score was locality prospective teachers have more mean than urban teachers. Rural teachers shown more interest to learn new and innovative than urban teacher. There is no significant interaction between the prospective teachers studying in different types of institutions and their science pedagogy content knowledge of prospective teachers.

Keywords: science pedagogy content knowledge, prospective teachers, science knowledge

INTRODUCTION

The challenge of pedagogy is the crafting - braining art, science, intuition and skills to bear in the creating of something that can become management or reach into the limitless range of possibilities and relationships. It requires the ability to plan and construct with ingenuity and dexterity. It involves

a constant working at adjusting, imagining and adjusting again until the thing sets right.

True knowledge of Teaching achieved by practice and experience in the classroom. It deals with beliefs, values and attitudes – with people and not statistics. The knowledge that teachers come to have the most faith in and use most frequently to guide their teaching is what works for them not necessarily what theory or research states.

According to **Paulo-freire** “ pedagogy refers to the methods of teaching adults as critical pedagogy. In concern with those teaching, teaching methods and the instructions of own philosophical faith and beliefs of teaching are used and governed by the pupils background knowledge and experienced personal situations, and environment as well as learning goals set by the students and teachers

2. REVIEW OF THE RELATED LITRATURE

Kalchman, Mindy; Kozoll, Richard H.(2017) investigated on Developing Distinct Mathematical and Scientific Pedagogical Content Knowledge in an Early Childhood Dual-Content Methods Course: An Alternative to Integration. In this expose showing, the authors discuss and illustrate their approach to such a combined course. They emphasize the development of pre service teachers’ distinct pedagogical content knowledge in mathematics and in science rather than an integration of the two. The authors do this by concentrating their course development on a central unifying theme or idea within each content-area. Through course readings, media, in-class activities and discussions, and fieldwork, the authors highlight the similarities and differences between early childhood mathematics and science methods, thus offering pre service teachers a conceptual infrastructure that empowers them to make informed choices about their own mathematics and science program.

Menon, Deepika; Sadler, Troy(2016) published an article Preservice Elementary Teachers’ Science Self-Efficacy Beliefs and Science Content Knowledge. Results designate statistically significant gains in participants’ science self-efficacy beliefs and science conceptual understandings. Additionally, a positive moderate relationship between gains in science conceptual understandings and gains in personal science teaching efficacy beliefs was found. Qualitative analysis of the participants’ responses indicated positive shifts in their science teacher self-image and they credited their experiences in the course as sources of new levels of confidence to teach

science. The study includes implications for pre service teacher education programs, science teacher education, and research.

3. NEED AND SIGNIFICANCE OF THE STUDY

Pedagogy content knowledge also includes an understanding of what makes the learning of specific topics easy or difficult the conceptions or preconceptions that students of different ages and backgrounds bring with them to the learning of those must frequently thought topics and lessons. Science teachers can have a major influence on the way science students learn and develop. Science teachers who have an impact on students' lives are those who have a genuine interest in students, know their subject matter and possess detailed information about instructional processes and the way students learn and development. subject of general science is organized by borrowing subject from different sub –subjects of science. Science is concerned with knowledge.

4. STATEMENT OF THE PROBLEM

The statement of the problem is stated as “**SCIENCE PEDAGOGICAL CONTENT KNOWLEDGE OF PROSPECTIVE TEACHERS.**”

5. OPERATIONAL DEFINITION

Science Pedagogy content knowledge

The study pedagogy content knowledge includes general pedagogy content knowledge, content knowledge, Pedagogical content knowledge, knowledge of students,

6. OBJECTIVES OF THE STUDY

To study the science pedagogy content knowledge of prospective teachers with reference to, locality,, type of school, education qualification.

7. HYPHOTHESIS OF THE STUDY

1. UG and PG prospective teachers do not differ in their science pedagogy content knowledge.
2. There is significant interaction between the prospective teachers studying different type of institution in their pedagogical content knowledge
3. Rural and Urban Locality prospective teachers do not differ in their science pedagogy content knowledge

8. RESERCH METHODOLOGY

Research Method

The researcher adopted normative survey method for the present study.

Sample

Stratified random sampling procedure was adopted for the present study.

Sample Size

The size of sample was 1578 prospective teachers from Salem, Erode and Coimbatore Districts.

Tool Used

In the present study pedagogical content knowledge (PCK) questionnaire was used for data collection.

8. ANALYSIS AND INTERPRETATION

Table -1 showing the Mean, Standard deviation and ‘t’ value of science pedagogy content knowledge of prospective teachers based on their Educational Qualification

Variable	Educational Qualification	N	Mean	SD	t-value	
Global value of SPCK	UG	659	307.34	23.34292	1.590	NS(0.05)
	PG	919	305.19	28.66398		

Since the calculated t value is less than the table value(1.96) at 0.05 level the null hypothesis is accepted. Hence UG and PG prospective teachers do not differ in their science pedagogy content knowledge.

Table-2 showing the Mean, Standard deviation and ‘f’ value of science pedagogy content knowledge of prospective teachers based on types of institution.

Variable	Groups	Sum of the square	Df	Mean square	F-value	Variable
Global value of SPCK	Between Groups	81375.85	2	40687.92	62.02	S(0.05)
	Within Groups	1033197.72	1575	655.99		
	Total	1114573.57	1577			

Since the calculated F value is greater than the table value (2.99) at 0.05 level the null hypothesis is not accepted. Hence there is no significant

interaction between the prospective teachers studying in different types of institutions and their science pedagogy content knowledge of prospective teachers.

Table- 3 showing the Mean, Standard deviation and ‘t’ value of science pedagogy content knowledge of prospective teachers based on their locality.

Variable	Locality	N	Mean	SD	t-value	
Global value of SPCK	Rural	652	306.55	27.34889	0.581	NS(0.05)
	Urban	926	305.76	26.04387		

Since the calculated t value is less than the table value (1.96) at 0.05 level the null hypothesis is accepted. Hence rural and urban prospective teachers do not differ in their science pedagogy content knowledge.

CONCLUSION

The current study revealed UG and PG prospective teachers do not differ in their science pedagogy content knowledge and Rural and urban prospective teachers do not differ in their science pedagogy content knowledge. Rural prospective teachers have more mean than urban teachers. The rural teachers shown more interest to learn new and innovative than urban teacher.

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Chapter-3

**Sustainable Heritage: IP Protection for
Indigenous Knowledge in India**

Krishna Ghosh

Assistant Professor, School of Law, Brainware University

Abstract

This study explores why it's important to protect the unique knowledge of native communities in India within the country's legal system. The focus is on keeping, guarding, and blending this indigenous knowledge into the wider intellectual property framework. It discusses the variety and value of India's native knowledge, including traditional farming, Ayurveda, crafts, and ethnomedicine. The analysis includes key laws like the Indian Patents Act, Protection of Plant Varieties Act, Biological Diversity Act, among others. We also look at the problems faced by those holding indigenous knowledge, such as biopiracy, a lack of legal awareness, and ethical worries related to commercialization. Actual cases are examined to show both successful protection and possible exploitation of native knowledge, underlining the need for strong legal measures. To bridge these gaps, the article suggests the best ways to effectively integrate native knowledge, like getting informed consent beforehand, involving the community in intellectual property decisions, and creating fair benefit-sharing systems. The article also proposes enhancing the legal framework through specific laws, clearer rules for what can be patented, and better enforcement. Collaboration, both within the country and internationally, is seen as vital for standardization and complete protection. Lastly, the article argues for public records and increased legal understanding among native communities to strengthen their protection.

Keywords: Native knowledge, Intellectual Property, Legal framework, Preserving traditional knowledge, Protecting traditional knowledge.

1. Introduction

The article “Bridging Traditions: Safeguarding Indigenous Knowledge in India’s IP Framework” offers a comprehensive examination of the

significance of indigenous knowledge and the role of intellectual property rights (IPRs) in preserving it. It defines indigenous knowledge, provides examples, and explores India's rich knowledge systems. The article discusses the Indian legal framework related to indigenous knowledge, highlights challenges faced by indigenous knowledge holders, and presents legal cases as illustrations. It proposes best practices for integrating indigenous knowledge into the IP framework, focusing informed consent, community involvement, and benefit-sharing. Recommendations for enhancing the legal framework are discussed, and the conclusion underscores the importance of collaborative efforts to protect indigenous knowledge within India's intellectual property system.

1.1. Brief Overview of Indigenous Knowledge and Its Significance in India

Indigenous knowledge, or traditional knowledge, in India encompasses a wide range of expertise and practices passed down through generations within diverse indigenous communities. It is integral to preserving cultural heritage, promoting sustainable resource management, offering alternative healthcare solutions through traditional medicine, and playing a crucial role in biodiversity conservation. Recognising and respecting indigenous knowledge is vital for building an inclusive, sustainable, and culturally sensitive society, and incorporating it within the intellectual property framework is essential for preserving and respecting these age-old practices and traditions.

1.2. Explanation of Intellectual Property Rights and their Importance in Preserving and Promoting Indigenous Knowledge

Intellectual Property Rights play an important role in safeguarding and promoting indigenous knowledge. They offer legal protection for traditional wisdom, preventing its unauthorised use and misappropriation. This protection empowers indigenous communities to control the commercial exploitation of their knowledge, leading to economic benefits. IPRs also encourage innovation and collaboration, fostering the adaptation of traditional practices to modern contexts. Furthermore, they raise awareness about the value of indigenous knowledge, contributing to a deeper appreciation of indigenous cultures and heritage. Overall, integrating IPRs into the preservation and promotion of indigenous knowledge is essential for its continued relevance and respect.

1.3. Purpose of the Article

This article aims to thoroughly examine the convergence of indigenous knowledge and the intellectual property framework in India. It seeks to

achieve several key objectives: making people aware about the significance of indigenous knowledge and its potential integration into intellectual property, providing clarity on the Indian legal framework concerning indigenous knowledge and intellectual property rights, highlighting the challenges faced by indigenous knowledge holders, and promoting best practices and recommendations for the protection and inclusion of indigenous knowledge within the intellectual property framework, with a strong focus on collaboration and inclusivity.

2. Understanding Indigenous Knowledge

2.1. Definition and Scope of Indigenous Knowledge

Traditional knowledge and Indigenous knowledge bear the same meaning. Traditional knowledge encompasses the innovations, practices, and collective wisdom developed and passed from generation to generation within specific communities. It is transmitted orally and rooted in the cultural, social, and environmental contexts of these communities. This knowledge is characterised by its holistic understanding, adaptability, and community-centric focus. Its scope spans various domains, including agriculture, medicine, craftsmanship, astronomy, and governance. Recognising and respecting indigenous knowledge is essential for preserving and integrating it into contemporary society while honoring the communities that safeguard it.

2.2. Examples of indigenous knowledge in various domains (agriculture, medicine, traditional craftsmanship, etc.)

Indigenous knowledge is a reservoir of wisdom and innovation developed over generations by diverse indigenous communities. This knowledge is deeply intertwined with the environment, culture, and traditions of the communities, manifesting in various domains. Here, we highlight examples of indigenous knowledge in key domains:

2.2.1. Agriculture

Crop Diversity and Resilient Farming Practices: Indigenous communities possess extensive knowledge of diverse crops, their growth patterns, and suitable planting techniques. They often utilise sustainable and resilient farming practices, such as intercropping and crop rotation, to maximise yield and minimise environmental impact.

Water Harvesting and Irrigation Techniques: Indigenous farmers have developed effective water harvesting and irrigation methods, optimising

water usage in arid regions. Techniques like contour trenching and traditional water storage systems are common examples.

2.2.2. Medicine

Herbal Remedies and Medicinal Plants: Indigenous communities have a deep understanding of medicinal plants and their healing properties. They use specific plants and herbs to treat a wide range of ailments, based on generations of empirical knowledge.

Traditional Healing Practices: Techniques like acupuncture, Ayurveda, traditional Chinese medicine, and various indigenous healing rituals have been developed and refined over centuries, providing holistic approaches to healthcare.

2.2.3. Traditional Craftsmanship

Textiles and Weaving Techniques: Indigenous cultures often have distinct textile traditions, using specific weaving techniques and natural dyes that have been passed down through generations.

Pottery and Ceramics: Each indigenous community often has its unique pottery techniques, utilizing local clay and firing methods to create functional and artistic pottery.

2.2.4. Environmental Knowledge

Ethnoecology and Ecosystem Management: Indigenous peoples possess an intimate understanding of their local ecosystems, biodiversity, and the delicate balance of flora and fauna, enabling sustainable resource management.

Navigational and Survival Skills: Indigenous communities have honed their navigational skills and survival instincts, allowing them to thrive in diverse landscapes, from forests to deserts.

2.2.5. Astronomy and Cosmology

Celestial Navigation: Indigenous communities often have sophisticated knowledge of celestial bodies, aiding navigation and understanding of seasonal changes.

Astronomical Calendars and Rituals: Many indigenous cultures have developed calendars based on celestial events, guiding agricultural activities and cultural practices.

These examples underscore the richness, diversity, and relevance of indigenous knowledge across various domains. Recognising and respecting

this knowledge is crucial for preserving traditional practices, fostering sustainable development, and promoting intercultural dialogue.

2.3. Highlighting the richness and diversity of India's indigenous knowledge systems

India's rich cultural tapestry is woven with diverse indigenous knowledge systems that have evolved over centuries. These systems encompass Ayurveda for holistic well-being, region-specific agricultural practices like shifting cultivation in the Northeast and water conservation in Rajasthan, unique traditional arts and crafts such as Pattachitra and Kutch embroidery, ethnomedicinal practices of various ethnic groups, and indigenous wisdom in environmental conservation. These knowledge systems highlight the country's cultural heritage and offer valuable insights for sustainable development and cultural preservation.

3. The Indian Legal Framework for Indigenous Knowledge

3.1. Overview of relevant laws and regulations pertaining to indigenous knowledge and intellectual property rights in India

For the purpose of safeguarding the indigenous Knowledge, Parliament has passed various IP Protection laws..Key laws and regulations include the Indian Patents Act, which prevents patents for inventions conflicting with public order, morality, or environmental well-being; the Protection of Plant Varieties and Farmers' Rights Act, which protects farmers' rights and plant breeders; the Biological Diversity Act, which regulates access to biological resources and traditional knowledge; the Traditional Knowledge Digital Library (TKDL), documenting traditional knowledge to prevent non-original patents; the Geographical Indications of Goods Act, promoting the preservation of traditional practices; and the Copyright Act, protecting traditional cultural expressions and folklore. India is also a signatory to international agreements such as the Convention on Biological Diversity and the Nagoya Protocol, reinforcing the protection and equitable sharing of benefits related to biological resources and traditional knowledge. These measures collectively ensure the preservation and protection of indigenous knowledge within India's IPR system.

3.2. Explanation of how the Indian legal system recognises and protects indigenous knowledge

The Indian legal system has taken significant steps to recognise and protect indigenous knowledge and traditional practices. This includes

recognising indigenous knowledge as “prior art” to prevent patents on existing knowledge, the establishment of the Traditional Knowledge Digital Library (TKDL) to prevent misappropriation, and the Protection of Plant Varieties and Farmers’ Rights Act, 2001, to protect the rights of farmers and communities.

However, challenges include the lack of legal awareness among indigenous communities, complex legal procedures, the need for more inclusive regulations, the potential for misappropriation, and limitations in the scope of protection, particularly in rapidly evolving fields. Addressing these gaps requires legal reforms, awareness programs, capacity building, and greater involvement of indigenous communities for a more equitable and effective legal framework.

4. Challenges Faced by Indigenous Knowledge Holders

4.1. Identification and discussion of common challenges indigenous knowledge holders face in India. Indigenous knowledge holders in India face numerous challenges, including biopiracy, unethical research practices, intellectual property rights violations, digital exploitation, and a lack of effective enforcement mechanisms. These issues result in the unauthorised use and misappropriation of their traditional knowledge, depriving indigenous communities of fair compensation and perpetuating economic and cultural exploitation. Addressing these challenges necessitates collaborative efforts involving legal authorities, indigenous communities, scholars, and policymakers to implement legal reforms, awareness campaigns, capacity building, and robust protection measures for the preservation and utilisation of indigenous knowledge.

4.2. *Ethical and cultural concerns associated with the commercialisation of indigenous knowledge*

The commercialisation of indigenous knowledge raises ethical and cultural concerns, including the commodification of traditional wisdom, lack of informed consent, unjust benefit sharing, violation of sacred knowledge, environmental impact, and the imposition of foreign intellectual property concepts.

These issues can devalue cultural significance, undermine autonomy, perpetuate historical injustices, and harm the environment. To address these concerns, it is crucial to approach commercialisation with respect for indigenous values, beliefs, and practices, ensuring equitable benefit-sharing and upholding the integrity of indigenous knowledge.

5. Case Studies

5.1. Examination of notable cases where indigenous knowledge has been protected or misused within the Indian legal system

Examining notable cases related to the protection or misuse of indigenous knowledge within the Indian legal system offers insights into the effectiveness of existing legal frameworks and highlights areas for improvement. Here, we present a brief overview of select cases:

5.1.1. Neem and Turmeric Patents Revocation

Case: The US Patent and Trademark Office granted patents for uses of neem and turmeric, traditional Indian remedies.

Outcome: India successfully opposed these patents, leading to their revocation. This highlighted the importance of protecting traditional knowledge and biodiversity.

5.1.2. Basmati Rice Geographical Indication (GI)

Case: An American company claimed a patent on a rice strain similar to basmati.

Outcome: India and other stakeholders successfully challenged the patent, reinforcing the unique geographical identity and cultural heritage associated with basmati rice.

5.1.3. Fakir Mohan Senapati's Folktales

Case: Fakir Mohan Senapati's folktales were published without proper attribution.

Outcome: Legal action was initiated, and the publication was rectified to credit the origin of the folktales to the indigenous communities.

5.1.4. Biopiracy of Medicinal Plants

Case: Several instances of biopiracy involving the misappropriation of traditional medicinal knowledge.

Outcome: Some cases were legally challenged, resulting in increased awareness about protecting traditional medicinal knowledge and advocating for benefit-sharing.

5.1.5. Traditional Craft Designs and Copyright

Case: Instances where traditional designs from various indigenous communities were used without permission or appropriate credit.

Outcome: Legal action has been taken in some cases to protect the intellectual property rights of artisans and communities, emphasising the need for copyright protection.

These cases demonstrate the importance of vigilance and proactive action to safeguard indigenous knowledge. They also underscore the need for stronger legal frameworks, international collaboration, and heightened awareness to prevent exploitation and misappropriation of traditional knowledge.

5.2. Analysis of the outcomes and implications of these cases on indigenous knowledge preservation and protection

Analysing the outcomes and implications of causes related to the protection or misuse of indigenous knowledge within the Indian legal system is crucial in understanding their broader impact on knowledge preservation and protection. Here, we delve into the analysis of the selected cases:

5.2.1. Neem and Turmeric Patents Revocation

Outcome Analysis: The successful revocation of patents highlighted the importance of challenging misappropriations and ensuring that traditional knowledge remains in the public domain.

Implications: It reinforced the necessity of a proactive approach to protecting traditional knowledge on a global scale and emphasised the significance of international cooperation in this regard.

5.2.2. Basmati Rice Geographical Indication (GI)

Outcome Analysis: Challenging the patent protected the uniqueness and cultural heritage associated with basmati rice, ensuring that its identity is preserved.

Implications: It set a precedent for defending geographical indications and raised awareness about the need for robust legal measures to protect traditional products and prevent exploitation.

5.2.3. Fakir Mohan Senapati's Folktales

Outcome Analysis: Correcting the attribution rectified the misrepresentation and acknowledged the contributions of indigenous communities to the folktales.

Implications: It emphasised the need for proper recognition and respect for the cultural heritage and intellectual contributions of indigenous

communities, setting a standard for ethical handling of traditional knowledge.

5.2.4. Biopiracy of Medicinal Plants

Outcome Analysis: Legal challenges raised awareness about the unethical misappropriation of traditional medicinal knowledge and the importance of fair benefit-sharing.

Implications: It drove discussions on the need for more stringent laws and international agreements to protect traditional medicinal knowledge and ensure equitable sharing of benefits.

5.2.5. Traditional Craft Designs and Copyright

Outcome Analysis: Legal action reinforced the importance of recognising and protecting the intellectual property rights of artisans and indigenous communities.

Implications: It highlighted the need for legal mechanisms that safeguard traditional designs, ensuring that artisans receive due credit and compensation for their creations.

These case analyses underscore the critical role of legal interventions in safeguarding indigenous knowledge. They emphasise the necessity of legal frameworks that recognise, respect, and protect traditional knowledge, ensuring its preservation, fair use, and equitable benefits for the indigenous communities.

6. Best Practices and Recommendations

6.1. Proposing best practices for the integration of indigenous knowledge into intellectual property frameworks

The proposal emphasizes the importance of integrating indigenous knowledge into intellectual property frameworks by advocating for several best practices. These practices include obtaining Prior Informed Consent and Free, Prior, and Informed Consent from indigenous communities, involving indigenous representatives in IP decision-making, recognizing customary laws, establishing benefit-sharing mechanisms, creating sui generis IP protection, promoting documentation initiatives like the Traditional Knowledge Digital Library (TKDL), and conducting education and awareness programs. These measures collectively aim to ensure the preservation, protection, and rightful attribution of traditional knowledge, respecting indigenous autonomy, fostering collaboration, and promoting

fair compensation while bridging the gap between indigenous knowledge and intellectual property, ultimately leading to equitable and culturally sensitive utilization.

6.2. Recommendations for strengthening the legal framework to better safeguard indigenous knowledge

The provided recommendations aim to strengthen the legal framework for safeguarding indigenous knowledge within the intellectual property system. They suggest enacting specific legislation tailored to the unique nature of indigenous knowledge, integrating traditional knowledge into existing intellectual property laws, establishing clear patentability criteria, conducting capacity-building programs for indigenous communities, collaborating internationally for standardized protection, creating public domain registers, and enhancing enforcement mechanisms. These measures collectively promote the protection and preservation of indigenous knowledge, ensuring equitable treatment and preventing misappropriation within the intellectual property system.

6.3. Suggestions for collaboration between indigenous communities, legal authorities, and other stakeholders

The paragraph highlights key suggestions for effectively safeguarding indigenous knowledge within India's intellectual property framework through collaborative efforts. It emphasizes the need for dialogue platforms, the inclusion of indigenous representatives in policy formulation, capacity building, participatory research projects, community-led benefit-sharing initiatives, joint task forces, and international collaboration. These measures aim to promote open communication, cultural sensitivity, mutual empowerment, and global cooperation, ultimately ensuring the preservation and integration of indigenous knowledge while respecting the expertise of all stakeholders involved.

7. Conclusion

Preserving and protecting indigenous knowledge is of utmost importance, deeply intertwined with the cultural heritage, identity, and sustainability of indigenous communities. This knowledge, rooted in centuries of wisdom and traditional practices, plays a crucial role in sustainable development, biodiversity conservation, and overall well-being. Protection through intellectual property frameworks is essential to prevent exploitation and uphold the rights of indigenous communities. The endeavor to safeguard

indigenous knowledge serves as a bridge between the past, present, and future, fostering a dynamic exchange that combines tradition and innovation. The call to action is for stakeholders, including policymakers, legal authorities, researchers, and indigenous communities, to collaborate in fortifying the legal framework, raising awareness, and celebrating and integrating indigenous knowledge for a diverse, respectful, and sustainable world.

It also emphasises the crucial need to preserve and protect indigenous knowledge within India's intellectual property framework through a multifaceted approach. This includes advocating for policy reforms, empowering indigenous communities with knowledge of intellectual property rights, promoting international collaboration, conducting awareness campaigns, and encouraging research and documentation. The collective goal is to integrate indigenous wisdom into society's progress by enhancing the legal framework, raising awareness, and fostering collaboration, ensuring the heritage of indigenous knowledge is respected and preserved.

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Chapter-4

Indigenous Knowledge Towards 21st Century Education for Sustainability

Dr. Kotra Balayogi

Assistant Professor, Unity College of Teacher Education, Dimapur, Nagaland

Abstract

Indigenous knowledge is generally recognised as an inferior social experience in spaces of knowledge production and the educational issue that results from this process imposes barriers to the integration of these epistemologies in the education institutions environment. The present study presents a systematic review about the indigenous knowledge towards 21st century sustainability and identified important factors that influence the representation of the indigenous culture in the institutions environment, allowing the construction of a framework in which indigenous knowledge is often neglected in the formal education system with obstacles to its introduction into any educational environment. It also revealed that the understanding of the local context is essential in proposing interventions to open a possible intercultural dialogue. Indigenous knowledge provides specific views of the world held by various indigenous peoples and it offers different views on nature and science that generally differ from traditional education systems. It introduces different perspectives on nature and the human in nature and the present study analyses the literature in education focusing on research and practices of integrating indigenous knowledge with 21st century education. The study suggests models, frameworks, etc. for how to elaborate on and design education for 21st century sustainability that takes indigenous knowledge. Indigenous knowledge is contextualized with regards to related terms like culture, customs, traditions, society, environment, people, mores, etc. The present study review provides justification for a stronger reflection about how to include views, aspects, practices, etc. from indigenous communities into education teaching and learning. It also suggests that indigenous knowledge offers rich and authentic contexts for learning for contributing to the development of more balanced and 21st century holistic worldviews, intercultural understanding, and sustainability.

Keywords: Culture, Customs, Education for Sustainability, Holistic, Indigenous Knowledge, Integration, Students, Teachers, Tradition, 21st Century

INTRODUCTION

One of the main problems in education is the perception of students that a lot of their lessons are neither interesting, engaging, nor relevant and learning is perceived not to be relevant in the view of students and thus becomes unpopular to them. A main factor for the missing perception of relevance is suggested in a lack of connections of the teaching of education is to the everyday life of students and society. To raise the relevance of education as part of it should accept a more thorough role in preparing students to become critical citizens. The role of education is to prepare students to think responsibly, critically, creatively, etc. in responding to societal issues caused by the impact of science and technology on life and society. To improve the relevance of education, teaching requires new ways in the curriculum and pedagogy beyond the mere learning of subject theories, facts, etc. Learning should be based on everyday life and societal situations that frame conceptual learning to enable students to appreciate the meaningfulness of it. For acquiring more relevant dynamic teaching and learning as well as for innovating the curriculum that is theory-driven and evidence-based curriculum development for education and corresponding teacher education are needed.

Accordingly, it is important to implement new topics and pedagogies in teaching and to change teacher education programs. One source for such new topics is sustainability thinking and action, and a corresponding related educational paradigm is called Education for Sustainable Development (ESD) (Burmeister et al. 2012). ESD in connection with all types of education has been suggested to have potential to contribute to all three domains of relevant science teaching (personal, societal, and vocational relevance) (Eilks and Hofstein 2014). It is relevant for individual action, like in cases involving consumption of resources, participation in societal debates about issues of sustainable development, or careers related to sustainability in science and technology (Sjöström et al. 2015). However, it should be mentioned that the ESD movement has been criticized for a too instrumental view on the relationship between science, technology, and society. The possibilities of environmental technology for solving environmental problems are emphasized, whereas the need for other societal and behavioural changes is not so much mentioned. Education for sustainability (Efs) is a more critical alternative to a narrow-focused ESD (Simonneaux and Simonneaux 2012; Birdsall 2013). According to Albe (2013), it requires the individual to take the political dimension of environmental issues and their intrinsic power relationships into consideration. The aim is to empower the individual for

acting responsibly in terms of sustainability, which was also identified by Stuckey et al. (2013) as an essential justification in their model of relevant education. Education for sustainability describing education driven by critical and alternative views on the transformation to a sustainable world. According to Savelyeva (2017), the dominant sustainability discourse is based on an anthropocentric conception, where nature needs to be managed within the three pillars of sustainability like ecological, economic, and societal sustainability and such a view on the human nature relationship is oriented towards producing a sustainable person. Indigenous views on nature and indigenous knowledge in education at different levels vary among societies and cultures across the globe.

The wisdom of indigenous knowledge is often based on sacred respect of nature, due to indigenous peoples' relationships and responsibilities towards nature (Knudtson and Suzuki 1992). Thus, learning about indigenous knowledge may help students recognizing this intimate connection between humans and nature in the foreground of culture from their regional environment/beyond. Teachers' identities are related to their worldviews, cultural values, educational philosophies, etc. and all these are influenced by the individual's perspectives towards it.

The introduction of indigenous knowledge in the classroom will represent different cultural backgrounds and might help improve the interpretation of this knowledge (Botha 2012), so that it makes education more relevant to students in culturally diverse classrooms (de Beer and Whitlock 2009). In addition, the incorporation of indigenous knowledge into educational institutions curricula might help to enable students to gain positive experiences and develop corresponding attitudes towards learning. It might help 21st century students to maintain the values of their local cultural wisdom (Kasanda et al. 2005; de Beer and Whitlock 2009; Ng'asike 2011; Perin 2011). Some research used indigenous knowledge to contextualize educational curricula by a cultural context (Chandra 2014; Hamlin 2013; Kimmerer 2012; Sumida Huaman 2016; van Lopik 2012). Indigenous knowledge offers rich contexts which have the potential to contribute understanding the relationship of environmental, sociocultural, spiritual understandings, etc. of life and community.

This approach could be appropriate to accommodate sociocultural demand in all types of education curricula as well as to raise students' perception of the relevance of learning towards sustainability. Aikenhead (2001)

found, however, that possible conflicts may arise when students have the problem of taking information from one knowledge system and placing it into another. There is a number of barriers enabling indigenous knowledge to co-exist in the all curriculums and in the minds of learners and teachers. Barriers are related to limitations of time and corresponding learning materials, prescribed curricula, the selection of appropriate pedagogies, teachers' doubts, etc. in conveying topics containing spiritual aspects in education (Snively and Williams 2016). Teachers have to be aware that it is especially tricky to handle indigenous spiritual views with sufficient care and respect. To examine the potential role of indigenous knowledge to enhance the relevance of education with a certain view on education for sustainability 21st century students' perception thereof.

OBJECTIVES OF THE STUDY

- ❖ To know the concept of indigenous and its knowledge importance
- ❖ To assess indigenous knowledge and related concepts in the education
- ❖ To define indigenous education and its related terms
- ❖ To study the terminology and definitions related to indigenous knowledge
- ❖ To discuss about the indigenous knowledge towards 21st century education for sustainability

METHODOLOGY

The present study is mainly concentrated on textual approach, books, articles, papers written on various National and International Journals has been considered to do the framework of the study hence the secondary data has been used for the study titled "Indigenous Knowledge towards 21st Century Education for Sustainability"

TERMINOLOGY AND DEFINITIONS

Indigenous: It refers to original inhabitants/first peoples in unique cultures who have experiences of any nation imperialism and colonialism and things that have developed "home-grown" in specific places.

Indigenous Knowledge: The local knowledge held by indigenous peoples/local knowledge unique to a particular culture/society.

Indigenous Education: The education-related knowledge of indigenous cultures and based on the culture, perspective of indigenous society, etc.

Table 1: Difference between Indigenous Knowledge and 21st Century Education

Themes	Indigenous Knowledge	21 st Century Education
Organizing principles	<ul style="list-style-type: none"> ❖ Holistic ❖ Emphasis practical application of skills and knowledge 	<ul style="list-style-type: none"> ❖ Part to whole ❖ Evidence and explanations within the physical world ❖ Emphasis on understanding how
Habits of mind	<ul style="list-style-type: none"> ❖ Trust for inherited wisdom ❖ Respect for all things 	<ul style="list-style-type: none"> ❖ Skepticism
Skills and procedures	<ul style="list-style-type: none"> ❖ Practical experimentation ❖ Qualitative oral record ❖ Local verification ❖ Communication of metaphors and stories connected to life, values, proper behavior, etc. 	<ul style="list-style-type: none"> ❖ Direct and indirect observation and measurement ❖ Hypothesis falsification ❖ Global verification ❖ Quantitative written record ❖ Communication of procedures, evidence and theory
Knowledge	<ul style="list-style-type: none"> ❖ Integrated and applied to daily living and traditional subsistence practices 	<ul style="list-style-type: none"> ❖ Discipline-based ❖ Macro vs. micro representations ❖ Mathematical models

CONCEPT AND IMPORTANCE

Indigenous peoples are ethnic groups with unique traditions, with political, cultural, social organisation, and ways of life that are distinct from the dominant societies with which they often share their territories. Their members are generally considered to be descendants of peoples who had previously inhabited a certain geographic area, when new conquerors from different cultures or ethnic origins arrived there. These conquerors would later become dominant through conquest, occupation, colonisation, or other means of exploitation (UN 2017). For hundreds of years, indigenous peoples have suffered and resisted actions developed by the advance of colonial powers, including cattle ranchers, mining companies, and timber traders, among others, a process where these populations lost land, resources, members of their communities, and consequently much of their cultural elements. Indigenous resistance is framed by demands for autonomy and self-determination, important concepts for guaranteeing the free exercise of their political conditions and enabling the free economic, social and cultural development of their peoples (Tobin 2014). The knowledge produced by indigenous peoples generally takes on different meanings, according to different academic disciplines. In general, it refers to local, traditional,

technical indigenous, peasant, traditional, and folk environmental knowledge (Sillitoe 1998). It is knowledge transmitted orally, through observation and practice, in a dynamic process that meets the needs of a particular community. Despite the diversity and complexity of indigenous knowledge, it is often neglected in knowledge production environments, being generally described with words such as ‘primitive,’ ‘backward,’ ‘savage,’ ‘rural,’ and ‘unscientific’ (Ezeanya-Esiobu 2019, 7).

The unique knowledge and interpretations of reality produced by indigenous communities through a complex process of cultural construction, end up being made invisible, marginalised, and regarded as an inferior social experience, against a hegemonic epistemological model that produces and legitimises a true monoculture of knowledge (Santos 2015). It is an inestimable loss for the perception of the human experience on the planet which, as proposed by Morin (1984), cannot be understood from fragmented approaches. Since the late 20th century, the debate about the recognition and acceptance of indigenous knowledge by academics and policymakers has created an interest in research related to the relevance of this knowledge in several political and educational sectors. The new theoretical and methodological paradigms that emerged from this process have also made it possible for discussions to develop related to the development of more sustainable activities, as well as ways to protect and highlight the social status of indigenous knowledge and its acceptance in knowledge production environments (Clarkson, Morrissette, and Régallet 1992). Works such as those by Odora Hoppers (2002) and Breidlid (2013) have provided vigorous debates contesting the predominance of Western epistemologies in the school curriculum, stating that indigenous knowledge has a place in academia in its own right, an argument that fits in with policies of recognition and social justice for minority and marginalised groups (Dei 2000).

As proposed by Freire (1992), underestimating the sociological experiences built by indigenous and traditional communities, is evidence of an elitist ideological valorisation that leads to scientific, ideological, and epistemological error. International agencies such as the World Bank and the United Nations have also, in recent decades, stated that indigenous peoples face substantial barriers in maintaining their cultural identities, among which they highlight lower access to quality education compared to non-indigenous students; with curricula and teaching methods that minimise, demean, or ignore the knowledge and stories of their communities. In addition to these factors, they also emphasise the deprivation of schooling in their mother tongues, a situation that harms the learning of these peoples and

constitutes a clear violation of human rights, both the rights to culture and to self-determination (Mcclain-Nhlapo et al. 2009). This position, taken by these and other international agencies, has contributed to important research and investments in supporting the participation of indigenous peoples and their organisations in development projects around the world in the search for reducing educational gaps between indigenous and non-indigenous persons, supported by a more inclusive discourse in relation to the cultures and languages of these populations. The educational issue resulting from the confrontation between indigenous knowledge and Western knowledge, is structured in a complex way, imposing obstacles to a possible integration of these epistemologies in schools and/or a possible indigenisation² of the school curriculum. This educational complexity involves situations established in a local context, but it is also necessary to consider global influences, together with the historical and social factors that intersect it. It is only by considering this web of factors, and carrying out an analysis based on both the local and global contexts, that it will be possible to unveil and understand this panorama in the search for a possible intercultural dialogue (Stoer and Cortesão 1999). This study presents a systematic review of articles on the integration and/or inclusion of indigenous knowledge in schools and the possible results of these interventions in school curriculum and/or in learning situations. It covers works published in the context of elementary and primary education from 21st century institutions located in so-called developing and/emerging countries.

INDIGENOUS COMMUNITIES AND KNOWLEDGE

Indigenous communities that are often made invisible, are the ‘owners of an unvalued knowledge and excluded from the knowledge historically accumulated by the society’ so there is a need for construction ‘from the knowledge of the people and with the people’, which allows for a more critical reading that ‘exceeds the borders of letters and constitutes itself in historical and social relations. Community participation is fundamental in the implementation of educational policies that are sensitive to the cultural context of indigenous communities. Community involvement makes it possible to pursue more ambitious goals, with the preservation of culture and the empowerment of indigenous peoples as one of the main focuses for the promotion of an intercultural curriculum. Members of indigenous groups, commonly located in more isolated areas, often have a low level of formal education, but have extensive epistemological knowledge of the traditional knowledge of their communities. In this context, the integration

of indigenous knowledge into the educational institution curriculum, would allow parents to become more involved in their children's education, making it possible to build a strong bridge between the 21st century community which could increase cognitive development, academic performance, student success, etc. Teaching through a language that students do not speak can make learning extremely difficult, especially if language is also foreign to the teacher. In this sense, bilingual programs based on the mother tongue present a model in which the students' home language, their first language, is used to develop initial reading and writing skills, concomitantly with academic content. In this process, the national language, the students' second language, can be introduced through the gradual transfer of skills and information, making a bridge between the first language and the second language. Bilingualism makes important contributions to learning as it increases awareness and multilingual skills, aiding intellectual development, reading skills and overall academic success (Hakuta 1986).

The national language also directly influences educational policies where minority vernacular languages do not have penetration. This process contributes to the proposition of contradictory intercultural curricula, promoting the teaching of the vernacular language with methodologies similar to those used for learning a second foreign language, using the national language as the basis for learning/even the insertion of the heritage language in only a symbolic way and it is a complex interaction that involves a series of historical and sociocultural factors, such as those that determine which languages are the object of educational activities, who teaches, and who has access to learning these languages, how they are taught which methods and materials and how policies influence the curriculum within this sociolinguistic environment. Another factor to be considered in the linguistic ecology of indigenous groups and its relationship with education is the desire of the community itself regarding the teaching of the vernacular language in the school environment. The inclusion of vernacular languages in the school curriculum as one of the components of great relevance in promoting the inclusion and recognition of indigenous knowledge in the school environment. Among the recommendations arising from these studies, there are also proposals for training bilingual teachers, contextualised in the competences, knowledge and skills to live better in a pluricultural and plurilingual world and the analysis of the contradictions between inclusive educational policies and the actual practice of teachers using indigenous language only symbolically and many consider the national languages of instruction, which are generally the languages introduced during the

process of colonisation, as the ideal for the teaching and learning process. In the view of some members of some indigenous communities, these are the languages for a good education and a good job that is, they can provide good opportunities for the training and success of 21st century students.

CONCLUSION, DISCUSSION AND SUMMARY

For centuries, educational institutions have denigrated indigenous knowledges and indigenous elders, educators, scholars, etc. have continued to recognize and advocate for the inherent, social, cultural value, etc. of indigenous knowledges and it is an act of empowerment by indigenous people. Indigenous peoples have made concerted efforts to sustain indigenous knowledges, whether through after educational institution programs, language immersion programs, etc. Although effective and necessary models for Indigenous educational self-determination, these efforts are often carried out in relatively small institutions serving and much of the research documenting successful models of indigenous education is based on “Tribally owned, private institutions that are characterized by relative flexibility, autonomy, and cultural homogeneity in their institutions. The present study draw attention to the affordances of indigenous knowledges for the broader project of 21st century education towards sustainability, and the responsibility of all educators and policy makers to support movements to sustain indigenous knowledges. All public education takes place on Indigenous lands and so must necessarily foster respect for those lands, indigenous peoples, and tribal sovereignty and it is not our children/indigenous knowledges they embody, but the policies and practices that ignore and demean them and the rights of indigenous students to educational self-determination, the right to an education that affirms indigenous knowledges and supports their rights as 21st century tribal citizens.

EDUCATIONAL IMPLICATIONS AND SUGGESTIONS

- ❖ Understanding the local context is essential in proposing interventions to open up a possible intercultural dialogue.
- ❖ It was possible to identify some recurring themes in several articles, among which the relevance of the indigenous world view in the teaching and learning processes stand out together with the importance of community involvement in the design, implementation and evaluation of educational programs.
- ❖ The information recorded and analysed allows all to recognise a framework where indigenous knowledge is generally neglected in the

formal educational system, with obstacles to its introduction into the school environment.

- ❖ Intercultural educational policies are meant to guide the teaching of local culture and indigenous languages in the educational institutions environment.
- ❖ The implementation of policies is hampered by teachers' inability/inexperience, a scarcity of resources, and a lack of community participation during the 21st century design and planning stages.

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Chapter-5

Preservation of Indigenous Knowledge

Dr. Parul Agarwal

Assistant Professor, Mangalmai Institute of Management and Technology, Greater Noida

Abstract

Indigenous knowledge is defined as knowledge that is spatially and/or culturally context specific, collective, holistic and adaptive. Although previously largely ignored in the fields of development and conservation, indigenous knowledge is currently experiencing a revival and its inclusion in development projects is considered essential. However, there are many issues related to recording indigenous knowledge and transferring it to other localities and contexts. There is debate over the extent to which indigenous knowledge is useful and to whom, outside the situation in which it was produced. Although it is widely recognized that many lessons can be learned from indigenous knowledge systems, there is little protection for indigenous knowledge within international law and thus it is vulnerable to misuse and rejection.

The preservation of indigenous knowledge is essential to a nation and culture. It is knowledge, information, skills and practices that are developed, maintained and transmitted from generation to generation within a community, often as part of its Form part of cultural or spiritual identity. Preservation of indigenous knowledge of any country or culture not only preserves its rich history but also protects the knowledge of agriculture, environment, watershed management, Information and communication technology.

Holders of indigenous or traditional knowledge (IK) face a lack of respect and appreciation for such knowledge. Respect for culture means following protocols, acknowledging diversity, and recognizing indigenous cultures as alive and constantly evolving. This is a 'hot topic', and the central goal of this paper is suggesting Different strategies of managing and preserving indigenous knowledge, especially the use of new technologies in the digital age in school education system will be explored and discussed. Activities undertaken to preserve indigenous knowledge are evaluated and suggestions are made as to educational professionals can more efficiently handle indigenous knowledge preservation while being respectful of culture.

Different strategies are adopted on the basis of collecting different literature review. Suggestions are also made after presenting the true scenario and improving the future picture of preservation of Indigenous knowledge by discussing different strategies in the education system.

Keywords: Indigenous Knowledge Watershed management, Environment, Diversity, Information and communication technology.

1. INTRODUCTION OF INDIGENEOUS KNOWLEDGE

Indigenous knowledge (IK) is today a popular word throughout the world. It has been interpreted in different ways at different places but generally it is understood as local or traditional knowledge that indigenous people have brought down with them from earlier times via the oral tradition. Indigenous knowledge (IK) is, broadly speaking, the knowledge used by local people to make a living in a particular environment (Warren 1991). Terms used in the field of sustainable development to designate this concept include indigenous technical knowledge, traditional environmental knowledge, rural knowledge, local knowledge and farmer's or pastoralist's knowledge. Indigenous knowledge is the traditional wisdom that is unique to a culture, region or a society. It is generally based on understanding, experiences and interpretation and is passed on from one generation to another. This knowledge base has a broad spectrum, ranging from textual traditions to vernacular architecture, farming techniques to medicinal theories, folklore to religion and rituals. It is important to understand this indigenous perspective in order to derive valuable lessons on sustainability.

As significant it is to recognize indigenous knowledge, it is equally important to understand, extract and incorporate it in today's context. With the limitations of reach of technological advancements, the potential of the indigenous knowledge application is essential, and we need to address the concern that this knowledge is eroding rapidly. There is a need to attribute and acknowledge this knowledge resource and apply its learnings into practice.

Indigenous knowledge is often termed as traditional knowledge, local knowledge, community or rural knowledge, farmers' knowledge, tribal knowledge and so on, however, it is pertinent to understand that although the concept of Indigenous Knowledge has different forms, the meaning may appear synonymous and moreover, it is not limited or confined to tribal population or any particular groups as such. In the face of growing inequities of the environment, ecology and the world at large, it is realized that Indigenous Knowledge system constitutes an important driving force for Sustainable Development- 'development that meets the needs of the

present without compromising the ability of the future generations to meet their needs' (Brundtland Report/ WCED Report, 1987, p 41). It is noteworthy that the world and the indigenous communities in it have a rich accumulation of knowledge based on their cultures, environments, social, political, and economic institutions, natural resources, etc which may be according to (Boon & Hens, 2007) the 'key drivers' for poverty reduction, livelihood improvement, and attaining sustainability of the given environment. Since time immemorial the indigenous communities across the globe have co-existed with their own set of knowledge and cosmology about the environment they live- in without much appreciation and recognition in the mainstream due to the fact that indigenous knowledge has its roots outside the formal institutions.

It was only through United Nations Conference on Environment and Education Conservation Strategy of International Union and Conservations of Natural Resources in 1980, Brundtland Commission, and World Commission on Environment and Development, 1987, the concept of Indigenous Knowledge gained its worldwide recognition and its efficacy was realised (Mahalik & Mahapatra, 2010). These events brought forth the importance of Indigenous Knowledge in Environment sustainability and confirmed its existence in every country, community, and the society at large in contrary to existing misconception that such knowledge system is confined only to tribal groups or the marginalized sections of the world. The urgency of Indigenous Knowledge of the local communities was lately realized in the face of growth and development which has contributed partly to the increasing environmental problems and ecological crisis of the world at large.

India is a home to people belonging to different ethnic group, racial stock, cultural background, religious intuition, social structure, etc each having their own unique indigenous knowledge system which is believed to have passed down through several generations to make sustainable use of the given environment keeping in mind the future implication. This is especially true for those sections of population who live in close proximity with the ecosystem namely tribal societies, indigenous communities, marginalized group, rural poor and women, etc in which forest and natural resources forms an integral part of their existence and cosmology. The application of Indigenous Knowledge is rich and diverse such as water management, agricultural productivity, land use pattern, Ethno medicine, Animal Husbandry, food preparation/ preservation, seed storage, environmental conservation, weather prediction, human health, crop health, food security, and so on. Existing researches in this area have confirmed the significance

of Indigenous Knowledge in environment sustainability while stressing the urgency to adopt, re-define and integrate these knowledge systems into mainstream policy and programme to enhance greater, if not complete Sustainable Development of the world at large.

Indigenous Knowledge maybe defined as ‘the knowledge developed by local people of a given environment that has been passed down over generations through oral tradition, kinship network, communal connection, social groups, etc. for judicious management of the resources on which their daily sustenance is dependent upon. However, there is no concrete definition of Indigenous Knowledge as such it has been defined and re-defined by many scholars, platforms, organizations and so on. The World Bank (2003) has defined Indigenous Knowledge as ‘the large body of knowledge, skills and experiences that has been developed outside the formal educational system which people apply to maintain, improve and sustain their livelihood’ While scholars like (Grenier in Mahalik & Mahapatra, 2010) has defined IK as ‘ the traditional knowledge of the local community existing within and developed around the specific conditions of men and women indigenous to a particular geographical area’, whereas (Basu also in Mahalik & Mahapatra, 2010) opined that ‘ Indigenous Knowledge is found in peoples’ memories and activities which are expressed in the form of stories, songs, belief system, rituals, folklores, community laws, local language, cultural values, agricultural practices, material objects, plant species, and animal breeds’ while Sharma (2014) adds that ‘Indigenous Knowledge also referred to as traditional or local knowledge is embedded in culture and unique to a given location or society with special reference to the rural poor whose life is build upon it (IK) for decision-making of communities in food security, human health, animal life, education, and natural resource management’.

1.1 CHARACTERISTICS OF INDEGENEOUS KNOWLWDGE

- It is dynamic, systematic and universal in principle. It is unwritten and known through the oral traditions.
- It is practical common sense, based on teachings and experience passed on from generation to generation.
- It is holistic - it cannot be compartmentalized and It is rooted in the spiritual health, culture and language of the people.
- It sets out the rules governing the use of resources - respect; an obligation to share. It is dynamic, cumulative and stable.

- It is a way of life - wisdom is using knowledge in good ways. It is using the heart and the head together. It comes from the spirit in order to survive.
- It gives credibility to people.
- It is based on experience, acquired from observations over time - it is argued that it may be most useful for local scale decision-making;
- It can show an understanding of the complex relationships between these individual components and the dynamic ecosystems within which they act;
- It is frequently linked with the sustainable use of local in which they act;
- It is frequently linked with the sustainable use of local resources.
- It describes the health of the local environment, wildlife, etc., promotes
- consideration of the relationships between human and biological systems;
- It often describes these symbiotic relationships and provides the basis for life sustaining decisions about how to relate to the environment.

1.2 IMPORTANCE OF INDEGENEOUS KNOWLEDGE

- Indigenous knowledge provides problem-solving strategies for local communities, especially the poor. Indigenous knowledge represents an important component of global knowledge on development issues. Indigenous knowledge is an underutilized resource in the development process
- Learning from indigenous knowledge can improve understanding of local conditions.
- Understanding indigenous knowledge can increase responsiveness to clients.
- Adapting international practices to local conditions can improve the impact and sustainability of our work.
- Investing in disseminating indigenous knowledge can help to reduce poverty.
- Sharing of Indigenous Knowledge within and across communities' can enhance cross-cultural understanding

2. AIM OF THE STUDY

Considering the importance of indigenous knowledge, the purpose of this present study is to suggesting different strategies in education system for preserving indigenous knowledge

2.1 OBJECTIVES

- To find out different strategies in education system for preserving the indigenous knowledge
- To determine various steps involved for successful implementation of different strategies in education system for preserving the indigenous knowledge
- To provide suggestions for effective implementation of mentioned strategies in education system.

2.2. RESEARCH QUESTIONS

- Q1. What are the different strategies can be adopted for preserving the indigenous knowledge?
- Q2. Which steps need to be followed for successful implementation of suggested strategies?
- Q3. What are the different suggestions for preserving indigenous knowledge in education system?

2.3. Delimitations of the study:

1. Different strategies are suggested for preserving indigenous knowledge are limited to education system only.
2. The present study is descriptive and qualitative in nature.

3. ANALYSIS OF DATA

The present study was descriptive and qualitative in nature. So, content analysis was used for analysing and interpreting the data.

Objective 3.1. To find out different strategies in education system for preserving the indigenous knowledge

Indigenous knowledge, deeply rooted in the cultural fabric of indigenous communities, holds immense value. It encompasses traditional practices, wisdom, and insights passed down through generations. To preserve and protect this invaluable knowledge, several strategies are essential:

Oral Traditions and Storytelling:

Oral storytelling is a powerful method for transmitting indigenous knowledge. Elders share stories, myths, and histories, ensuring that vital information is passed on to younger generations. Community gatherings and cultural events provide platforms for storytelling, reinforcing the significance of these narratives.

Experiential Learning:

Indigenous knowledge often thrives through hands-on experience. Practical skills related to agriculture, medicine, and natural resource management are learned by doing. Encouraging intergenerational exchanges allows elders to mentor youth, fostering a seamless transfer of knowledge. Different guest lectures also arranged for giving information about these fields.

Language Preservation:

Native languages carry the essence of indigenous knowledge. Efforts to revitalize and teach these languages are crucial. Schools and educational programs should prioritize teaching in native languages, ensuring that indigenous children learn from their cultural context. Education Institutes must organize different debate, essay writing and literacy club activities.

Cultural Revitalization:

Traditional ceremonies, rituals, and practices reinforce indigenous identity and knowledge. Supporting these cultural expressions helps preserve their wisdom. Art forms like carvings, paintings, and dances embody indigenous knowledge. These should be celebrated in the form of different competitions and activities.

Collaboration with Institutions:

Archiving and documentation play a pivotal role. Collaborate with museums, libraries, and research institutions to record indigenous practices, stories, and artifacts. Digital repositories can safeguard this knowledge for future generations. Museums and library visit must be compulsory part of curriculum.

Legal Protections:

Advocate for intellectual property rights for indigenous knowledge. Legal frameworks should recognize and protect traditional practices. Community-based protocols guide how outsiders access and use indigenous knowledge.

Inclusion in Decision-Making:

Involve indigenous communities in policy discussions related to land, environment, and cultural heritage. Their insights are invaluable for sustainable development and conservation.

Climate Change Adaptation:

Indigenous knowledge often holds solutions for climate resilience. Traditional ecological knowledge informs sustainable practices. Recognize indigenous contributions in global climate action. Education Institute adopt different programs like seminars, symposium and workshop for generating awareness among the students.

Education and Awareness:

Public awareness campaigns can promote appreciation for indigenous knowledge. Schools, universities, and media should highlight its importance.

Empowering Youth and Women:

Encourage young people and women to actively participate in preserving and transmitting indigenous knowledge. Their engagement ensures continuity.

Use of ICT and Social Media:

Social media platforms provide a powerful means to share indigenous knowledge globally. Communities can create pages, groups, or channels dedicated to their cultural heritage. Facebook, Instagram, and YouTube allow for multimedia content sharing, including photos, videos, and stories related to indigenous practices. Twitter and hashtags can be used to raise awareness about specific aspects of indigenous knowledge.

Well Equipped Library:

Indigenous knowledge (IK), developed by communities over time, plays a crucial role in sustainable development. However, it faces threats due to its often oral and tacit nature. Libraries can contribute significantly to preserving and managing Indigenous Knowledge. Different strategies like collection, documentation, organization, access and dissemination need to be followed. Library professionals need to be proactive in devising strategies for the management and preservation of IK with the help of their professional knowledge and skills in order to ensure access to this valuable resource.

Objective 3.2. To determine various steps involved for successful implementation of different strategies in education system for preserving the indigenous knowledge.

Historical Context:

The modern Indian school system has its roots in the colonial era (1830s-1870s). During this period, the curriculum was heavily influenced by Western knowledge and the English language. Unfortunately, indigenous knowledge was largely excluded from the educational framework. Despite the presence of indigenous systems like village teachers and centers for “historic learning,” the British colonial system replaced these local forms of education. As a result, indigenous knowledge lost state support and patronage¹.

Challenges and Opportunities:

Recognizing and preserving indigenous knowledge is crucial for cultural continuity, environmental sustainability, and holistic education. Challenges include striking a balance between traditional wisdom and modern scientific knowledge, addressing regional diversity, and ensuring representation of marginalized communities. Opportunities lie in integrating indigenous knowledge into the curriculum, fostering respect for diverse cultural perspectives, and promoting sustainable practices.

Steps Toward Integration

Curriculum Reform: Revise existing curricula to include indigenous perspectives, histories, and practices. Highlight contributions of indigenous communities to various fields.

Teacher Training:

Equip educators with the knowledge and skills to incorporate indigenous content effectively. Sensitize teachers to cultural diversity.

Local Contextualization: Tailor curriculum content to reflect the specific indigenous knowledge relevant to each region.

Interdisciplinary Approach: Integrate indigenous knowledge across subjects, emphasizing its relevance in science, environment, agriculture, and arts.

Community Involvement: Engage local communities, elders, and practitioners to co-create educational materials and share their expertise.

Language Preservation: Promote indigenous languages alongside mainstream languages in schools.

Science Education: Integrating indigenous knowledge into science curricula can strengthen both cultural identity and scientific understanding 4.

Climate Change and Indigenous Knowledge

Efforts are underway to incorporate indigenous knowledge and languages into formal and informal education systems related to climate change adaptation and responses.

Objective 3.3. To provide suggestions for effective implementation of mentioned strategies in education system.

Raise Awareness

There is need to raise awareness in the community about the value of their IK. This can be done through recording and sharing IK success stories in songs, drawings, puppet plays, storytelling, dramas, videos, and other traditional or modern means of communication.

Documentation

Libraries should record and document IK. Since IK is essential for development, it must be gathered, organized and disseminated in the same systematic way as western knowledge (Warren et al. 1993). This recorded IK can later be circulated in newsletters, books, video, radio, newspapers, telephones, Internet and other traditional or modern means of communication like art, drama and music. Indigenous forms of record keeping can be encouraged.

Digital Libraries

While enhancing IK documentation, digital libraries based on IK can also be developed. These are known to preserve indigenous culture and making relevant information readily available locally.

Identify the Indigenous Knowledge Specialists

Further still, there is need to identify and indigenous specialists. Indigenous specialists are community members who have special skills or expertise in one or more subject areas or who practice a profession (e.g., healers). Other useful people to identify include decision makers, innovators,

political opinion leaders, who in one way or the other affect management and application of indigenous knowledge in development projects.

Organization of Different Kind of Activities

Different kinds of activities like talks of experts, debates, quizzes can be arranged for preserving the indigenous knowledge. These kind of activities can be useful for having ideas about traditional watershed management, conservation of biodiversity and environment protection.

Arrange Excursion or Field Visits

Education Institute should arrange field trip to Museums, Historical monuments and heritage which indicates rich culture of our society. Excursion of many famous botanical garden and forest range should be part of curriculum of every education system. Old trees and vegetation also depict their rich heritage of any country.

4. CONCLUSION AND FUTURE OF INDIGENOUS KNOWLEDGE

India has very rich cultural heritage. For preserving the indigenous knowledge education institutes come forward and create awareness among the youths. So that our traditional approaches and rich heritage can be fruitful for future generations also. There are following future plans which can decide the better tomorrow for Indigenous Knowledge.

Recognition that indigenous people who live in an area have understanding and insights about resources, environment and ecosystems has been extended to include a greater acceptance of a participatory approach to resource management - co-management has been an important development in resource management in some cases.

- Cultural preservation - knowledge and images of the past keep a culture alive and reinforce a sense of place and the notion of home.
- Land claim processes - indigenous geographies used as the basis for land selection and for developing approaches to native control.
- Resource management practices - involving a wide array of knowledge concerning species and species habitats.
- Land use regulation – Tradition knowledge used in locally-based planning processes to determine local and regional perspectives about who is most affected by developments.

- Environmental monitoring - to depict and record changes related to the well-being of a people over time.
- Conservation of plant diversity- against overexploitation; habitat loss and fragmentation; global climate change; species introductions & invasions

In short we can say that, preserving indigenous knowledge in the Indian context requires deliberate efforts, collaboration, and a commitment to honoring diverse ways of knowing. By weaving indigenous wisdom into the fabric of education, we can create a more inclusive and sustainable future.

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Chapter-6**Indigenous Technology for Sustainable Development in India****S. Senthilraja**Assistant Professor in Computer Science, KRP College of Education, Pachampalayam,
Sankari West, Namakkal-637303, Tamilnadu

Abstract

It is generally accepted that science and technology play a significant role in supporting and enhancing the nation's social and economic growth. The advancement of native technology is given more attention. Technology is the scientific use of knowledge, skills, and resources to help people realize their objectives and aspirations. It alludes to a device, instrument, or technological element. Indigenous technology (IT) is a technology created and produced taking into account the needs, customs, and culture of a people and used in that people's surroundings. Its attempt to engage and extract significant knowledge and experiences that are typical of the indigenous world through meaningful encounters is one of its key features. Informal knowledge is prevalent in communities at large and is referred to as indigenous knowledge. A human group's indigenous knowledge encompasses a wide range of views held by its members regarding common occurrences in their immediate surroundings as well as in their social, cultural, and economic interactions. Indigenous knowledge is a valuable natural resource that may support development in sustainable, affordable, and inclusive ways. The research papers in this volume provide an in-depth look at the indigenous science and technology used by India's tribal and rural communities for subsistence. They investigate topics including traditional folk media, traditional health care systems, traditional knowledge systems, traditional subsistence systems, indigenous science, resource management, and sustainable development.

Keywords: Indigenous Technology, Informal knowledge, Skills and Knowledge

INTRODUCTION

In these millennia, Indian civilisation has led the way in scientific and technological advancements. Indian knowledge systems in medicine,

mathematics, astronomy, agriculture, architecture, and metallurgy were groundbreaking for the whole globe. Even though Indian scientists produced important works in science and technology, a large portion of this knowledge system was passed down orally over the centuries. The oral traditions of Indian societies influenced every facet of their lives. However, throughout time, many of these cultural practices and oral traditions lost their scientific justification. In an attempt to undermine centuries' worth of Indian cultural history, nineteenth-century colonialism labelled indigenous knowledge in India as basic, rudimentary, and stagnant. The indigenous knowledge system of India was created in harmony with the natural world. It naturally understood the natural resources found in Indian ecosystems and came up with solutions to challenges that were both economically and culturally optimal. Confronted by the community. Studying our time-tested indigenous knowledge with increased vigour is essential as the forces of contemporary technology-driven industrialization threaten ecological balance and sustainability.

If considered in the context of technology, indigenous technology is not a novel idea. Thus, the concepts of indigenous knowledge and indigenous technology are examined in this study. The features of native technology and expertise are taken into account. The risks to indigenous knowledge and technology are also examined in the report.

The discipline's overarching goals are to:

- ❖ Introduce students to the idea of indigenous knowledge in their educational system.
- ❖ To increase the efficacy of education by offering instruction that respects the innate viewpoints of indigenous people.
- ❖ To recognize the importance of traditional learning methods and indigenous knowledge in preserving the environment.
- ❖ To understand indigenous viewpoints on coexistence and sustainable resource use.
- ❖ To comprehend how “modern” schooling undermines indigenous wisdom.
- ❖ To find ways to include pertinent elements of indigenous knowledge.

SUSTAINABLE DEVELOPMENT

Development may be made sustainable by humanity such that it satisfies the demands of the current without endangering the capacity of

future generations to satisfy their requirements. The idea of sustainable development does entail limitations, not absolute limitations, but limitations imposed on environmental sources by the current state of technology and social organization and the capacity of the biosphere to absorb the impacts of human activity. However, social structure and technology can be enhanced and controlled to pave the way for a new phase of economic expansion.

According to the commission (WCED, 1984), widespread poverty is no longer a given. Poverty is not simply a bad thing in and of itself, but sustainable development calls for providing for everyone's fundamental requirements and giving them the chance to meet their expectations for a better quality of life. A society where poverty is pervasive will always be vulnerable to natural disasters and other calamities.

TECHNOLOGY

The great confusion about what technology means and stands for. From the Renaissance to the present, technology has been understood as a body of knowledge concerning the practical arts, and modernity is linked to its modern interpretation. As such, technology defies statistical definition. Keirl (2006) said that it's critical to think about the characteristics of technology to gain a deeper comprehension of the term. The life and culture of a people revolve around these characteristics. As a result, Keirl (2006) held the opinion that human intention and design are the source of all technologies, which are manufactured. Stated differently, technology cannot function in any meaningful way in the absence of logical human interaction. According to etymology, the word "technology" comes from the Greek word "techne," which implies "belonging to the arts, crafts, or skill (Vandeleur, 2010).

According to the aforementioned, technology is the application of knowledge to the creation and design of tools, appliances, and other items aimed at improving the human situation. Technology is the art of effectively applying information to produce something that improves people's quality of life. It describes the use of resources, expertise, and knowledge to fulfill the needs and desires of others. It is acknowledged that technology is a tool that maintains people's socioeconomic standard of living. It is also widely acknowledged that the term «technology» refers to the science and art of applying human knowledge, abilities, and experiences to endeavours in order to satisfy the needs and desires of others.

INDIGENOUS KNOWLEDGE (IK) AND INDIGENOUS TECHNOLOGY (IT)

Indigenous knowledge (IK) is, in general, the knowledge that the local people use to survive in a certain setting. The concepts of indigenous technical knowledge, traditional environmental knowledge, rural knowledge, local knowledge, and farmer's or pastoralist knowledge are all used to refer to this idea in the subject of sustainable development.

A more general definition of indigenous knowledge (IK) would be the information that a local, indigenous community has accumulated over many generations of living in a specific environment. This concept includes all types of information, practices, technologies, know-how, skills, and attitudes that help a community establish sustainable means of subsistence in its surroundings. "A body of knowledge built up by a group of people through generations of living in close contact with nature" is the definition of indigenous knowledge (Johnson, 1992). In general, such types of knowledge develop in the local context, being uniquely tailored to the needs of the local populace and circumstances. In addition, it is imaginative and exploratory, continuously fusing internal and external innovations to adapt to changing circumstances. Thinking of indigenous knowledge as "old-fashioned," "backwards," "static," or "unchanging" is typically incorrect. Indigenous people—also known as Tribal, Native, First, or Aboriginal people—are the original occupants of a given geographic area, with a culture and belief system that differs from the global body of knowledge. Some believe that this kind of definition is excessively restrictive because it leaves out those who may have lived in a place for a very long time but were not the first occupants. As a result, the phrase "local knowledge," which encompasses the knowledge of any group that has been subsistence farmers in a certain region for a considerable amount of time, has become widely used. According to this method, it doesn't matter if the individuals in question are the original occupants of the area; what matters is understanding how locals, whether they are Aboriginal or not, perceive and interact with their surroundings so that their knowledge can be mobilized for the design of suitable interventions.

BENEFITS OF INDIGENOUS KNOWLEDGE

- ❖ Indigenous Knowledge is essential for socioeconomic operations that are ecologically sensitive.
- ❖ Indigenous Knowledge can support both national and local development that is sustainable.

- ❖ The cultures are being introduced to the world community through Indigenous Knowledge.
- ❖ Indigenous Knowledge is in favour of the majority of people in developing nations having a good quality of life.
- ❖ Indigenous Knowledge is going to help with sustainable development.

INDIGENOUS TECHNOLOGY

The term “indigenous technology” describes the customary knowledge, abilities, and methods that native peoples create and apply in their daily lives. A wide range of industries, including sustainable resource management, architecture, crafts, and agriculture, are frequently included in this technology. Indigenous technology is a reflection of the profound knowledge that certain indigenous groups have of their own ecosystems and natural resources. It is firmly anchored in the cultural and environmental context of those communities. The sustainability and well-being of indigenous people worldwide depend on these technologies, which have been evolved over many generations.

THREATS TO INDIGENOUS KNOWLEDGE AND TECHNOLOGIES

Users of traditional knowledge deal with a variety of challenges. In certain instances, communities’ cultural existence is in jeopardy, endangering the very survival of knowledge itself. The traditional methods of preserving or passing on knowledge to future generations can be weakened by a number of factors, including migration, outside social and environmental influences, the intrusion of contemporary lifestyles, and disturbance of traditional ways of life. The language that provides a knowing tradition with its principal voice and the spiritual perspective that upholds this legacy may be in danger of disappearing. Numerous traditional activities, together with the related ideas and knowledge, have irreversibly disappeared due to either acceleration or spread. Preserving the information that elders and communities around the world hold is so crucial. The lack of respect and appreciation for traditional knowledge is another issue that holders of such information must deal with.

The goals that a protective system is meant to accomplish will determine how it is designed and characterized. Like IP protection in general, traditional knowledge protection is pursued as a tool to achieve larger policy objectives rather than as a goal unto itself. Like any other ancient civilization, India possesses a variety of traditional knowledge systems, such as those related

to Ayurveda, Yoga, and meditation. These knowledge systems were lost to time but came back into focus when Westerners began to express interest in them. We have instances of foreigners attempting to obtain patents for already-existing knowledge systems as a result of this carelessness. A discussion over the preservation of traditional knowledge systems has been sparked by this. Urbanization and a lack of knowledge are the causes. It is imperative to take appropriate measures to safeguard traditional knowledge.

- ❖ First of all, traditional knowledge is owned collectively, while the current system aims to commercialize ownership and is built to be held by individual corporations.
- ❖ Second, while traditional wisdom is passed down from generation to generation, this protection is limited in time.
- ❖ Thirdly, although traditional innovation is gradual, informal, and happens over time, it takes a narrower definition of invention that must meet the requirements of originality and be feasible for industrial application. The main threat to the survival of many of these communities today is the emergence of new technology and the new application of traditional knowledge-based products. Without the communities' consent or profit sharing, the contemporary cultural and manufacturing sectors increasingly commercially exploit traditional knowledge-based products using new technologies. The intricate social and legal frameworks that preserve traditional knowledge within the application of laws to prevent unapproved or inappropriate use of traditional knowledge cannot be replaced by a single definition or type of legal protection system.

CONCLUSION

Creating Indigenous Technology that is meaningful to human beings, especially in the modern period, is a fundamental problem that indeed all of our countries must address. Imported technologies from the country have encountered significant challenges, particularly concerning training, spare parts, maintenance, and repairs. The wealth of native tools, gadgets, clothing, and other products on the continent can be used to satisfy international standards. The definition of technology is the science and art of applying human knowledge, abilities, and experiences to human endeavours to satisfy people's needs and desires. A people's identity is provided via their indigenous knowledge (IK).

A people's identity is provided via their indigenous knowledge (IK). It comprises an individual's view, comprehension, and justification of their

existence, their morality and immorality, and their beliefs and precepts. Indigenous Knowledge is primarily limited by geography and is focused on local or indigenous peoples, their beliefs, and traditions. Any technology created, manufactured, embraced, and applied in a specific setting for the benefit of its inhabitants is referred to as indigenous technology. Indigenous technology has encountered unsettling threats from both inside and outside of India, including insufficient support from governments, their agencies, and other stakeholders, as well as an over-reliance on indigenous technologies by Indian governments and people, which has had a minimal impact. Fear of extinction and exploitation by developed countries are two more risks to Indigenous Technology.

- ❖ Assign resources for consistent and targeted technical endeavours and take the lead in product and brand marketing initiatives.
- ❖ Commit to buying products that are developed locally and on par with those that are produced elsewhere. The absence of such pledges, however, is causing the items developed domestically to lose pace.
- ❖ Examine the trading practices of commonwealth nations, paying particular attention to their purchasing patterns, and support locally produced goods so they can gain traction in these markets.

It is important to protect, honour, and spread indigenous knowledge and technologies. The parties were required to “respect, preserve, and maintain knowledge, innovations, and practices of indigenous and local communities embodying traditional lifestyles and promote their wider application with the approval and involvement of holders of such knowledge, innovations, and practices”. For the benefit of diverse people, governments in the countries, as well as developmental organizations (NGOs, donor agencies, local authorities, and the private sector), must thus acknowledge, appreciate, preserve, and spread Indigenous Knowledge and Indigenous Technology. Only after this is finished indeed, feel secure enough to discuss its priceless contribution to the global pursuit of technological advancement.

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Chapter-7

Navigating Challenges: Threats to Indigenous Knowledge Systems

Neha Sharma

Assistant Professor, Department of Home Science, IIMT University, Meerut

Abstract

The chapter “Navigating Challenges: Threats to Indigenous Knowledge Systems” takes a critical look at the various concerns that threaten the rich legacy of Indigenous knowledge that exists around the world. Indigenous knowledge, which is intricately entwined with ecological wisdom, cultural practices, and sustainable customs, is in grave danger of extinction due to a number of issues. In order to offer light on the intricacies and repercussions for Indigenous communities, this chapter examines the numerous elements of these difficulties.

Outlining the historical injustices that have impeded the transfer of Indigenous knowledge is the first step in the exploration. The inter generational transfer of wisdom has been disrupted by colonization, cultural assimilation, and marginalization, endangering the fundamental basis of Indigenous cultures. These historical scars are made worse by modern issues including encroaching on Indigenous territories, environmental degradation, and climate change, which further degrades the ecosystems that preserve conventional wisdom.

The chapter also explores how globalization and the monetization of Indigenous knowledge have affected Indigenous people. The commodification of Indigenous knowledge creates ethical questions and has an impact on the autonomy and well-being of Indigenous people since traditional practices are more open to theft and exploitation. Furthermore, the examination of the function of insufficient legal frameworks and intellectual property rights in safeguarding Indigenous knowledge underscores the pressing necessity for policy reforms.

The chapter highlights the agency and resiliency of Indigenous communities in overcoming these obstacles throughout the investigation. Advocacy, cooperative research, and community-led projects are shown to be essential tactics for protecting and reviving Indigenous knowledge systems. Through recognizing

the risks to Indigenous knowledge, this chapter adds to the larger conversation on cultural conservation, sustainable development, and the necessity of honoring the variety of knowledge systems that exist within our international community.

Keywords: Indigenous Knowledge, Cultural Heritage, Traditional Practices
Inter generational Transmission, Historical Injustices, Environmental Degradation, Climate Change, Land Encroachment, Globalization.

INTRODUCTION

I. Context

The cumulative knowledge, ideas, customs, and inventions that Indigenous cultures have carried down through the ages are represented by Indigenous Knowledge Systems (IKS). This complex web of knowledge, which includes a wealth of data on the environment, sustainable lifestyles, and cultural identity, is firmly anchored in the experiences of many Indigenous communities around the globe.

Indigenous Knowledge Systems: An Overview and Definition (IKS)

Indigenous knowledge systems are the collective body of information, abilities, and customs that have grown and been passed down orally down the centuries within Indigenous communities. With its holistic approach that integrates social, cultural, spiritual, and environmental elements, this knowledge offers distinctive viewpoints on how interconnected all things are. It is dynamic and adaptive, changing to meet the demands of the community, the environment, and cultural trends.

The importance of IKS is rooted in not just in its real-world uses but also in its deep cultural and spiritual aspects. It supports a sense of continuity with ancestors' customs and acts as a cornerstone for the community's identity. In addition, IKS is essential for directing sustainable practices, providing answers for today's environmental problems, and building resilience in Indigenous communities.

IKS'S CRUCIAL ROLE IN ECOLOGICAL WISDOM, SUSTAINABILITY, AND CULTURAL IDENTITY

Cultural Identity: Indigenous communities' cultural identities are intrinsically linked to IKS. It includes conventional wisdom regarding language, art, rituals, and customs, offering a structure that molds both individual and societal identities. Indigenous communities are able to stay connected to their heritage through IKS, which promotes a feeling of pride and acceptance.

Sustainability: IKS's ingrained environmental knowledge supports sustainable behaviors that have given Indigenous communities millennia to flourish in a variety of settings. IKS promotes naturally sustainable approaches like agroecology, traditional land management, and resource conservation, emphasizing the value of living in tune with the environment.

Ecological Wisdom: IKS recognizes the interconnection of all living things and provides a distinctive viewpoint on ecological systems. Indigenous people use seasonal indicators, animal behavior, and traditional ecological calendars to analyze and adjust to environmental changes. In light of modern issues like biodiversity loss and climate change, this ecological expertise is essential.

AN OVERVIEW OF THE WORLD'S DIVERSE INDIGENOUS CULTURES

Indigenous cultures are incredibly diverse, encompassing a wide range of languages, customs, cosmologies, and ways of life. spanning the Amazon to the Arctic, from Indigenous cultures have created distinctive knowledge systems that are formed by their particular landscapes and historical experiences, ranging from the Maasai Mara to the Pacific Islands.

To appreciate the depth and breadth of Indigenous Knowledge, one must have a thorough understanding of the global diversity of Indigenous cultures. Every community offers a different set of customs and perspectives that show how they have adapted to their particular ecosystems and dealt with problems in the past and present.

We will examine historical injustices, current threats, and the tenacity of Indigenous communities in protecting and reviving their priceless knowledge as we go deeper into the difficulties faced by Indigenous Knowledge Systems in the ensuing parts.

II. Native American Knowledge is Vital

Indigenous Knowledge (IK) is essential to the worldwide effort to achieve sustainable development because it provides special perspectives and methods that improve the lives of Indigenous people and the general public. Beyond its practical uses, IK is significant because it promotes sustainability, environmental stewardship, and the holistic, community-centered philosophy that it embodies.

Adding to the Important Roles IKS Plays in Sustainable Development

Indigenous knowledge systems are priceless repositories of wisdom that offer long-term answers to difficult problems. Over generations, Indigenous people have acquired ecological knowledge, farming practices, and resource management approaches that have shown to be naturally sustainable. In order to build resilient and environmentally conscious societies, IK must be incorporated into contemporary sustainable development initiatives.

IK places a strong emphasis on having a thorough understanding of ecosystems and promotes actions that work in harmony with nature rather than against it. Indigenous people have proven how to manage water resources, engage in sustainable agriculture, and conserve biodiversity. These actions not only guarantee their own food security but also support international efforts to halt climate change and save natural resources.

Furthermore, a useful framework for re-framing development paradigms is provided by the ethical foundations of Indigenous practices, which are based on respect for the interconnection of all life. Addressing modern issues like resource depletion, biodiversity loss, and climate change requires a change toward a more sustainable and regenerative strategy.

Indigenous Practices and Environmental Stewardship: An Interconnected Framework

Indigenous knowledge is closely linked to environmental stewardship, demonstrating a deep comprehension of the fragile harmony between the natural environment and humans. Indigenous cultures understand that human activity and ecological health are mutually dependent, and they see themselves as stewards of the land.

The behavior of plants and animals, as well as seasonal cycles and weather patterns, are all covered by indigenous ecological knowledge. The conservation of holy places, agroforestry, and rotational farming are examples of sustainable land management techniques that make use of this interrelated knowledge. Indigenous groups support the resilience of ecosystems and the preservation of biodiversity by coordinating their actions with natural cycles.

In Indigenous cultures, taking care of the environment also means taking responsibility for the next generation. Prioritizing resource sustainability helps to guarantee the community's long-term well-being. This long-term viewpoint contrasts with opportunistic actions that disregard the long-term effects on the environment in favor of quick gains.

EMPHASIZING THE COMPREHENSIVE AND COMMUNITY-BASED CHARACTER OF INDIGENOUS KNOWLEDGE

Indigenous knowledge is by its very nature holistic, including aspects of culture, society, and spirituality in addition to ecological observations. IK's holistic approach acknowledges the connections between cultural identity, community cohesiveness, and a healthy relationship with nature and human well-being.

Unlike isolated methods, Indigenous cultures take a holistic approach to knowledge, realizing that decisions made in one area of life have an impact on other areas as well. A sense of balance is promoted by this holistic viewpoint, which highlights the significance of preserving harmony both within the community and with the larger environment.

One of Indigenous Knowledge's main advantages is that it is community-focused. Understanding not owned by lone individuals but rather shared by the community as a whole. Participatory and inclusive decision-making procedures guarantee that the many viewpoints present in the community are taken into account and honored.

We will examine historical injustices, current threats, and the tenacity of Indigenous communities in defending their knowledge systems as we delve into the issues that jeopardize the preservation of Indigenous knowledge in the following parts.

III. THREATS AND HISTORICAL CONTEXT

Examining Historical Injustices, such as those Resulting from Colonization and Cultural Absorption

Indigenous Knowledge Systems (IKS) face a number of obstacles, some of which have their origins in a history marked by systematic injustices, cultural assimilation, and colonization. Indigenous communities around the world have experienced attempts to eliminate their cultural practices, political dominance, and the imposition of foreign ideas.

The delicate equilibrium that Indigenous communities kept with their ecosystems was upset by colonization. Indigenous cultures' autonomy was weakened by forced relocations, the taking of ancestral territories, and the imposition of European worldviews. Indigenous knowledge systems were further eroded by the intrusion of foreign education systems and religious beliefs that sought to eradicate indigenous knowledge.

Policies aimed at integrating Indigenous peoples into mainstream society through cultural assimilation frequently resulted in the eradication of indigenous cultures, languages, and customs. The intentional destruction of Indigenous languages, which contain rich cultural information, broke the line of wisdom passing down through the generations. Long-lasting risks to the vitality of Indigenous knowledge systems (IKS) resulted from historical injustices that caused a disconnection between Indigenous populations and their ancestral knowledge.

The Effects of Outside Factors Interfering with Knowledge Transmission Across Generations

The inter generational transfer of Indigenous knowledge has continued to be disrupted by external forces motivated by globalization and economic interests. IKS deterioration has been increased by rapid urbanization, encroachment on Indigenous territories, and the monetization of traditional traditions.

Indigenous groups are frequently forced to relocate as a result of urbanization, upsetting their ecological and traditional ways of life. Their separation from their surroundings also breaks their ties to their ancestral regions that are the secret to their inherited wisdom. The wisdom passed down from elders to younger generations is hampered by the ensuing distance.

Native American knowledge commercialization presents two threats. On the one hand, it leaves traditional practices open to exploitation since outside parties want to profit from distinctive cultural items without giving Indigenous groups the credit or benefits they deserve. However, the commercialization of cultural traditions has the potential to dilute or distort their original importance, which compromises the depth and validity of traditional knowledge.

ANALYZING CURRENT ISSUES WITH LAND ENCROACHMENT, CLIMATE CHANGE, AND ENVIRONMENTAL DEGRADATION

Indigenous knowledge is even more threatened by modern issues. Indigenous populations are severely impacted by environmental deterioration, which is caused by industrial practices and unsustainable resource extraction whose customary means of subsistence are closely linked to the land. The environments supporting Indigenous practices are threatened by pollution, deforestation, and resource depletion, which directly jeopardizes the dissemination of ecological knowledge.

A further layer of complexity is introduced by climate change, which modifies ecosystem dynamics and messes with established weather patterns. Indigenous people are struggling to deal with the intensity and unpredictability of climate-related disasters because of their intricate ecological knowledge. In addition to having an immediate effect on survival, these modifications call into question the longevity of customs that have been practiced for many generations.

Indigenous areas are seriously threatened by land encroachment, which is frequently connected to economic development initiatives. Mega projects like mining, dam construction, and agricultural expansions encroach on Indigenous territories, displacing people and denying them access to essential resources. The disturbance of these areas puts at danger not just the actual locations where Indigenous knowledge is performed, but also the landscapes' cultural and spiritual value.

Indigenous communities have incredible endurance in navigating these past injustices and current problems. They advocate for the acknowledgment and defense of their rights, rely on their traditional wisdom, and modify their tactics in response to emerging dangers. The impact of globalization on the world at large, the monetization of Indigenous knowledge, and the shortcomings of legal frameworks in defending Indigenous rights will all be covered in more detail in the parts that follow.

IV. Commodification and Globalization

Examining How Globalization Affects Indigenous Knowledge

Indigenous Knowledge Systems (IKS) have been profoundly impacted by globalization, which has brought both opportunities and challenges despite promoting connection. Global trade in products, services, and ideas has raised awareness of Indigenous cultures, but it has also exposed customs to outside influences that jeopardize their survival.

Indigenous wisdom is now accessible to a worldwide audience thanks to the quick spread of information via mass media and digital platforms. Although this might promote understanding and respect, it also prompts questions about the possibility of misrepresenting and distorting Indigenous ways of life for the benefit of others. The legitimacy and cultural context of conventional knowledge are being called into question by the flood of outside ideas and interpretations.

Ethical Issues Regarding the Misuse and Commercialization of Indigenous Procedures

Indigenous customs are being appropriated and turned into commodities, which is one of the main problems brought about by globalization. Deeply ingrained in social, spiritual, and cultural contexts, traditional knowledge is becoming more and more commercialized. The appropriation and use of Indigenous intellectual property without sufficient acknowledgment or benefit to the indigenous communities gives rise to ethical concerns around this commercialization.

Indigenous groups frequently find themselves in a precarious situation where they have little legal options to stop the exploitation of their knowledge. The relevance and integrity of traditional practices run the risk of being diminished when they are commercialized, whether in the form of art, traditional medicine, or cultural performances. Furthermore, the communities who own the cultural richness are frequently left out of the financial gains made by the privatization of Indigenous knowledge.

Case Studies Showing Examples of Cultural Abuse in an International Setting

Case studies abound that demonstrate examples of cultural misappropriation and exploitation in an international setting. The exploitation of sacred ceremonies for tourism purposes and the illicit usage of Indigenous art in fashion are only two instances of how vulnerable Indigenous cultures are to the forces of globalization.

For example, the fashion industry has come under fire for misappropriating Indigenous designs without giving due credit or payment. Indigenous artists frequently find that mass-produced apparel items copy their traditional patterns and symbols, which raises concerns about ethical business methods and cultural sensitivity.

While some Indigenous communities benefit economically from tourism, it can also result in the commercialization of rituals and rites that are considered sacred. Harmful perceptions are maintained when these behaviors are misunderstood or purposefully misrepresented for profit. can undermine Indigenous cultural manifestations' validity.

In order to maintain and uphold Indigenous intellectual property rights, it is imperative that ethical standards and legal frameworks be carefully

examined in light of the effects of globalization and commodification on Indigenous knowledge. The next few parts will discuss how intellectual property rights and current legal frameworks are inadequate for protecting Indigenous knowledge.

V. LEGAL FRAMEWORKS AND INTELLECTUAL PROPERTY RIGHTS

Assessment of Current Frameworks for Intellectual Property Rights

Given that Western conceptions of private ownership are frequently accommodated within existing intellectual property rights (IPR) frameworks, protecting Indigenous Knowledge Systems (IKS) presents substantial obstacles. The individualistic nature of traditional intellectual property regimes is in contrast to traditional Indigenous knowledge, which is based on community activities and collective understanding.

Copyright, patents, and trademarks—the three most popular types of intellectual property protection—are designed to shield certain authors or innovators. This presents a basic inconsistency with Indigenous knowledge, which is regarded as a cultural history and frequently has communal ownership. As a result, the safeguarding of Indigenous cultural expressions, traditional medical knowledge, and ecological practices is not sufficiently addressed by these frameworks.

Talk on the Difficulties Indigenous Communities Face Because Insufficient Legal Defense

Indigenous populations are more vulnerable to losing their expertise due to insufficient legal protections. The absence of acknowledgement in current intellectual property systems frequently exposes Indigenous knowledge to unlawful usage, exploitation, and theft. Within the confines of legal definitions that might not correspond with their cultural sense of knowledge ownership, indigenous populations encounter difficulties in establishing ownership.

Furthermore, Indigenous populations frequently do not give their free, prior, and informed consent to the commercialization of their knowledge. In addition to being unethical, this reinforces power disparities by benefiting outside parties from Indigenous knowledge while providing little to no benefits to local people. There are no efficient legal systems in place right now to deal with these injustices.

Policy Reforms Are Required to Protect Indigenous Peoples Intellectual Assets

Resolving the inadequacies of current legal structures requires extensive policy changes that acknowledge the distinct characteristics of Indigenous Knowledge Systems. Indigenous communities should actively participate in the creation and application of laws and policies that directly affect them as part of reforms.

One of the main components of these policy reforms ought to be the creation of sui generis systems, which are systems created especially to take into account Indigenous knowledge. In addition to recognizing collective ownership, these systems ought to give the principle of free, prior, and informed consent top priority and include legal safeguards against misuse and unlawful use.

Additionally, as indigenous knowledge frequently crosses national boundaries, international cooperation is crucial. The rights of Indigenous groups should be upheld by international agreements and conventions, guaranteeing that their knowledge is safeguarded everywhere empowering Native American groups. It is essential that they actively participate in procedures when decisions are made pertaining to their expertise. This entails acknowledging and honoring their systems of governance, supporting community-driven projects aimed at knowledge preservation and recording, and allocating sufficient funds for capacity-building and legal assistance.

In the parts that follow, we will look at community-led projects, cooperative research projects, and lobbying as tactics used by Indigenous groups to deal with these issues and save their priceless knowledge for coming generations.

Final Thoughts: Handling Difficulties - Dangers to Indigenous Knowledge Systems

Indigenous Knowledge Systems (IKS) are priceless archives of knowledge that contain millennia's worth of discoveries, methods, and inventions created by Indigenous people all across the world. However, there are numerous risks to these knowledge systems that put their survival in danger. These threats arise from globalization, historical injustices, and a lack of proper legal protections. It is critical to consider the tenacity of Indigenous people, the shortcomings of current frameworks, and the pressing need for transformative efforts to protect this cultural heritage as we negotiate the challenging terrain of maintaining Indigenous knowledge.

Indigenous Communities' Resilience

In spite of past injustices and current difficulties, Indigenous communities have demonstrated incredible tenacity in maintaining and reviving their knowledge systems. These communities actively participate in the documentation process through community-led initiatives preservation and dissemination of their cultural legacy. Indigenous peoples have demonstrated agency via their determination to recover their languages, revive customs, and modify tactics in response to emerging dangers.

In order to provide Indigenous peoples a sense of empowerment and ownership, community-led projects are essential. Communities ensure that their distinctive ways of life are not only kept as artifacts but are living, evolving traditions that sustain cultural authenticity in modern situations by actively participating in the preservation of their knowledge.

Research Collaboration and Advocacy

Indigenous communities and outside parties forming relationships to encourage collaborative research is another tactic to counter challenges to Indigenous knowledge. Understanding the need of courteous cooperation, academics interact participatorily with communities, recognizing the mutually beneficial nature of knowledge exchange. Working together, researchers help to document and validate Indigenous knowledge while also empowering communities to negotiate fair partnerships and assert their rights. Researchers also act as allies, amplifying Indigenous voices and fighting for the protection of their intellectual property rights. This collaborative approach guarantees that outside parties contribute positively to the preservation of knowledge without continuing exploitative practices. Indigenous groups find that advocacy is a potent strategy for addressing systemic problems and bringing attention to the dangers that their knowledge systems confront. Indigenous organizations and activists are vital in drawing attention to the issues of cultural appropriation, weak legal systems, and the significance of upholding Indigenous rights on a global scale.

The Shortcomings of the Current Legal Frameworks

The inadequate nature of current legal frameworks is a noteworthy obstacle to the safeguarding of Indigenous Knowledge. Systems of intellectual property rights, which have their origins in Western individualistic ideas, find it difficult to take into account the communal and social character of Indigenous knowledge ownership. Consequently, when it comes to the

misuse and monetization of their cultural heritage, Indigenous groups have little options for legal action.

It is clear that policy changes are necessary, highlighting the deve of sui generis systems that honor and acknowledge the distinctive qualities of Indigenous wisdom. The notion of free, prior, and informed consent must be given top priority in policy reforms to guarantee Indigenous communities' agency in decisions that affect their knowledge. Furthermore, international cooperation is necessary to develop a coherent and internationally applicable framework that protects Indigenous rights.

The Need for Transformational Measures

The growing dangers of globalization, environmental degradation, and cultural appropriation highlight the need for trans formative action to protect Indigenous knowledge. It is vital that Indigenous knowledge be preserved worldwide, not just for the benefit of Indigenous communities. The loss of this information weakens the cultural fabric, reduces the diversity of human thought, and limits our collective wisdom in tackling global concerns of the connected world we live in.

A paradigm change in how society views and values Indigenous knowledge is necessary for trans formative action. It is essential to recognize that all knowledge systems, regardless of their cultural origin, are interrelated. It entails encouraging ethical cooperation, cultivating respect between cultures, and opposing the systems that support the continued exploitation of Indigenous knowledge.

Education becomes apparent as a potent instrument for revolutionary transformation. A more inclusive and polite global society is achieved through incorporating Indigenous viewpoints into school curricula, encouraging cross-cultural interactions, and raising awareness of the importance of multiple knowledge systems.

In the end, overcoming obstacles and dangers to Indigenous Knowledge Systems necessitates a comprehensive, cooperative, and culturally aware strategy. It requires us to acknowledge the agency of Indigenous communities, give voice to their concerns, and take proactive measures to removing structural obstacles that impede the preservation of their priceless cultural legacy.

In conclusion, despite the serious risks to Indigenous Knowledge Systems, there is optimism because of the tenacity, self-determination, and resiliency of Indigenous communities. We can all work together to protect Indigenous

knowledge for the benefit of present and future generations by supporting transformative initiatives, upholding Indigenous rights, and encouraging sincere collaborations. Though there are many obstacles to overcome, the need to preserve and honor the variety of human understanding cuts across cultural divides, enjoining us to act as stewards of knowledge and a common, sustainable future.

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Chapter-8

**Preservation of Indigenous Knowledge:
Strategies, Challenges, and Implications
for Sustainable Development**

Juhi Bidhuri

Assistant Professor, Army Institute of Education, Greater Noida

Abstract

Preservation of indigenous knowledge stands as a pivotal endeavour in striving for sustainable development, acknowledging the wealth of wisdom embedded within diverse cultural traditions. This abstract delves into the multifaceted landscape of strategies, challenges, and implications involved with the preservation of indigenous knowledge.

Strategies for preservation encompass a spectrum of approaches, including documentation, community-based research, integration into formal education, digital technologies, and collaborative partnerships. These strategies aim to honour the oral traditions, localized contexts, and holistic perspectives inherent in indigenous knowledge systems, fostering cultural continuity and resilience.

However, the preservation of indigenous knowledge is not without its challenges. Threats from globalization, modernization, and more rampant environmental degradation result in risks to the transmission and viability of indigenous knowledge. Ethical considerations, intergenerational transmission barriers, and issues related to intellectual property rights further complicate preservation efforts.

Nevertheless, the implications of preserving indigenous knowledge resonate deeply within the realm of sustainable development. Indigenous knowledge offers invaluable insights into sustainable resource management, environmental conservation, and holistic approaches to health and well-being. Upholding indigenous rights to control and benefit from their knowledge fosters social justice, empowerment, and equitable partnerships, contributing to the broader agenda of sustainable development.

To conclude, the preservation of indigenous knowledge holds profound significance for fostering cultural diversity, environmental stewardship, and social justice. By navigating the complexities of preservation strategies and addressing the challenges therein, societies can harness the transformative potential of indigenous knowledge towards a more sustainable and inclusive future.

Keywords: Indigenous knowledge, Sustainable development, Preservation

Introduction

Indigenous knowledge encompasses the wisdom, practices, and beliefs being passed from one generation to another within specific cultural groups. It finds its roots in the experiences, traditions, and relationships of indigenous peoples with their environments. Understanding the background and value of indigenous knowledge requires recognizing its historical context and the profound impact it has on indigenous communities and broader society.

Background

Indigenous knowledge has a deep historical origin, dating back to the earliest human societies. Indigenous knowledge has been shaped by centuries of interaction and communication among indigenous peoples and their environments, evolving in response to changes in landscapes, climates, and cultures.

Indigenous knowledge is inseparable from their Indigenous cultures and identities. It is transmitted orally, through storytelling, rituals, and practices, reinforcing cultural continuity and resilience in case of any external pressures. The colonization of indigenous lands often led to the suppression and erasure of indigenous knowledge systems. Colonial powers imposed their systems of well-defined knowledge and marginalized the indigenous system of knowing, contributing to cultural loss and intergenerational trauma.

Definition

Indigenous knowledge refers to the accumulated wisdom, practices, innovations, and beliefs that are developed and transmitted through generations of specific cultural groups, often indigenous or traditional communities. It encompasses the deep understanding and interconnectedness between human societies and the natural environments, along with the cultural, social, and spiritual dimensions of various aspects of life. If we observe we find that Indigenous knowledge is typically grounded in localized contexts, oral traditions, and holistic worldviews, reflecting the

unique experiences, perspectives, and values of Indigenous peoples. It encompasses varying domains, including traditional ecological knowledge, medicinal practices, agricultural techniques, storytelling, spiritual beliefs, and social customs. Indigenous knowledge systems are characterized by their resilience, adaptability, and sustainability, as developed time and again over centuries to encompass the demands and challenges of diverse ecosystems and cultural contexts. Recognizing and respecting indigenous knowledge is pertinent for promoting cultural diversity, environmental stewardship, social justice, and sustainable development.

Few **Important characteristics** that distinguish Indigenous Knowledge are:

- *Oral Tradition:* Indigenous knowledge is often passed orally from one generation to another generation. Elders and community members play the central role in passing down knowledge through storytelling, songs, ceremonies, and informal interactions.
- *Localized and Context-Specific:* Indigenous knowledge is deeply embedded in specific local contexts, ecosystems, and cultural landscapes. It is tailored to the unique needs, challenges, and opportunities of a specific community or environment.
- *Holistic Approach:* Indigenous knowledge tends to hold a holistic perspective, considering the interconnectedness of various elements such as nature, spirituality, community, and social relationships. It recognizes the interdependence of all living things and the importance of balance and harmony.
- *Experiential Learning:* Learning in indigenous knowledge systems often occurs through direct experience, observation, and participation in community activities. Practical, hands-on knowledge is highly valued, complementing theoretical understanding.
- *Sustainable Practices:* Indigenous knowledge often includes sustainable and environmentally friendly practices. Traditional ecological knowledge emphasizes harmonious interactions with nature to ensure the long-term health and resilience of ecosystems and communities.
- *Cultural Embeddedness:* Indigenous knowledge is deeply embedded in cultural practices, traditions, and belief systems. It reflects the identity, worldview, and values of a specific indigenous community, contributing to cultural continuity, resilience, and self-determination.
- *Community-Centric:* Indigenous knowledge is communal, emphasizing the collective well-being of the community over individual interests.

Decision-making, problem-solving, and knowledge-sharing often involve collaboration, consensus-building, and reciprocity.

- *Adaptability and Resilience*: Indigenous knowledge is adaptable to changing circumstances which results in it being flexible in response to environmental shifts, social dynamics, and cultural changes. It may incorporate new insights while maintaining core cultural values and principles.

Strategies for the Preservation of Indigenous Knowledge

Preserving indigenous knowledge is essential for safeguarding cultural heritage, promoting sustainable development, and respecting the rights and autonomy of indigenous communities. Several strategies can be employed to ensure the preservation and transmission of indigenous knowledge:

- *Documentation and Archiving*: Establishing comprehensive documentation initiatives to record oral traditions, practices, rituals, and other forms of indigenous knowledge. This includes creating audio-visual recordings, written transcripts, and digital archives that can be used by future generations.
- *Community-Based Research*: Implementing research methods like participatory methods that involve indigenous communities for the documentation and preservation process. This approach respects indigenous protocols, values, and intellectual property rights, ensuring that knowledge sharing is there on the community's terms.
- *Integration into Formal Education*: The indigenous knowledge can be incorporated into formal education systems at all levels, starting from primary schools to universities. This involves developing culturally relevant curricula, teaching materials, and teacher training programs that integrate indigenous perspectives into mainstream education.
- *Digital Technologies*: Leveraging digital technologies, such as mobile apps, websites, and social media platforms, to disseminate indigenous knowledge to broader audiences. This includes creating digital repositories, interactive learning tools, and virtual reality experiences for the preservation and promotion of indigenous culture and heritage.
- *Capacity Building*: It is important to provide training and include capacity-building initiatives to empower indigenous communities to document, preserve, and transmit their knowledge effectively. This includes workshops, seminars, and skill-building programs focused

on research methods, documentation techniques, and information management.

- *Cultural Revitalization*: Supporting initiatives that promote the revitalization of indigenous languages, traditions, and cultural practices. This includes cultural festivals, language immersion programs, and community-led projects that celebrate and preserve indigenous identity.
- *Inter-Generational Transmission*: Facilitating inter-generational knowledge exchange and transmission within indigenous communities. This can be done by developing opportunities for elders to transmit their knowledge to younger generations through storytelling, mentorship programs, and experiential learning activities.
- *Partnerships and Collaboration*: Building partnerships and collaborative networks between indigenous communities, government agencies, non-governmental organizations, academic institutions, and other stakeholders. This fosters mutual respect, trust, and cooperation in the preservation as well as promotion of indigenous knowledge.

Challenges in Preserving Indigenous Knowledge

Preserving indigenous knowledge faces several challenges, stemming from historical, cultural, social, and environmental factors. These challenges include:

- *Colonialism and Cultural Suppression*: The legacy of colonialism resulted in the suppression, marginalization, and erasure of indigenous knowledge systems. Colonizers often imposed their own systems of knowledge and governance, undermining indigenous ways of knowing and living.
- *Language and Communication Barriers*: Indigenous knowledge is often transmitted orally and may be expressed in indigenous languages that are at risk of extinction. Language barriers can hinder the effective documentation, preservation, and transmission of indigenous knowledge from one generation to another.
- *Loss of Elders and Traditional Knowledge Holders*: The loss of elder generations and traditional knowledge holders represents a significant challenge to preserving indigenous knowledge. With the passing of elders, valuable insights, stories, and practices may be lost, impacting the inter-generational transmission of knowledge.

- *Environmental Degradation and Displacement*: Environmental degradation, climate change, and forced displacement of indigenous communities threaten traditional lifestyles and knowledge systems. Loss of access to ancestral lands, resources, and ecosystems disrupts the transmission and practice of indigenous knowledge.
- *Globalization and Modernization*: Globalization and modernization pose challenges to the conservation and protection of indigenous knowledge by promoting homogenization, standardization, and cultural assimilation. Westernization and market-driven economies may devalue or commodify indigenous knowledge, leading to its loss or distortion.
- *Intellectual Property Rights and Legal Issues*: Indigenous knowledge as seen is often exploited without consent or benefit to the indigenous communities, raising ethical and legal concerns regarding intellectual property rights. Lack of legal protection and unrecognition of indigenous knowledge perpetuates exploitation and undermines indigenous self-determination.
- *Digital Divide and Technological Access*: Indigenous communities may face limited access to digital technologies, internet connectivity, and information resources, hindering efforts to document, archive, and disseminate indigenous knowledge using digital platforms.
- *Ethical Considerations and Research Ethics*: Indigenous knowledge research often raises ethical considerations regarding informed consent, cultural sensitivity, and rights of possession of knowledge. Researchers while researching indigenous communities must navigate power dynamics, colonial legacies, and community protocols to ensure respectful and equitable partnerships.

Addressing these challenges requires a multi-faceted approach that prioritizes indigenous rights, cultural revitalization, environmental sustainability, and social justice. Collaboration between indigenous communities, governments, non-governmental organizations, researchers, and other stakeholders is essential to form culturally appropriate methods for preserving and promoting indigenous knowledge in a rapidly changing world.

Implications for Sustainable Development

Preserving indigenous knowledge has great implications for sustainable development across various domains. These implications include:

- *Environmental Conservation*: Indigenous knowledge systems are deeply rooted in sustainable resource management practices, emphasizing

harmony with nature and the preservation of ecosystems. Combining indigenous knowledge with environmental policies and practices can enhance biodiversity conservation, mitigate climate change, and promote resilient landscapes.

- *Sustainable Agriculture and Food Security*: Indigenous agricultural practices, such as agroforestry, crop diversification, and traditional seed saving, offer resilient and sustainable solutions to food security challenges. Using indigenous knowledge for agricultural research and development can enhance productivity, promote resilience to climate variability, and safeguard traditional food systems.
- *Community Health and Well-being*: Indigenous knowledge encompasses holistic approaches to health and well-being, addressing physical, mental, emotional, and spiritual dimensions. Integrating indigenous healing practices, medicinal plants, and traditional medicine systems into healthcare delivery can improve access to culturally relevant and sustainable healthcare services, particularly in underserved indigenous communities.
- *Cultural Preservation and Identity*: Preserving indigenous knowledge is essential for safeguarding cultural heritage, languages, and traditions. Revitalizing indigenous languages, promoting cultural festivals, and supporting community-led initiatives can strengthen cultural identity, social cohesion, and resilience against cultural assimilation and loss.
- *Social Justice and Equity*: Recognizing and respecting indigenous knowledge contributes to social justice by upholding the rights, autonomy, and self-determination of indigenous peoples. Empowering indigenous communities to control and benefit from their knowledge fosters equitable partnerships, reduces disparities, and promotes inclusive and participatory approaches to development.
- *Traditional Ecological Knowledge for Decision-Making*: Indigenous knowledge gives valuable inputs into ecosystem dynamics, natural resource management, and sustainable land use practices. Using traditional ecological knowledge in decision-making processes, environmental assessments, and natural resource governance enhances the effectiveness and legitimacy of conservation and development initiatives.
- *Resilience and Adaptation to Change*: Indigenous knowledge systems are adaptive and resilient, evolving in response to changing environmental, social, and economic conditions. Leveraging indigenous knowledge

can enhance community resilience, promote local innovation, and foster adaptive capacity in the face of global challenges such as climate change, biodiversity loss, and socio-economic disparities.

In summary, integrating indigenous knowledge available into sustainable development initiatives can enhance environmental stewardship, promote cultural diversity, empower indigenous communities, and foster inclusive and resilient societies. Recognizing the worth of indigenous knowledge is important for achieving sustainable development goals and ensuring a more equitable and harmonious relationship between humans and the natural world.

Conclusion

In conclusion, the preservation of indigenous knowledge is crucial for promoting sustainable development, cultural diversity, and social justice. Throughout this exploration, we have identified key findings that underscore the significance of indigenous knowledge preservation. We have recognized indigenous knowledge as a repository of wisdom, rooted in localized contexts and holistic perspectives. Moreover, we have acknowledged the challenges posed by historical legacies, environmental degradation, and cultural assimilation. Despite these challenges, we have highlighted the resilience, adaptability, and transformative potential of indigenous knowledge for addressing contemporary global challenges.

Call to Action for the Preservation of Indigenous Knowledge: In light of the findings, it is imperative to heed the call to action for the preservation of Indigenous knowledge. This will involve serious efforts from governments, civil society, academia, and indigenous communities themselves. We must prioritize the recognition, respect, and protection of indigenous rights, including the right to control and benefit from their knowledge. Moreover, we must support strategies that strengthen indigenous communities to document, transmit, and revitalize their knowledge systems. This entails investing in community-led research, capacity-building programs, and digital technologies that facilitate the preservation and dissemination of indigenous knowledge. Furthermore, it is essential to foster partnerships and collaboration that promote mutual respect, trust, and equity in the preservation and promotion of indigenous knowledge. By embracing this call to action, we can honour the rich cultural heritage of indigenous peoples, promote environmental sustainability, and advance inclusive and equitable development for all.

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- <https://core.ac.uk/download/pdf/132283648.pdf>
- <https://www.scribd.com/presentation/534119003/Unit-7-Anth-1012>
- <https://www.sciencedirect.com/science/article/abs/pii/S0268401206000089>

Chapter-9

**Digital Preservation and Cultural
Transmission: An In-Depth Assessment of the
7C Model in Indigenous Knowledge Archives**

Karthikeyan.P

Assistant Professor, Army Institute of Education

Abstract

This research paper explores the significance of Indigenous knowledge (IK) for environmental sustainability, cultural heritage, and human well-being. Despite its importance, IK faces challenges in preservation and transmission in the digital age. The 7C model, a framework for digitizing and managing IK, is examined critically for its effectiveness. The paper evaluates the model's strengths, limitations, and impact on indigenous communities, considering cultural sensitivity, power dynamics, and knowledge ownership. It assesses how the model enhances knowledge accessibility and intergenerational transmission. The objective is to provide insights and recommendations for refining the 7C model to better contribute to safeguarding and sharing IK for future generations. The research explores into the intersection of digital preservation and cultural transmission in indigenous knowledge archives, focusing on the 7C model's role. The study comprehensively assesses the model's efficacy in preserving indigenous knowledge in digital formats, considering accessibility, usability, and cultural relevance

Keywords: Indigenous Knowledge, 7C Model, Digitization

INTRODUCTION

Indigenous knowledge (IK) stands as a reservoir of invaluable wisdom, encompassing environmental sustainability, cultural heritage, and human well-being. However, the digital age poses formidable challenges to the preservation and transmission of this knowledge. As we navigate the complexities of the 21st century, the preservation of Indigenous knowledge

becomes pivotal for sustaining diverse cultures and fostering a harmonious coexistence with the environment.

At the forefront of addressing these challenges is the 7C model—a dynamic framework tailored for digitizing and managing Indigenous knowledge. This research paper critically examines the effectiveness of the 7C model, probing its strengths, limitations, and profound impact on indigenous communities. A careful evaluation encompasses considerations of cultural sensitivity, the intricate dynamics of power, and the delicate matter of knowledge ownership.

Beyond these considerations, the research delves into how the 7C model augments knowledge accessibility and facilitates the transmission of wisdom across generations. The ultimate objective is to unravel insights and propose recommendations that can refine the 7C model, ensuring its optimal contribution to the safeguarding and sharing of Indigenous knowledge for the prosperity of future generations.

This exploration delves into the intersection of digital preservation and cultural transmission within the realm of indigenous knowledge archives, with a focused lens on the 7C model's role. The study takes a comprehensive approach, assessing the model's efficacy in preserving indigenous knowledge in digital formats. It contemplates aspects of accessibility, usability, and cultural relevance, recognizing the nuanced intricacies that underscore the preservation and transmission of indigenous wisdom in a rapidly evolving digital landscape.

REVIEW OF LITERATURE:

- ❖ Kareti, S. R., Rajpoot, V. S., & Ramar, H. H. (2022). A module for digital conservation of medicinal plants used by tribal communities living in selected villages of Anuppur district, Madhya Pradesh, Central India. *VINE Journal of Information and Knowledge Management Systems*. This study aimed to develop a digital module for the digital conservation of traditional knowledge of medicinal plants (MPs) used by tribal communities in the Anuppur district of Madhya Pradesh, Central India. The research used a qualitative approach, gathering data through literature review and field survey. A prototype digital learning system was constructed and assessed, focusing on engaging with knowledge keepers, using multimedia, and providing content in local languages. The study aims to preserve important MP species with therapeutic compounds for treating ailments, highlighting the importance of digital tools for future conservation.

- ❖ Balogun, T., & Kalusopa, T. (2021). A framework for digital preservation of Indigenous knowledge system (IKS) in repositories in South Africa. *Records Management Journal*, 31(2), 176-196. This study assesses digital preservation policies and plans for long-term preservation of Indigenous Knowledge Systems (IKS) in South Africa. Data was collected from eight respondents in four IKSDCs, part of the National Recordal Systems (NRS) initiative. The findings show no digital preservation policies in place, but some institutions are developing policies for IKS management. Digital curation, policy formulation, and disaster preparedness plans are some measures in place. The study aims to ensure the South African Government's investment in digitizing IKS is not wasted and mitigates the risk of damage and alteration over time.
- ❖ Maasz, D., Winschiers-Theophilus, H., Stanley, C., Rodil, K., & Mbinge, U. (2018). A digital indigenous knowledge preservation framework: the 7C model—repositioning IK holders in the digitization of IK. *Digitisation of culture: Namibian and international perspectives*, 29-47. Indigenous Knowledge (IK) preservation and management are increasingly recognized by governments due to the value of IK and emerging technologies. To support these efforts, an integrative framework called the 7C model is proposed. This framework consists of seven major phases: codesign, conceptualization, collection, correction, curation, circulation, and creation of knowledge. The model aims to guide design and implementation efforts and identify gaps in current plans. It is applied with technologies developed under an indigenous knowledge holder's toolkit, promoting the digitalization of indigenous knowledge across these phases.
- ❖ Balogun, T., & Kalusopa, T. (2021). A framework for digital preservation of Indigenous knowledge system (IKS) in repositories in South Africa. *Records Management Journal*, 31(2), 176-196. This study assesses digital preservation policies and plans for long-term preservation of Indigenous Knowledge Systems (IKS) in South Africa. Data was collected from eight respondents in four IKSDCs, part of the National Recordal Systems (NRS) initiative. The findings show no digital preservation policies in place, but some institutions are developing policies for IKS management. Digital curation, policy formulation, and disaster preparedness plans are some measures in place. The study aims to ensure the South African Government's investment in digitizing IKS is not wasted and mitigates the risk of damage and alteration over time.

RESEARCH QUESTION:

To what extent has the 7C model demonstrably facilitated ethical, collaborative, and sustainable digitization of indigenous knowledge across diverse cultural contexts, and what future adaptations could enhance its effectiveness?

OBJECTIVES:

1. **Analyze the historical development of the 7C model:** This objective involves tracing the model's origin, key contributors, and major phases of development. Research questions could include:
2. **Evaluate the effectiveness of the 7C model in different cultural contexts:** This objective involves examining case studies where the model has been implemented and analyzing its success in ensuring ethical, collaborative, and sustainable digitization. Research questions could include:
3. **Explore future directions for the 7C model:** This objective involves identifying potential ways to refine and expand the model to address emerging challenges and opportunities. Research questions could include:

INTEGRATE INDIGENOUS KNOWLEDGE AND TECHNOLOGY

The fusion of indigenous knowledge and technology is vital for sustainable development, effective decision-making, and preserving traditional wisdom. Indigenous knowledge, spanning oral and written insights, innovations, practices, and beliefs, forms the bedrock for responsible stewardship of cultural and natural resources. Key strategies for this integration encompass:

1. **Cultural Relevance and Creativity:** Infusing indigenous knowledge into technology education fosters diverse perspectives, cultural concepts, and innovative solutions. This integration taps into the rich creativity, deep observation, and critical thinking ingrained in indigenous knowledge systems.
2. **Sustainability and Responsible Stewardship:** Indigenous knowledge's emphasis on sustainability and responsible resource management inspires locally generated solutions to technological challenges when integrated with technology.
3. **Preservation and Valuing of Indigenous Knowledge:** Integrating indigenous knowledge into technology education validates invaluable

traditional knowledge, countering historical marginalization and promoting cultural diversity.

- 4. Decolonization and Empowerment:** The incorporation of indigenous knowledge by educators challenges the dominance of Western-centric perspectives, empowering indigenous students and communities. This contributes to the decolonization of educational frameworks.

Approaching the integration of indigenous knowledge and technology mandates a foundation of respect, collaboration, and commitment to preserving traditional wisdom while addressing contemporary challenges. This ensures a balanced and inclusive incorporation of diverse perspectives in the ever-evolving landscape of technology and knowledge dissemination.

HISTORY OF 7C MODEL FRAMEWORK

The 7C model, first presented in 2011 by Dr. Linda Tuhiwai Smith, is a model that aims to digitize indigenous knowledge ethically and collaboratively. It was developed through discussions and frameworks, incorporating perspectives from diverse indigenous communities and practitioners.

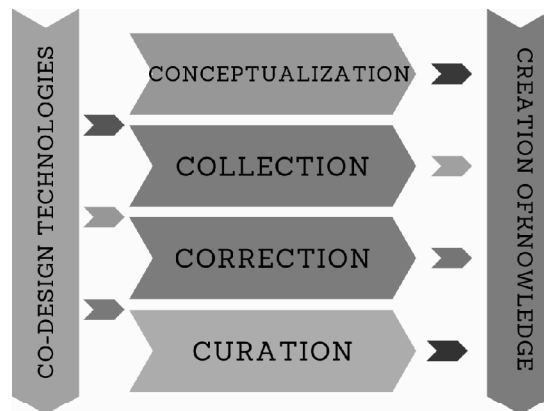
The model gained recognition and adoption within indigenous knowledge and digital cultural heritage circles internationally. It aligns with principles such as the United Nations Declaration on the Rights of Indigenous Peoples and the Convention on Biological Diversity's Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization. Implementing the 7C model requires significant commitment from governments, institutions, and individuals working with indigenous communities. It is still evolving, with ongoing discussions and research aimed at addressing practical challenges, refining ethical considerations, and adapting it to different cultural contexts. The 7C model continues to be influential in guiding ethical digitization of indigenous knowledge globally.

MEANING OF 7C MODEL FRAMEWORK

The 7C model is a framework designed to guide the ethical and collaborative digitization of indigenous knowledge (IK). It emphasizes co-creation and empowerment of indigenous communities throughout the process. Here's a breakdown of the 7 phases:

- 1. Co-design:** Establish trust and collaboration with indigenous knowledge holders to jointly design technologies and methods for digitization.

2. **Conceptualization:** Discuss and agree on the goals, values, and protocols for digitizing IK, ensuring respect for cultural sensitivities and ownership.
3. **Collection:** Gather IK through culturally appropriate methods, involving knowledge holders in the process and ensuring informed consent.
4. **Correction:** Validate and verify collected information with knowledge holders to ensure accuracy and avoid misrepresentation.
5. **Curation:** Organize and manage digitized IK in a secure and accessible way, considering long-term preservation and community control.
6. **Circulation:** Determine how and with whom to share digitized IK, respecting community rights and intellectual property.
7. **Creation of knowledge:** Use digitized IK in collaborative research and innovation, ensuring benefits flow back to the community.



The 7C model emphasizes:

- **Community-driven:** Indigenous knowledge holders drive the process, not external researchers or institutions.
- **Ethical considerations:** Respect for cultural values, intellectual property, and community control are paramount.
- **Long-term sustainability:** The model aims to preserve and revitalize IK for future generations.
- **Knowledge co-creation:** Collaboration between indigenous and non-indigenous knowledge systems leads to new insights and solutions.

SUCCESSFUL IMPLEMENTATION OF THE 7C MODEL IN THE DIGITIZATION OF INDIGENOUS KNOWLEDGE

The 7C model has been successfully implemented in various projects for the digitization of indigenous knowledge. Here are some examples:

- ❖ **The Indigenous Knowledge Holder’s Toolkit:** This toolkit was developed under the 7C model to promote the agency of indigenous knowledge holders in the digitization of their knowledge. The toolkit includes various technologies that support the different phases of the 7C model, such as audio and video recording devices, metadata management tools, and digital curation software.
- ❖ **The Digitalization of Indigenous Knowledge in Namibia:** The 7C model was used to guide the digitization of indigenous knowledge in Namibia, resulting in the creation of a digital repository of indigenous knowledge. The project involved collaboration with indigenous knowledge holders, who provided guidance and feedback throughout the digitization process.
- ❖ **The Digitalization of Indigenous Knowledge in Canada:** The 7C model has been used in various projects in Canada to digitize indigenous knowledge, including the creation of digital archives of oral histories, songs, and dances. The model has been effective in ensuring that the digitization process is culturally sensitive and respectful of indigenous knowledge holders.

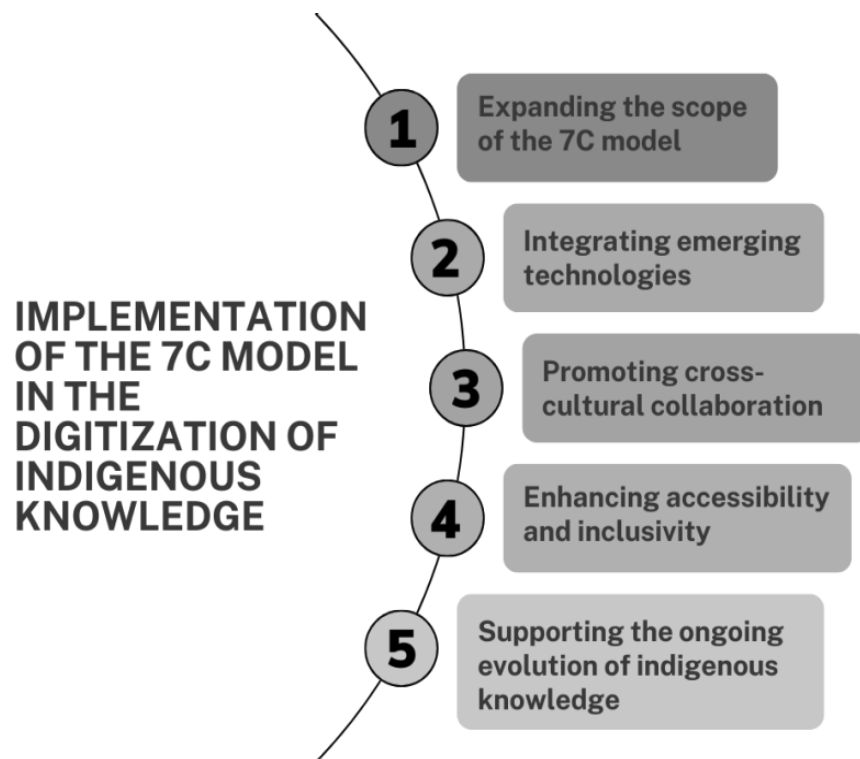
These examples demonstrate the effectiveness of the 7C model in guiding the digitization of indigenous knowledge, promoting cultural sensitivity and respect for traditional knowledge holders.

FUTURE DIRECTIONS FOR THE IMPLEMENTATION OF THE 7C MODEL IN THE DIGITIZATION OF INDIGENOUS KNOWLEDGE

Some future directions for the implementation of the 7C model in the digitization of indigenous knowledge include:

- ❖ **Expanding the scope of the 7C model:** The 7C model can be further developed to include additional phases or aspects, such as community engagement, intellectual property rights, and long-term sustainability of the digitized knowledge.
- ❖ **Integrating emerging technologies:** As new technologies emerge, the 7C model can be adapted to incorporate them, such as artificial intelligence, virtual reality, and blockchain, to enhance the digitization process and preserve indigenous knowledge more effectively.

- ❖ **Promoting cross-cultural collaboration:** The 7C model can be used to facilitate collaboration between indigenous communities and researchers from different cultural backgrounds, fostering mutual understanding and respect for diverse knowledge systems.
- ❖ **Enhancing accessibility and inclusivity:** The 7C model can be adapted to ensure that the digitized indigenous knowledge is accessible to a wider audience, including people with disabilities, non-experts, and those with limited access to technology.
- ❖ **Supporting the ongoing evolution of indigenous knowledge:** The 7C model can be extended to include the ongoing creation and evolution of indigenous knowledge within the digital environment, ensuring that the digitization process remains relevant and responsive to the needs of indigenous communities.



By exploring these future directions, the 7C model can continue to guide the digitization of indigenous knowledge, promoting cultural sensitivity, respect for traditional knowledge holders, and the preservation of valuable cultural heritage.

WHEN DIGITIZING INDIGENOUS KNOWLEDGE, HOW CAN THE 7C MODEL BE MODIFIED TO FIT VARIOUS CULTURAL CONTEXTS?

The adaptation of the 7C model to different cultural contexts in the digitization of indigenous knowledge involves a thoughtful and collaborative approach. Here are specific strategies for achieving this adaptation:

- ❖ **Cultural sensitivity:** Ensure that the digitization process is culturally sensitive and respectful of the indigenous knowledge holders' values and beliefs. This can be achieved by involving knowledge holders in the design and implementation of the digitization process.
- ❖ **Local languages and terminologies:** Incorporate local languages and terminologies into the digitization process to ensure that the knowledge is preserved in its original context. This can be achieved by collaborating with knowledge holders to translate and transcribe the knowledge into the appropriate languages.
- ❖ **Traditional knowledge systems:** Integrate traditional knowledge systems into the digitization process to ensure that the knowledge is preserved in its entirety. This can be achieved by involving knowledge holders in the conceptualization and collection phases of the 7C model.
- ❖ **Community engagement:** Encourage community engagement throughout the digitization process to ensure that the knowledge is preserved in a way that is meaningful and relevant to the community. This can be achieved by organizing community workshops, focus groups, and other participatory activities.
- ❖ **Technological adaptations:** Adapt the 7C model to incorporate emerging technologies that are relevant to the specific cultural context. This can be achieved by involving knowledge holders in the selection and implementation of appropriate technologies.
- ❖ **Intellectual property rights:** Ensure that the digitization process respects the intellectual property rights of the indigenous knowledge holders. This can be achieved by involving knowledge holders in the negotiation and implementation of appropriate intellectual property agreements.

By implementing these strategies, the 7C model can be adapted to different cultural contexts, fostering a digitization process that is not only technically sound but also deeply rooted in the values, languages, and traditions of the indigenous communities involved. This approach ensures

a respectful and meaningful preservation of indigenous knowledge for generations to come.

RECOMMENDATIONS:

The 7C model aims to enhance digitization practices by refining the Indigenous Knowledge Holder's Toolkit, fostering international collaboration, developing capacity-building programs, establishing ethical guidelines, integrating emerging technologies, and prioritizing inclusivity in design and dissemination for diverse audiences.



1. Continuous Toolkit Enhancement:

- Continue refining and expanding the Indigenous Knowledge Holder's Toolkit based on feedback from various indigenous communities, ensuring it remains a versatile and user-friendly resource for digitization projects.

2. International Collaboration and Knowledge Sharing:

- Foster collaboration between projects implementing the 7C model globally. Encourage the exchange of experiences, challenges, and successful strategies to enhance the collective understanding of effective digitization practices.

3. Capacity Building Programs:

- Develop and implement capacity-building programs to empower indigenous communities in utilizing the 7C model effectively. These

programs should focus on digital literacy, ensuring active participation in the digitization process.

4. Ethical Guidelines:

- Establish clear and comprehensive ethical guidelines for implementing the 7C model, addressing issues such as intellectual property rights, community engagement, and respectful representation of indigenous knowledge in digital formats.

5. Adaptation to Emerging Technologies:

- Explore ways to integrate emerging technologies like artificial intelligence, virtual reality, and blockchain into the 7C model. This adaptation can enhance the digitization process and ensure the preservation of indigenous knowledge remains at the forefront of technological advancements.

6. Inclusive Accessibility Measures:

- Adapt the 7C model to ensure the digitized indigenous knowledge is accessible to diverse audiences, including people with disabilities, non-experts, and those with limited access to technology. Prioritize inclusivity in design and dissemination.

CONCLUSION

In conclusion, the research paper critically evaluates the 7C model's effectiveness in digitizing indigenous knowledge, acknowledging its successes in projects like the Indigenous Knowledge Holder's Toolkit, Namibia, and Canada. The model has proven instrumental in preserving cultural heritage while respecting the agency of indigenous communities.

Looking forward, the paper suggests several recommendations to refine and enhance the 7C model. These include continuous toolkit improvement, international collaboration, capacity building, ethical guidelines, adaptation to emerging technologies, and inclusive accessibility measures. By implementing these recommendations, the 7C model can continue to be a robust framework for the ethical and sustainable digitization of indigenous knowledge.

The exploration into the intersection of digital preservation and cultural transmission within indigenous knowledge archives, with a focus on the 7C model's role, provides valuable insights. The comprehensive assessment considers accessibility, usability, and cultural relevance, recognizing the nuanced intricacies of preserving and transmitting indigenous wisdom in the evolving digital landscape.

The ongoing evolution of the 7C model, guided by these recommendations, ensures its continued relevance and contribution to the safeguarding and sharing of indigenous knowledge for the prosperity of future generations. Through a collaborative and respectful approach, the digitization process can be tailored to fit diverse cultural contexts, ensuring meaningful preservation and transmission of indigenous wisdom across generations.

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Chapter-10

Role of Indigenous Leaders in Youth Empowerment

Priti Sharma* & Prof. (Dr.) Tania Gupta**

* Research Scholar, Department of Education School of Education, K.R. Mangalam University, Gurugram, Haryana

**Dean, School of Education, K.R. Mangalam University, Gurugram, Haryana

Abstract

Indigenous leaders are individuals from indigenous communities who play prominent roles in advocating for the rights, well-being, and empowerment of their respective communities. These leaders often work to address issues such as land rights, cultural preservation, education, healthcare, and social justice. Indigenous leadership can take various forms, including political, cultural, and grassroots activism.

In this qualitative research study, we will analyse the role and contribution of Swami Vivekananda in Youth Empowerment. We will also study the relevance of his teachings in current times by doing a comprehensive literature analysis and develop its context in light of the Indian Knowledge Systems (IKS) and the National Education Policy (NEP) 2020.

Swami Vivekananda was a strong advocate for the empowerment of the youth. He believed that the youth of a nation were the real strength and future of the nation. One of his famous speeches, delivered at the Parliament of the World's Religions in Chicago in 1893, emphasized the importance of tolerance, acceptance, and understanding among people of different faiths.

Vivekananda's teachings emphasized the development of physical, mental, and spiritual strength in individuals. He believed that a strong, disciplined, and spiritually aware youth could contribute significantly to the progress and well-being of society. His ideas on education, character-building, and service to humanity have inspired many individuals, including indigenous leaders, to work towards the upliftment and empowerment of youth.

Swami Vivekananda played a crucial role in youth empowerment through his teachings, lectures, and writings. His impact on the youth is multifaceted in domains such as Emphasis on Self-Realization, Advocacy for Education, Call for Fearlessness, Social Service and Compassion, Spiritual Awakening, Promotion of Unity and Inclusivity, and Legacy in Youth Organizations.

In summary, Swami Vivekananda's role in youth empowerment lies in his teachings that inspired individuals to realize their potential, pursue education and character development, face challenges fearlessly, engage in social service, explore spirituality, and promote unity and inclusivity. His influence continues to inspire youth empowerment initiatives worldwide.

Keywords: Swami Vivekananda, Indigenous Leaders, Youth Empowerment, Indian Knowledge Systems, NEP 2020.

INTRODUCTION

Swami Vivekananda's Vision: Often referred to as the wandering monk of India, Swami Vivekananda earned acclaim not only among saints and seers but also resonated with the scientific minds of his era.

It is difficult to understand whether Swami Vivekananda was an astounding scientist or a Wandering Monk. He became more popular after his historic speech in the "Parliament of the World's Religions" in Chicago, USA in 1893. Most people understand that "Parliament of the World's Religions" was attended only by religious persons from all over the world, but very few know the fact that the great scientists of that era like Lord Kelvin, Prof. Von Helmholtz, Nicholas Tesla were also part of the audience. These luminary scientists were captivated by the profound knowledge embedded in ancient Indian scriptures, leading to frequent meetings with Swamiji to delve into the scientific insights concealed within these texts.

- Swami Vivekananda's teachings spanned various facets of science, religion, spirituality, education, philosophy, and social issues, emphasizing character building.
- Presenting Vedantic views in a scientific language, Swamiji discussed concepts ranging from atoms, energy, and matter to space-time, dark energy, and the fundamental question of the universe's creation.
- He envisioned from Vedanta that the micro-world and macro-world follow the same building scheme, emphasizing the unity of existence.
- Swami Vivekananda modernized Vedanta to make it accessible and appreciable even for scientifically-minded individuals.

- He preached the unity of existence, highlighting the oneness of matter and energy, and the ultimate unity of God, man, and nature-the cornerstone of Hindu thought and life.

Swamiji envisioned India as a guiding force of scientific knowledge, human strength, and spiritual enlightenment for all of humanity. His vision surpassed mere economic prosperity, stressing the importance of comprehensive development that balances both the material and spiritual aspects of life. As he eloquently put it: “When the real history of India is unearthed, it will be proved that, as in matters of religion, so in science and fine arts, India is the primal Guru of the whole world.”

Objectives of the Study

1. To study Vivekananda’s Views about the Role of Youth in Nation Development.
2. To explain the relevance of Swami Vivekananda’s Teachings on Youth in the Present Times
3. To synthesize the Fusion of the Indian Knowledge System (IKS) with the teachings of Swami Vivekananda.
4. To analyze the teachings of Swami Vivekananda and its impact on NEP 2020.

Literature Review

The literature review provides an overview of existing knowledge and research related to Swami Vivekananda’s impact on youth, covering topics like self-realization, education, fearlessness, social service, spiritual awakening, unity, and inclusivity.

Methodology

This study is theoretical and qualitative based on nature, the researchers analyze the objectives on the dependent on different secondary sources as well as primary.

Discussion and Findings

This study is qualitative and findings are based on reports, papers, articles, and journals, for the objectives of this study.

1. Vivekananda’s Views about the Role of Youth in Nation Development

Swami Vivekananda played a pivotal role in empowering the youth through his teachings, lectures, and writings, leaving a lasting impact on several fronts:

- **Emphasis on Self-Realization:** Swami Vivekananda stressed the significance of individuals understanding their inherent potential and inner strength. His teachings emphasized the pursuit of self-realization, urging individuals to recognize the divinity within themselves. This, he argued, would foster strong self-confidence and empowerment.
- **Advocacy for Education:** Vivekananda underscored the importance of education, not only in terms of academic knowledge but also in character development. He believed that education should go beyond acquiring information, focusing on instilling moral and ethical values. Many were inspired by his teachings to pursue education for personal and societal upliftment.
- **Call for Fearlessness:** Encouraging the youth to be fearless in the face of challenges, Swami Vivekananda asserted that overcoming obstacles with determination was crucial for success. His message resonated strongly with young people, motivating them to pursue their goals without succumbing to the fear of failure.
- **Social Service and Compassion:** Vivekananda highlighted the significance of serving humanity and practicing compassion. He believed that genuine empowerment stemmed from contributing to the well-being of others. Inspired by his teachings, many young individuals engaged in social service and community development initiatives.
- **Spiritual Awakening:** Swami Vivekananda's teachings on spirituality aimed to provide a deeper meaning and purpose in life. Encouraging the youth to explore their spiritual side, he believed it would lead to inner strength and balance, enabling individuals to navigate life's challenges more effectively.
- **Promotion of Unity and Inclusivity:** In his famous speech at the Parliament of the World's Religions in 1893, Vivekananda highlighted the importance of religious tolerance and the unity of humanity. His call for universal acceptance and understanding resonated with the youth, fostering a sense of inclusivity and harmony.
- **Legacy in Youth Organizations:** The Ramakrishna Mission, founded by Swami Vivekananda, actively engaged in various educational and humanitarian activities. Through the establishment of schools, colleges, and hospitals, the mission significantly contributed to youth empowerment and societal development.

Swami Vivekananda's impact on youth empowerment lies in his teachings that inspired individuals to recognize their potential, pursue education and character development, confront challenges fearlessly, engage in social service, explore spirituality, and promote unity and inclusivity. His influence continues to inspire initiatives worldwide dedicated to empowering the youth.

2. Relevance of Swami Vivekananda's Teachings on Youth in the Present Times

Swami Vivekananda's teachings remain highly relevant to youth in the present time due to their timeless and universal nature. Here are some aspects highlighting the relevance of his teachings:

- **Self-Realization in the Digital Age:** In an era dominated by technology and social media, Swami Vivekananda's emphasis on self-realization and self-confidence is crucial. His teachings encourage young people to navigate the digital world while staying true to their authentic selves and discovering their unique potential.
- **Tolerance and Unity in Diversity:** The world today is marked by diversity in terms of culture, religion, and beliefs. Vivekananda's teachings on tolerance and the acceptance of diverse perspectives are essential for fostering harmony in a globalized society, promoting understanding, and building bridges across cultures.
- **Service-Oriented Mindset:** The challenges of the contemporary world, including environmental issues, social inequality, and global health crises, call for a service-oriented mindset. Swami Vivekananda's teachings on selfless service to humanity resonate strongly, inspiring youth to engage in meaningful contributions to society.
- **Integration of Science and Spirituality:** In an age where scientific advancements are rapid, Vivekananda's call for integrating science and spirituality is pertinent. The pursuit of knowledge should not be limited to the materialistic domain but should also encompass the spiritual dimension for a holistic understanding of life.
- **Stress on Education and Skill Development:** With an increasingly competitive job market, Vivekananda's emphasis on education and skill development is more relevant than ever. His teachings motivate young people to acquire not only academic knowledge but also practical skills necessary for personal and professional success.
- **Global Citizenship and Social Responsibility:** In a world interconnected through technology and global issues, Vivekananda's vision of global

citizenship gains significance. Youth are encouraged to think beyond national boundaries and take responsibility for the well-being of the entire world, addressing pressing issues like climate change and poverty.

- **Leadership and Ethical Values:** The need for ethical leadership is crucial in addressing contemporary challenges. Vivekananda's teachings on leadership, rooted in ethical principles, provide a foundation for the development of responsible and compassionate leaders who can navigate complex issues with integrity.
- **Mindfulness and Mental Well-being:** Swami Vivekananda's teachings on the importance of inner strength and mental resilience are particularly relevant in a time where mental health is a growing concern. His emphasis on meditation, self-discipline, and positive thinking offers practical tools for managing stress and maintaining well-being.

Swami Vivekananda's teachings provide a timeless guide for navigating the challenges and opportunities of the present time. His principles of self-realization, tolerance, service, education, global citizenship, ethical leadership, and mindfulness offer a holistic approach to personal development and societal contribution, making them enduring and relevant for today's youth.

5. The Fusion of the Indian Knowledge System (IKS) with the teachings of Swami Vivekananda

Swami Vivekananda's profound vision becomes the guiding light for Viksit Bharat@2047, shaping the nation's destiny with inspiration drawn from his teachings.

Achieving Viksit Bharat@2047: The fusion of the Indian Knowledge System (IKS) with the teachings of Swami Vivekananda offers a potent framework for realizing the visionary concept of Viksit Bharat@2047.

- Drawing from the structured transmission of knowledge ingrained in the Vedas, Upanishads, and other ancient scriptures, IKS provides a comprehensive foundation for education and societal progress. When combined with Swamiji's emphasis on character development, values, and a holistic approach to growth, this amalgamation creates a powerful synergy.
- Viksit Bharat, guided by the profound wisdom of IKS and Swami Vivekananda, envisions a nation that seamlessly blends its cultural heritage with modern advancements. This harmonious integration not only nurtures scientific and spiritual coexistence but also fosters innovation and sustainability that propels us towards embodying a true

Viksit Bharat – a nation balancing tradition and modernity, innovation and sustainability, fostering a comprehensive and resilient development paradigm.

- In essence, the fusion propels our nation toward a future where progress is dynamic, rooted in tradition, and shaped by a balanced synthesis of timeless wisdom and contemporary vision, fostering a society that is both forward-looking and deeply connected to its cultural roots.

Concluding this article in the spirit of Swami Vivekananda, envisioning Viksit Bharat@2047: “Let us all work hard, my brethren; this is no time for sleep. Our work depends on the coming of the India of the future. She is there ready waiting. She is only sleeping. Arise and awake, and see her seated here, on her eternal throne, rejuvenated, more glorious than she ever was-this motherland of ours”.

6. The teachings of Swami Vivekananda and its impact on NEP 2020

There are numerous parallels between Swamiji’s educational vision and the National Education Policy (NEP) 2020.

- **Mother Tongue Emphasis:** Swamiji advocated the importance of the mother tongue in education, proposing the learning of English and Sanskrit for comprehensive personality development. NEP 2020 aligns with this by mandating primary education in the mother tongue, alongside the option to study other languages from the official list.
- **Atmanirbhar Bharat Ideals:** Swamiji’s emphasis on science and technology corresponds with NEP 2020 initiatives such as the National Research Foundation and technological integration in school curricula. NEP’s focus on vocational education resonates with Swamiji’s vision of creating individuals as opportunity providers. This convergence aims to contribute to an Atmanirbhar Bharat.
- **True Education Ideals:** NEP 2020 commits to enhancing each student’s uniqueness, aligning with Swamiji’s view that education should expand, not restrict, one’s potential. Both emphasize the relentless pursuit of truth and the continual effort to improve the human condition.
- **Vishwaguru Ideal:** NEP 2020 aspires to elevate India to a global leader in education, aligning with Swamiji’s belief in the connection between national and character transformation. Both envision individuals contributing to the nation and the world through intellectual prowess and character development.

- **Vasudev Kutumbakam Ideals:** Swamiji's emphasis on lifelong learning aligns with NEP 2020's vision of creating a holistic, flexible, and multidisciplinary education system. NEP aims to restore India's historical role as a knowledge powerhouse, echoing Swamiji's idea of learning from the world.
- **Moulding Students into Complete Human Beings:** Swamiji's focus on nurturing self-confidence corresponds with NEP 2020's goal of moulding students with moral and spiritual values, knowledge, skills, creativity, and leadership. Both emphasize the development of mental and physical strength.
- **Education for Masses:** Swamiji stressed the role of education in spreading intelligence among the masses. NEP 2020 echoes this sentiment, emphasizing access, equity, quality, affordability, and accountability to transform the educational ecosystem into a vibrant knowledge society.
- **Man-Making and Character Building:** Both Swamiji and NEP 2020 emphasize education as a life-building and character-building exercise, focusing on holistic development, creativity, and life skills essential for a well-rounded personality.
- **Optimistic Future Education:** NEP 2020, set to be implemented gradually, draws inspiration from Swamiji's call to "Arise, Awake, and Stop not till the goal is reached." Active involvement of stakeholders is crucial for effective implementation.
- **Women Education:** NEP 2020 aligns with Swamiji's perspective on women's education, emphasizing the importance of Indian knowledge systems. Both acknowledge the significance of preserving cultural ideals while promoting women's development.
- **SEDGs Education:** Swamiji's socialist views on the education of all sections of society resonate with NEP 2020's commitment to providing quality education to disadvantaged groups, promoting social justice, and ensuring equity.

Thus, NEP 2020's principles reflect and align with Swamiji's profound educational vision, aiming for a transformative and inclusive education system. There are multifarious commonalities between Swamiji's vision of education and NEP 2020.

Conclusion

In conclusion, Swami Vivekananda's teachings continue to be highly relevant and impactful on youth in the present time. His timeless wisdom transcends cultural and temporal boundaries, offering a comprehensive guide for navigating the challenges and opportunities of the contemporary world.

Vivekananda's emphasis on self-realization and self-confidence resonates with youth in the digital age, encouraging them to maintain authenticity and discover their unique potential amidst the influence of technology and social media. His teachings on tolerance and unity in diversity are particularly crucial in fostering understanding and harmony in a globalized society marked by diverse cultures and beliefs.

The service-oriented mindset advocated by Vivekananda is essential in addressing pressing global issues, motivating youth to contribute meaningfully to the betterment of society. As the world grapples with the integration of science and spirituality, his call for a holistic understanding of knowledge remains pertinent, encouraging a balance between material advancements and spiritual well-being.

In a competitive job market, Vivekananda's stress on education and skill development provides practical guidance for personal and professional success. His vision of global citizenship inspires youth to think beyond national boundaries and take responsibility for the well-being of the entire world, addressing pressing issues with a sense of social responsibility.

Vivekananda's teachings also promote ethical leadership and mindfulness, offering a valuable framework for personal and societal well-being. As mental health becomes a growing concern, his emphasis on inner strength, meditation, and positive thinking provides practical tools for managing stress and maintaining mental well-being.

In essence, Swami Vivekananda's teachings serve as a timeless and comprehensive guide for the youth of the present time. His principles of self-realization, tolerance, service, education, global citizenship, ethical leadership, and mindfulness collectively contribute to a holistic approach to personal development and societal contribution, making them enduring and relevant for today's dynamic and complex world.

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Chapter-11

A Comparative Study of Indian Knowledge System in English Textbooks of Central Board and West Bengal Board Schools

Rini Mandal¹ & Jayanta Mete²

Ph.D. Scholar¹ & Professor²

Department of Education, University of Kalyani, Nadia, West Bengal, India-741235,

Abstract

English is a mandatory subject in each school curriculum, including schools of central board and state boards. English provides students with a window to have a worldview, to gain diverse knowledge about people's lives, cultures, traditions, and histories both in India and abroad and to connect with the world. The National Education Policy (NEP) 2020 perceiving the importance of rich Indian culture and heritage focuses on reviving it and recommends promotion of the Indian Knowledge System in every possible way.

This study aims to investigate the various aspects of Indian knowledge already existing in the English textbooks followed by the school curriculums of Central Board & West Bengal Board, using the Content Analysis method. To comprehend its role in revitalising the Indian Knowledge System, the research also takes into account the suggestions of NEP 2020. The results demonstrate a significant disparity in the quantity of indigenous information integrated into the English textbooks of the two boards. So, if the recommendations of NEP-2020 could be implemented in the upcoming curriculum properly it could promote the Indian Knowledge System and help preserve the rich cultural and traditional values through their integration into the formal education system.

Keywords: Indian Knowledge System, NEP 2020, English textbooks, CBSE, WBBSE, WBCHE

Introduction

Indian Knowledge System (IKS) refers to India's traditional knowledge. It is the accumulation of systematized Indian knowledge, ranging from the

oldest known texts—Vedic literature to the oral traditions of the native people. It encompasses Foundational knowledge, Science, Engineering and Technology, Humanities and Social Sciences and offers many areas to choose from, such as Astronomy, Ayurveda and Yoga, Mathematics and Computers, Languages and Linguistics, Metallurgy Rasa-Shastra, Public Administration, and a lot more [12, 3]. IKS include yoga, meditation, astrology, and a range of conventional medical techniques. India's history and culture have greatly benefited from these customs, which have been carried down through the ages [8]. It has developed from ongoing contact between many groups, cultures, and knowledge systems and is distinguished by its holistic approach to understanding the world [10].

Since English was introduced to India, it has enjoyed a powerful presence here. People from various states in India and other countries use English as a 'Lingua Franca'. It is a compulsory language in schools from elementary to higher secondary, and the Indian Constitution also recognised it as one of the official languages. English textbooks provide pupils with a window to look into the world and a wealth of information about people's lives, customs, cultures, and histories, both domestically and internationally.

While the new Education Policy (NEP 2020) advocates for the inclusion of Indian knowledge in subjects across all levels of formal education and suggested that the curriculum be revised accordingly, the existing English textbooks already have certain Indian knowledge-related works. The present study aims to examine the extent to which Indian knowledge and its many aspects have been included in English textbooks used by the schools under Central Board of Secondary Education (CBSE) and West Bengal Boards.

Objectives

1. To understand the role of NEP 2020 in reviving the Indian Knowledge System.
2. To identify the various Indian Knowledge already present in the secondary and higher secondary English textbooks of NCERT followed by the CBSE curriculum.
3. To identify the various Indian Knowledge already present in the secondary and higher secondary English textbooks followed by the West Bengal Board schools.

Methodology

The study is based on the Content Analysis Method. Data are collected from the English Textbooks followed by the schools under the Central

Board of Secondary Education (CBSE) board and West Bengal Board, at the Secondary and Higher Secondary level. Also, recommendations of the NEP 2020, as well as relevant articles and journals are followed.

Delimitations

The study is delimited to:

1. The study of IKS focused on English textbooks only, other subjects are not considered here.
2. The study focused only on the curriculum followed by CBSE and West Bengal boards, other national or state boards of school education are not studied here.
3. The study selected the English textbook of secondary and higher secondary classes, other classes are not considered here.

Literature Reviews

Akriti (n.d.) examined the steps taken by the Indian government to incorporate traditional knowledge into the formal education system under NEP 2020 and went on to talk about the success and failure rates of other countries' educational frameworks.

In her study, Shokeen (2023) explained the idea of the Indian Knowledge System (IKS) and how NEP 2020 prioritized it. It goes into further detail on the value of IKS in teacher preparation and offers some suggestions for how to include it. She also emphasized that an ecologically sensitive approach to teaching might result from IKS integration.

Bose & Gao (2022) investigated the topic of cultural representation in Indian ELT textbooks. They used one national board and ten ELT textbooks from four states of India by using a sequential mixed- methodology. They looked at how culture was portrayed in the textbooks, how individuals differed in terms of their country, gender, and ethnicity, and how deeply the cultural information was covered. The findings indicated that British culture was dominant overall and a great deal of gender prejudice, a large variety of geographical variances, and the representation of Irish and White people from Britain in the textbooks.

In her research, Margianti (2022) examined how forty junior high school English instructors felt about the inclusion of local cultural elements. The results show that instructors see the addition of local cultural aspects in English classrooms favourably (i.e., believe a close connection between

language and culture, the inclusion of local culture can make it easier for students to understand the lectures, enhance learning, make the class feel positive and entertained and also aid students learning).

In textbooks used in English classes in Saudi Arabia's public universities, Alshenqeeti (2019) examined three different forms of cultural representation: source, target, and English as a foreign language (EFL). The content analysis approach showed that the information was biased in favour of the target culture's depiction, also analyses of survey data (N = 120) demonstrated less interest in the source culture. They recommended rigorous frameworks for the cultural integration of EFL textbooks and upcoming experimental trials be developed with great care.

Sugirim et al. (2013) investigated how instructors perceived and dealt with cultural aspects in English textbooks and the teaching and learning process. They collected information by doing focus groups (FGDs) with twenty English instructors from five regencies and by looking through the seven English textbooks these teachers were using. Both content analysis and qualitative data analysis were used in their data analysis. These results show that: (1) teachers have used the explicit and implicit insertion techniques found in textbooks to incorporate cultural elements into their lesson plans and learning activities; (2) the cultural elements found in the books are knowledge, behaviours, and artefacts; and (3) there are 409 western and 739 Indonesian cultural elements, but sufficient justifications are absent to avoid misunderstandings.

Research Gap

Studies conducted in different nations examined how cultures are portrayed in English textbooks and asked instructors and students about their opinions on this matter. The researchers studied some recent papers by Akriti, who spoke about the educational framework of NEP-2020 and the efforts being made by the Indian government to include IKS in education. Shokeen also touched on the significance of incorporating IKS into Teacher Education. Bose and Gao examined the cultural representation in relation to the content of the textbook, the racial, gender, and national characteristics of individuals, and the richness of the cultural material, but the researchers were unable to find any study dealing with the presence of IKS in English textbooks of CBSE and West Bengal board. Thus, the goal of this study is to examine the Indian knowledge present in English textbooks.

Recommendations of National Education Policy-2020 For Integration of The Indian Knowledge System (IKS)

NEP 2020 recognised the importance of ancient Indian knowledge and recommended that ‘from the foundational stage, all curricula and pedagogy will be revised with a strong emphasis on the and local Indian context and ethos in terms of culture, traditions, heritage, customs, language, philosophy, geography, ancient and modern knowledge, societal and scientific needs, indigenous and traditional ways of learning, etc.’ (4.29). ‘Indian Knowledge Systems, which cover tribal knowledge and indigenous and traditional learning methods, will be incorporated into subjects like mathematics, astronomy, philosophy, yoga, architecture, medicine, agriculture, engineering, linguistics, literature, sports, and games, as well as governance, polity, and conservation. Additional courses will be made available in tribal ethnomedical procedures, forest management, traditional (organic) agricultural cultivation, natural farming, etc. Students in secondary school will also have the option to opt for engaging courses on Indian Knowledge Systems’ (4.27). It also stressed that “India is a treasure trove of culture” and children can acquire a good sense of cultural identification and self-worth by becoming well-versed in the history, traditions arts, and languages of their own culture (22.1).

Integration of Indian Knowledge System (IKS) in English Textbooks at Secondary and Higher Secondary Stages of CBSE Curriculum

Table 1. Chapters Dealing with IKS at Different Stages

Sl. No.	Classes	Total chapters	Chapters with an Indian theme
1	9	21 (11 in Beehive 10 in Moments)	3 3 in Beehive 0 in Moments
2	10	21 (11 in First Flight 10 in Footprints)	2 2 in First Flight 0 in Footprints
3	11	16 (8 in Hornbill 8 in Snapshots)	1 1 in First Flight 0 in Footprints
4	12	22 (14 in Flamingo 8 in Vistas)	1 1 in Flamingo 0 in Vistas

Table 1 shows the chapters containing the theme of the Indian Knowledge System out of the total chapters in the English textbooks at the Secondary and Higher Secondary stages of the CBSE Curriculum. Although having two

books (a main course book and a supplementary reader book) the chapters containing IKS are very meagre.

Table 2. English Chapters Containing Themes of Indian Knowledge or Values in CBSE Curriculum

Class	Name/ Title of Chapter	Theme/ Brief summary of the chapters	Values/ knowledge learned
9	<i>The Shehnai of Bismillah Khan</i>	The chapter deals with the revival of 'pungi' and the development of 'shehnai' from it. It also portrays the life of the great Shehnai player, Ustad Bismillah Khan.	The students learn to appreciate the rich heritage of Indian music and musical instruments and are encouraged to learn to play them.
	<i>My Childhood</i> By A P J Abdul Kalam	The autobiographical account of A.P.J. Abdul Kalam shows his childhood days and the hard work done by him when he was a child. It also offers an overview of the lives of people, geographical location, tradition, culture and practices of South India	Students get acquainted with the traditions, culture and practices of South India and the life of great people like Abdul Kalam. They learn the values of harmony and brotherhood.
	<i>Kathmandu</i> by Vikram Seth	The author Vikram Seth provides a travelogue, where he gives a brief account of his observations on a long journey from China to India.	The students get to know the environment and surroundings of holy places, Pashupatinath Temple and Baudhnath Stupa.
10	<i>Glimpses Of India</i>	This chapter contains three stories- 1. Baker from Goa, 2. Coorg and 3. Tea from Assam These show glimpses of the tradition, culture, lives of people, geographical features, etc. of the three states of India	Students learn to appreciate the diversity of India, respect and learn about the indigenous culture and traditions and people's lives.
	<i>Sermon at Benares</i>	The unit provides an overview of the transformation of Siddhartha Gautama to Gautam Buddha and the process of enlightening others through preaching.	Students learn to deal with the sorrow, pain and suffering caused by the death of kinsmen and obtain peace of mind in difficult situations.
11	<i>Silk Road</i> by Nick Middleton	The unit is a travelogue which shows the author's hardship and challenges faced while journeying to Mount Kailash through the ancient trade route known as the 'Silk Road'	Pupils learn about the geographical factors, environment, people's lives and the difficulties faced by them for survival.
12	<i>Indigo</i> by Louis Fischer	The biographical piece portrays Mahatma Gandhi fighting against the British for the legal rights of peasants (of Champaran)	Students learn the role and contribution of Gandhi in freeing Indian people from the bondage of Britishers and the difficulties faced by the common, peasants and poor under colonial rule.

Table 2 depicts the themes and values/knowledge conveyed through the chapters related to IKS. The summary of the chapters provides an overview of the kind of information related to IKS. The table also shows the expected values/ knowledge learned by the students through the chapters.

Integration of Indian Knowledge System (IKS) in English Textbooks at Secondary and Higher Secondary Stages of West Bengal Curriculum

Table 3. Chapters Dealing with IKS at Different Stages

Sl. No.	Classes	Total chapters	Chapters with an Indian theme
1	9	12 (in Bliss)	1
2	10	8 (in Bliss)	1
3	11	10 (in Mindscapes)	2
4	12	9 (in Mindscapes)	1

Table 3 depicts the chapters containing the theme of the Indian Knowledge System out of the total chapters in the English textbooks at the Secondary and Higher Secondary stages of the West Bengal Curriculum. There is only one textbook of English in the West Bengal board.

Table 4. English Chapters Containing Themes of Indian Knowledge or Values in West Bengal Curriculum

Class	Name/ Title of Chapter	Theme/ Brief Summary of the Chapters	Values/ Knowledge Learned
9	-	-	-
10	<i>The Passing Away of Bapu</i> by Nayantara Sehgal	This chapter contains the memoir of the author who recounts her and the nation's emotional state after the passing away of Bapu, Mahatma Gandhi.	Students learn the role of Gandhiji in the Indian freedom movement. They will also realise the emotion and respect the Indian people have for Gandhiji.
11	<i>The Place of Art in Education</i> by Nandalal Bose	Nandalal attempted to describe the importance of art education to enhance aesthetic skills and also emphasized on the beauty of art in providing pleasure and a medium to convey self	Pupils learn about the importance of art, Indian culture and tradition. They also came to know about the artist, Nandalal Bose.

12	Strong Roots by APJ Abdul Kalam	The biographical piece portrays APJ Abdul Kalam's childhood days in Rameswaram of Tamil Nadu, traits learned from his parents which later mould his personality.	Students learn the values of communal harmony, the struggles faced by great personalities in life and also about the traditions of different cultures.
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Table 4 depicts the themes and values/knowledge conveyed through the chapters related to IKS of English textbooks of the West Bengal board. The summary of the chapters provides an overview of the kind of information related to IKS. The table also shows the expected values/ knowledge the students will learn after reviewing the IKS chapters.

Comparison between English Chapters of the CBSE Curriculum and West Bengal Curriculum Containing Themes of Indian Knowledge or Values

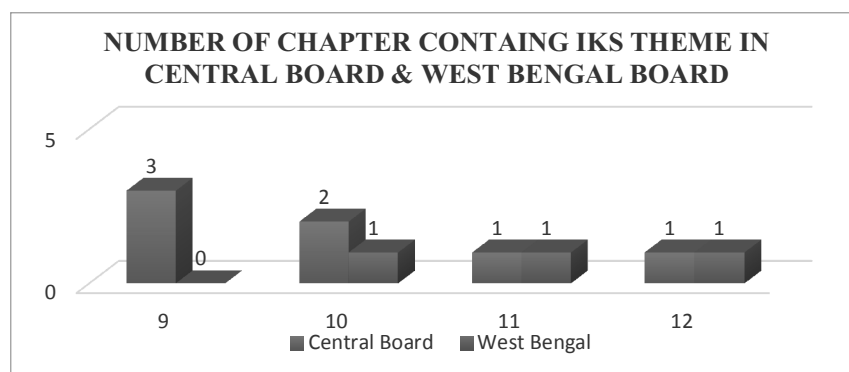


Figure 1

The above **Figure 1** shows the number of chapters in English textbooks of each class having themes related to Indian Knowledge, of both CBSE and West Bengal boards. It is evident from the figure that the number of chapters dealing with IKS is higher in number in CBSE boards than West Bengal board.

Discussion

The Tables and Figure above demonstrate the English textbooks presently followed by the CBSE board and West Bengal board at the Secondary and Higher Secondary stages and the number of chapters containing the theme of the Indian Knowledge System. From the analysis, it can be stated that the number of chapters dealing with IKS is very meagre in both boards. The researchers also found that in the CBSE curriculum, some foreign writers

also conveyed Indian themes (i.e., *Silk Road* by Nick Middleton and *Indigo* by Louis Fischer) besides Indian writers. But in textbooks of West Bengal boards, the IKS theme is reflected in stories written by Indian writers only.

Although, the number of chapters dealing with IKS is very meagre in textbooks of both boards; still it provides a medium to acquire diverse knowledge related to ancient Indian culture, tradition, religion, beliefs, geographical location, lives of people, etc. This helps them to know their roots better and relate to the present-day world.

Conclusion

English has become an integral part of our lives at present. The English textbooks offer students a window to look at the lives of people, histories, diversity of cultures and traditions and to connect with the world of India and abroad. The integration of diverse Indian Knowledge into English language education at different stages provides students with a deeper understanding of India. The students learn to respect the diversity of India and get acquainted with their roots. Keeping pace with this, NEP-2020 also recommended the integration of IKS into the formal education curriculum. This would surely promote the Indian Knowledge System and help preserve rich cultural and traditional values in the upcoming time.

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Chapter-12

**From Silicon Valley to Green Valley:
Bengaluru Schools Leading the
Charge in Sustainable Education**

Kavitha.K

Principal, Army Public School K.Kamaraja Road, Bangalore and Research Scholar,
School of Commerce & Management Studies, Dayananda Sagar University, Bengaluru

Dr. Roohi Kursheed Khan S

Associate Professor & BBA Program Manager, School of Commerce & Management
Studies, Dayananda Sagar University, and Bengaluru

Abstract

The goal of teaching secondary students green human resource management (GHRM) is to develop a workforce that understands ecologically friendly principles. According to (Ren et al., 2018) increasingly salient questions not yet studied in the broader human resource management (HRM) this phenomena examines the complex relationships between how organizational actions affect the environment and how Human Resource Management (HRM) systems are designed, implemented, and impact it.

As part of its dedication to sustainability, GHRM incorporates green ideas into staff development, incentives, and promotions for the school community. Our study uses the Partial Least Squares (PLS) modelling methodology to examine data from 122 respondents, using a convenience sample of 50 teachers (Pirouz, 2012) missing values, or multicollinearity. Partial least squares regression has been demonstrated on both real data and in simulations (Garthwaite, 1994, Tennenhaus, 1998. According to (Ababneh, 2021), the research shows the significant influence of three GHRM activities on teachers' organizational citizenship behaviour toward the environment (TOCBE). These practices are in line with the Ability-Motivation-Opportunity paradigm.

This empirical data highlights secondary education's significant contribution to the advancement of sustainable practices. It demonstrates the transforming power of GHRM and adds to a holistic and ecologically sustainable development

strategy. Secondary schools play a key role in fostering the development of a workforce that is environmentally conscious as they include green ideas into HRM systems.

Keywords: Green HRM, Secondary Education, Sustainable Practices, Eco-Friendly, Workplaces, Teachers Empowerment, Empirical Evidence

1.1. INTRODUCTION

In education, Green Human Resource Management (Green HRM) stands out as a pivotal approach, aiming to equip secondary school students with a profound understanding and active engagement in environmentally friendly concepts. This strategy involves the infusion of green principles into various facets of human capital management within the school community, aligning with a commitment to sustainability. As a potent tool, Green HRM contributes to the creation of eco-friendly educational environments and the cultivation of sustainable practices

Teachers' Organizational Citizenship Behaviour towards the Environment (TOCBE) refers to the discretionary and positive actions undertaken by educators that go beyond their prescribed duties to contribute to environmental sustainability within the educational context. These behaviours may include initiatives such as promoting eco-friendly practices, integrating environmental topics into the curriculum, and participating in school-wide sustainability efforts.

From the global to the local level, addressing climate change and promoting sustainable growth also rely on collaborative problem-identification and problem-solving skills. Our children as the responsible global citizens of tomorrow need to work collaboratively to solve the most pressing environmental challenges that development will impose. Combining sound environmental sustainability competence with sound digital skills is key if young people are to contribute to the twin green and digital transition *as one cannot be achieved without the other*.

Additionally, financial literacy is needed to help tomorrow's Entrepreneurs conduct research before making decisions having a direct or indirect environmental impact, weigh alternatives, understand the offsets and trade-offs and be poised to take on challenges and seize opportunities. More needs to be done to instil the culture of Environmental conservation and equip Students with these skills to ensure that they will be able to work cohesively to solve complex environmental problems and have the capacity to put new technological innovations to safeguard the only planet we call home.

1.2. PURPOSE OF THE STUDY

Assessing the knowledge, perspectives, and experiences of Bengaluru school teachers in the 12th grade on Green Human Resource Management (GHRM) methods is the primary focus of this research. In particular, the research aims to:

Examine the degree of familiarity Bengaluru schools' 12th grade teachers have with the idea of GHRM.

Determine and evaluate the most often used GHRM techniques as seen by Bengaluru's 12th grade instructors in connection to younger pupils.

Examine how, given the particular Bengaluru setting, some GHRM approaches are thought to play a critical role in supporting sustainable development inside organizations.

Examine the views of educators in the twelfth grade regarding the relationship between the influence of specific environmentally friendly HR practices and their real application in startup businesses in Bengaluru.

1.3. STATEMENT OF THE PROBLEM

Preparing students for the dynamic needs of the twenty-first century, where the convergence of technical breakthroughs and consequential environmental concerns, is a critical challenge facing the educational landscape today. With the region developing by leaps and bounds, a consciousness towards environment preservation, both at the individual and collective levels is inescapable and is the need of the hour. Knowledge, skills, values and attitudes in our future generations who refuse to even envisage development without equal importance to protection and restoration of the only home we have is imperative. If education is the foundation of Nation building, the degree to which sustainable development is inculcated in our schools, is a question that begs to be asked.

Even though sustainable development is becoming more and more important, it is unclear how much knowledge Bengaluru school instructors in the 12th grade have about Green Human Resource Management (GHRM) techniques. GHRM has the power to influence future generations' perspectives and create a workforce that is sensitive to environmental principles by serving as a strategy to coordinating human resource activities with environmental sustainability.

1.4. RESEARCH QUESTIONS

In the course of the analysis, the following research questions were addressed in context with **12th-grade** teachers in Bengaluru schools:

Are teachers in Bengaluru schools familiar with the concept of Green Human Resource Management (GHRM)?

In young students within Bengaluru, what are the most commonly implemented GHRM practices according to 12th-grade teachers' observations?

According to 12th-grade teachers in Bengaluru, which GHRM practices play a crucial role in fostering the sustainable development of organizations in the local context?

From the perspective of 12th-grade teachers, is there a noticeable connection between the impact of individual pro-environmental human resource practices and their actual implementation in the analysed young enterprises in Bengaluru?

2. REVIEW OF LITERATURE

The discipline of Green Human Resource Management (GHRM) is a developing area that is becoming more and more prominent in scholarly discourse. Its purpose is to develop a workforce that can navigate a linked society and match human resource operations with environmental sustainability objectives. There are other terms used in this field, such as Sustainable Education (Sterling, 2008) Education for Sustainability (EfS) ((Hicks, 2013)and Environmental Education (Sauvé, 1996). The research highlights the significance of higher education in promoting a green economy and attaining comprehensive sustainable development, adopting the commonly used term Education for Sustainable Development (ESD) (Gao et al., 2019).

According to the study, which examines how higher education affects economic growth, using Green HRM concepts can help create a more sustainable and environmentally conscious economy (Gao et al., 2019). As a means of integrating sustainability concerns with human resource strategies, educational institutions are progressively implementing Green HRM practices. The study looks at what influences the adoption of Green HRM by teaching faculty and how such adoption affects their professional capacities(R. Bhagyalakshmi, 2019).

Green HRM seeks to create a workforce that sustains eco-friendly ideals throughout the employee lifetime and is in line with company green goals.

Green HR practices include both adopting eco-friendly HR procedures and protecting intellectual property. The study highlights how strategically important green human resource management (HRM) is in fostering green workplace cultures and practices that influence long-term performance in healthcare businesses throughout the world (Aggarwal et al., 2023).

The necessity for modern employment solutions is highlighted by the growing rate of unemployment in the European Union, particularly among young people. A rising emphasis on generating green jobs within a sustainable economy is a result of the recognition of the critical role that human resources, especially the youth, play in sustainable economic growth. In order to combat young unemployment and advance the European Union's sustainable development goals, the study promotes proactive policies, investments in education, and the incorporation of green employment initiatives (Acelandu et al., 2015).

Research Gap: There is clearly a research gap in understanding the specific dynamics of Green Human Resource Management (GHRM) practices within educational institutions, particularly in Bengaluru, despite the fact that there is a lot of discourse on the concepts of GHRM, Education for Sustainable Development (ESD), and their impact on various sectors. The amount of information that is now available highlights the importance of green efforts in general as well as their potential impact on sustainable development and economic progress.

Focused research on 12th grade teachers' views and practices about GHRM and how these practices support sustainable development is, nevertheless, lacking in Bengaluru schools. In order to close this gap, the study will look into how familiar 12th grade teachers are with GHRM, what common practices are seen in GHRM, which practices are thought to be most important for promoting sustainable development, and how pro-environmental HR practices are perceived to be related to the implementation of these practices in young Bengaluru business Start-ups.

Essentially, the goal of this study is to shed light on the perspectives of important stakeholders, namely teachers of the 12th grade, about the unique setting of GHRM within Bengaluru's educational system and the part they play in promoting environmentally aware thinking. The project intends to fill this research vacuum and advance knowledge of GHRM's transformational potential in secondary school and its implications for sustainable practices.

3.1 RESEARCH METHODOLOGY

In order to achieve its goals, this study uses a qualitative research methodology. The choice to utilize a qualitative research design stems from the fact that it is well-suited to examining the complex viewpoints and experiences of Bengaluru's 12th-grade teachers with relation to Green Human Resource Management (GHRM) practices. The project intends to collect complete data by utilizing techniques like semi-structured interviews and questionnaires, which enable participants to freely express their observations and opinions.

This study approach's exploratory and interpretive qualities allow for a deeper understanding of how 12th-grade teachers see and evaluate GHRM activities related to sustainable education. The flexibility and depth needed to capture the many facets of GHRM as experienced by the participants are provided by this technique.

3.2 PARTICIPANTS AND PROCEDURES

Seventy educators were contacted by the researcher through letters of invitation that described the goals of the study, emphasizing the importance of their involvement, and guaranteed the confidentiality of the data. In the end, a convenience sample strategy was used to pick 50 current instructors from a variety of schools, yielding a response rate of 71.4%.figure 1 represents the number of educators distributed age wise

This study explores the perspectives of teaching staff members about green recruiting practices and the long-term viability of educational establishments. The principal unit of study is the person, with a particular emphasis on teachers as in table 1 working in government and private schools in Bengaluru's several zones (North, East, West, and South).

Demographic Respondents

Table 1: Age Group of Respondents

Age	Percentage
25-34	25%
35-44	50%
45-54	20%
55-59	5%
above 60	Nil

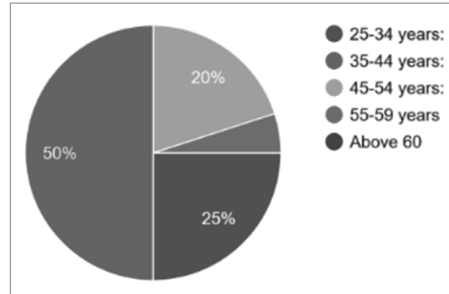


Figure 1: Age group

Table 2: Gender Group of Respondents

Gender	Percentage
Female	95%
Male	5%

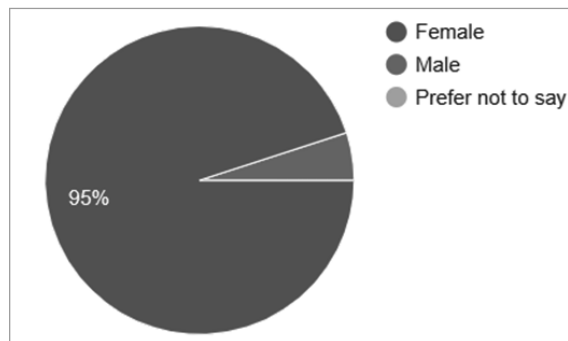


Figure 2: Gender

4. RESULTS

Awareness of GHRM Concept

Over fifty-five percent of the participants said that they are acquainted with the notion of Green Human Resource Management (GHRM).

A significant proportion of participants (25%) said that they were unfamiliar with GHRM.

About 20% of respondents said they were not sure how much they understood about GHRM.

According to the poll, a sizable fraction of participants had a comparatively high level of GHRM knowledge or comprehension.

It's possible that 25% of the participants don't completely understand or are aware of the notion.

Perception of Correlation between HR Practices and Impact

Seventy percent of the respondents think that there is a clear correlation between some eco-friendly HR policies and the real effects they have on Bengaluru firms.

Hardly 5% of participants expressed that they fail to observe any noticeable correlation between the implementation of HR regulations and their overall influence.

Regarding the association, roughly 25% of respondents are unclear or unable to make up their minds.

Many of the participants firmly feel that environmentally friendly HR practices have a genuine impact.

There is variation in opinions as evidenced by the minority (5%) who have a different perspective.

To reach a judgment, the group that is undecided could want more details or justification.

Themes Emerging from Survey Responses:

As figure 3 in world cloud represents emerging survey responses



Figure 3: Word Cloud

Practical Training: The development of sustainable practices is said to need practical learning, which is a crucial GHRM activity.

Bringing Up the Next Generation of Consciousness: A dedication to education and awareness campaigns as a core GHRM practice is indicated by the emphasis on the early instillation of sustainable principles.

Having an Impact on Employee Productivity: A positive impact on worker efficacy is implied by the correlation between increased employee productivity and GHRM practices.

Eco-Awareness Interviews and Resume Screening: A purposeful tactic in line with GHRM protocols that prioritize environmental awareness in recruiting is the inclusion of green criteria in interviews and CV screenings.

Green Education: The emphasis on green training suggests that the significance of ongoing education and skill development for sustainable practices is understood.

Diversity and Inclusion, Workplace Culture, Eco-Friendly Initiatives, and Employee Training: A holistic approach to sustainable development is suggested, incorporating several GHRM principles such as eco-friendly projects, diversity and inclusion, employee training, and good work environments. Incentives for employees who espouse environmental mindset and encourage others to make small incremental changes in their individual and collective processes.

Hiring People Who Share the Organization's Values: A key GHRM tactic is to choose applicants who share the organization's commitment to sustainability, emphasizing the importance of value alignment in the hiring process.

Significance of a Multifaceted Approach to GHRM in Light of Sustainable

The collective responses emphasize the necessity of inclusive and customized GHRM approaches to support long-term organizational development, taking into account a range of strategies such as practical training, awareness-building, recruiting practices that align with values, and ongoing education.

The study results reveal a variety of issues that highlight the complexity of GHRM practises and their importance in fostering sustainability in organizations, particularly in Bengaluru.

The various viewpoints emphasize the necessity of a flexible and inclusive GHRM strategy in order to achieve successful long-term organizational growth.

Inclusion of GHRM in NCF (National Curriculum Framework) and future National educational policies (NEP): GHRM needs to be incorporated in to the curriculum from Primary classes to higher classes in a progressive manner. The philosophy is that culture is ingrained when you “catch them young”. Integration of GHRM mindset in to vocational education, practical skills, and experiential learning with curriculum adaptation is needed. The idea of a modern society which has not lost sight of the importance of the sanctity of planet earth and a society which cherishes and promotes sustainable environment friendly development for a safe place to thrive needs to be instilled at a young age. Teachers can be the Champions to implement this in the school environment.

Infrastructure Development: Enhance the infrastructure of schools by focusing on Green way of living. For eg:

- Renewable energy sources
- Water conservation measures
- Incorporating green spaces
- Waste reduction and recycling
- Green transportation modes
- Composting

Teacher Training and Recruitment: Prioritize teacher training programs specifically designed for Environmental awareness and Green practices. Provide specialized training to teachers on effective teaching methodologies, technology integration, and inclusive education practices. Encourage qualified and motivated teachers by offering incentives such as gift vouchers and public recognition.

Community Engagement and Participation: Foster strong community engagement in Environmental conservation and sustainable development. Encourage the active involvement of parents, community leaders and Government bodies. Legislation of Policies by the School Management and creation of a supportive environment towards Environmental protection in every aspect of our lives is important.

Awareness on development and resultant carbon footprint: Awareness of carbon footprint means understanding how much greenhouse gas emissions, and solid waste generation are caused by the activities of schools, such as energy use, transportation, waste management, and food consumption. It also means Teachers and students taking actions to reduce the environmental impact of schools and to educate students and staff about the benefits of

low-carbon lifestyles. By being aware of their carbon footprint, schools can contribute to the global efforts to mitigate climate change and to promote sustainability.

CONCLUSION

The present study concludes by exploring the knowledge and perspectives of 12th-grade teachers in Bengaluru with respect to Green Human Resource Management (GHRM) practices. The results show that respondents had a varied comprehension of GHRM ideas, with more than half indicating familiarity. Still, a sizable portion are either ignorant or unsure, which highlights the necessity of focused awareness campaigns.

Additionally, most participants saw a clear correlation between eco-friendly HR policies and how they affect Bengaluru firms, which is encouraging given GHRM's responsibility in promoting sustainable growth.

Additionally, most participants saw a clear correlation between eco-friendly HR policies and how they affect Bengaluru firms, which is encouraging given GHRM's responsibility in promoting sustainable growth.

The survey results reveal a variety of issues that highlight the complexity of GHRM procedures. The study highlights the significance of customized and inclusive GHRM approaches by identifying a variety of techniques for promoting sustainability, from green education to real-world learning.

As schools in Bengaluru experience a radical change toward environmentally conscious operations, the research suggests focused interventions to improve teachers' knowledge and comprehension of GHRM. Additionally, it recommends developing a thorough GHRM strategy that integrates a range of techniques to build an educational environment that is sustainable.

This research highlights the critical role that educators play in fostering environmentally sensitive attitudes, offering insightful contributions to the changing field of GHRM in secondary school. GHRM is a strategic instrument that the region may use to integrate human resource practices with environmental stewardship and create a workforce that is aware of eco-friendly concepts as it navigates towards a more sustainable future.

SUGGESTIONS& RECOMMENDATIONS

While the importance and degree of awareness of GHRM has been brought out, suggestions on how the Teacher and the school culture is instrumental

in instilling the concept as “pioneers and champions of change” is lacking in the paper. Few suggestions are as under:

- To incorporate GHRM in school environment, some possible steps are:
- Conducting an environmental audit to assess the current level of environmental performance and identify areas for improvement.
- Developing a green HR policy that outlines the goals, objectives, and strategies for implementing GHRM in school environment.
- Providing training and education to staff and students on environmental issues and GHRM practices, such as waste management, energy efficiency, recycling, etc.
- Encouraging staff and students to participate in green initiatives and activities, such as carpooling, volunteering, planting trees, etc.
- Implementing green incentives and rewards to recognize and motivate staff and students who demonstrate environmental responsibility and leadership.
- Monitoring and evaluating the outcomes and impacts of GHRM practices on the school environment and stakeholders, such as carbon footprint, employee satisfaction, student engagement, etc.

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Chapter-13

**Empowering Communities Through
Indigenous Knowledge:
A Comprehensive Exploration of
Its Role in Education**

Shalu Tyagi

Student, M.Ed. Special Education (Learning Disability), Amity Institute of Rehabilitation
Sciences, AIRS) Amity University Uttar Pradesh

Prof. (Dr.) Jayanti Pujari

Professor, Director, Amity Institute of Rehabilitation Sciences, (AIRS) Amity University
Uttar Pradesh

Abstract

Indigenous knowledge means the traditional ways of teaching, the knowledge, skills, and practices that have been developed and handed down through the generations within a specific community or culture. This knowledge arises with Individual experiences, perceptions, and understandings of the surrounding ecosystems and the natural world and these are often the sources of this information. Several disciplines, such as Resource management, spirituality, medicine, agriculture, and storytelling, and many others are enclosed by Indigenous knowledge. This Research paper probe the definite transformative effects of including indigenous knowledge into the formal education systems in order to promote the cultural sustainability and to empower communities. The article critically examines the historical marginalization of indigenous knowledge in educational contexts and argues for a paradigm shift that moves education closer to inclusion and cultural meaning. With distinctive contribution of indigenous knowledge and recognizing its contribution education can become a means for empowerment, enhancing the identity and self-esteem of indigenous learners. Through Review of the literature, the paper examines effective case studies and projects that have included indigenous knowledge into curricula emphasizing the benefits for academic achievement, cultural pride, and community resilience. This investigation adds to the discussion

around education by offering diverse perspectives to communities, educators, and policymakers interested acknowledging and understanding the diversity of indigenous knowledge in the educational landscape.

Keywords: Cultural pride, Cultural sustainability, communities, Education, Indigenous knowledge, Paradigm shift

INTRODUCTION

The traditional ways of teaching, the unique strategies and the systems created by people over generations refers to the indigenous knowledge. It includes all the perception, wisdoms, skills, practices and acknowledging that indigenous communities have gathered hand have been passed down from one generation to the other orally. This knowledge, which encompasses traditional ecological knowledge, resource management, agriculture, medicine, spirituality, and social organization, usually has to do with a particular environment. Indigenous knowledge integrates numerous aspects of life, culture, and the natural world in a holistic and connected way. It has a strong connection to local setting, showcasing the bond that native communities share with their environment. For the survival of the indigenous people, this knowledge is important for the resilience and sustainable development.

Within specific communities or cultures, indigenous knowledge has been nurtured and transmitted through the years, making it a valuable contribution to the vast fabric of human civilization. Indigenous knowledge is ingrained in individual experiences, perceptions, and in-depth understanding of the knowledge and the environment which surrounds them. It encompasses a wide range of abilities, customs, and practices. The main goal of the study is investigating the transformational potential of integrating indigenous knowledge into educational environments. The aim is not just to recognize the cultural heritage but to acknowledge it and understand it as a tool for encouraging sustainability in culture and empowering communities. Indigenous knowledge has historically been marginalized in educational learning environments and driven to the outside of mainstream curricula. This study proposes a shift in paradigm in education that situates it at the nexus of cultural meaning and inclusivity, paving the way for a more comprehensive and empowered educational process. This research paper seeks to shed light on the contribution indigenous knowledge may offer to education sector. Education is the means of achieving academic success, but it does not only work in the academics, but it also helps to understand and promote cultural pride and increase resilience.

Based on different literature national and international, case studies, this paper examines effective research papers, case studies and projects that have contributed successfully to integrating indigenous knowledge to the curriculum. By emphasizing on the positive effects of these programs such as improved academic performance, increased cultural pride, and increased cultural resilience, this study contributes to the ongoing discussion regarding education. With the goal to encourage a deeper awareness and acceptance of indigenous knowledge within the field of education, it is intended to present a range of perspectives that speak to communities, educators, and policymakers.

OBJECTIVE OF STUDY

To analyze integration of Indigenous Knowledge into formal education systems with a focus on empowering communities, fostering cultural sustainability, and enhancing the overall educational experience for learners.

REVIEW OF LITERATURE

In the paper *The Integration of Indigenous Knowledge in Education* by Paquin (2023) explores the incorporation of Indigenous knowledge into education. The literature review covers decolonization through education, best teaching practices for integration, and the impact of ontological differences on the integration process. The study emphasizes the importance of building authentic relationships with local Indigenous communities before attempting knowledge integration. It addresses the global context of Indigenous knowledge suppression, with a focus on efforts in the Pacific Northwest and Canada. The project aims to transform education to be inclusive of various ways of knowing, advocating for communities with suppressed identities and cultures. Key questions include models for integration, the impact on student learning, and how ontological differences regulate integration.

Silva, Pereira, and Amorim (2023) conducted a systematic review on the integration of indigenous knowledge in schools. They investigate the incorporation of native wisdom into elementary education in developing and/or emerging nations, emphasizing the challenges and results of these initiatives. The study determines what influences how indigenous culture is presented. In schools and emphasizes the neglect of indigenous knowledge in formal education systems. Through a review of 14 selected studies, the research highlights the importance of understanding the local context for proposing interventions that facilitate intercultural dialogue. The article

addresses the historical and social complexities surrounding the confrontation between indigenous and Western knowledge, emphasizing the need for a comprehensive analysis of both local and global factors.

In the paper *Lessons and Insights for Namibian Higher Education Institutions on How to Include and Support Indigenous Knowledge in Teacher Training Education* by Amuthenu (2023) they explore strategies for effectively incorporating and supporting Indigenous Knowledge in teacher training education in Namibia. The research, based on a qualitative approach and analysis of 30 peer-reviewed articles, identifies six key areas where Indigenous knowledge can be integrated into higher education programs in the areas of teaching and learning, curriculum development, evaluation and review, research, and human resources. The outcomes highlight the value of a dedicated, cooperative approach including educators, curriculum designers, communities, and administrative personnel. to sustainably include and promote indigenous knowledge in teacher training programs. The paper underscores the significance of integrating indigenous knowledge to enhance cultural diversity awareness and promote harmonious multicultural education.

In the paper *Enhancing Student Engagement and Learning Outcomes via Teachers' Indigenous Knowledge and The cultural Competencies* by Suarta, et al. (2022), they investigate how learning results are affected by students' perceptions of the indigenous knowledge and cultural competences of their literature lecturers. The study, conducted in Indonesian higher educational institutions, uses 536 literature students using a time-lagged quantitative research approach. The findings suggest that learning outcomes in cognitive, social, and interpersonal abilities are positively influenced by students' perceptions of teachers' indigenous knowledge and cultural abilities. The study also highlights the significant mediating role of students' engagement in enhancing learning outcomes. The findings emphasize the importance of providing teacher training and development to enhance the transfer of knowledge to students in literature studies. The study bestows by addressing the unique cultural context of Indonesia and providing practical insights for academicians and school administrators.

In paper, *Endorois community of Kenya's work The role of Indigenous knowledge: customs and principles in achieving socio-economic well-being and equality* by Sergon, et al. (2022) They investigate how the community in Kenya might benefit from Indigenous knowledge in order to promote fairness and socioeconomic well-being. The study highlights the significance of Indigenous economic practices and values in sustaining community identity and well-being. It examines the impact of adoption of liberal economic

paradigms and the displacement of indigenous African economic systems, identifying them as causes of socio-economic and ecological crises in Africa. The article suggests that integrating Indigenous economic practices can counterbalance the drawbacks of the capitalist neoliberal model. The study employs an ethnographic approach and qualitative methods to investigate the Endorois community in Baringo County, emphasizing the importance of preserving Indigenous knowledge for community sustainability and equity.

In the paper *The gift of education: Jacob's exploration of how indigenous knowledges may impact public education in the future*, et.al (2018) advocates for the incorporation of Indigenous Understandings in Educational Institutions to promote Indigenous self-determination and enhance overall education. Drawing on past curriculum transformation efforts and testimonies at legislative hearings in Oregon, the authors argue that Indigenous Knowledges can improve relationships within and between communities. They frame this perspective as a gift that educators and policymakers can embrace for the benefit of all students. The article emphasizes the diversity and plurality of Indigenous Knowledges and challenges historical misrepresentations of Indigenous peoples. The authors propose that Indigenous Knowledges offer valuable insights for shaping the future of education, aligning with culturally sustaining and revitalizing pedagogies.

The Alaska Native Knowledge Network is discussed in the paper *Creating an Environment for Indigenous Knowledge in Education*: Barnhardt (2007) outlines a ten-year educational restoration effort in Alaska focused on reintegrating Indigenous knowledge systems into the school curriculum. The aim is to connect students' learning experiences in school with life outside, restoring a traditional sense of place and enriching education for all. The chapter discusses the significance of regional elders, cultural standards, traditional values, cultural camps, atlases, and experiential learning. The focus is on a place-based education, which moves from learning about local culture to instructing with and through it. The Old Minto Cultural Camp serves as an example, offering a cultural immersion experience and contributing to cross-cultural understanding. The chapter concludes with the importance of recognizing various forms of knowledge and worldviews in education, promoting mutual recognition and adaptation.

ROLE OF INDIGENOUS KNOWLEDGE IN EDUCATION

- **Cultural Importance:** Indigenous knowledge infuses traditional practices, beliefs, and understanding into the curriculum, bringing it cultural connection to education. It assists individuals to establish

a sense of identity and pride by enabling them to connect with their cultural background.

- **Complete Learning:** Indigenous knowledge provides a complete or holistic approach to learning, covering various aspects of life, nature, and community. This perspective provides a better understanding of the world and promoting integrated learning.
- **Cultural Pride and Persistence:** it been shown through many case studies, effective researches and projects that indigenous knowledge have positive outcomes into curricula comprising of increased cultural pride and resilience.
- **Conservation of Traditional Skills:** Indigenous knowledge includes skills that have been passed down through generations like storytelling, craftsmanship and many more, to preserve these skills, and passing on valuable cultural practice to the future generations has been incorporated in education.
- **Strengthen Problem-Solving:** Indigenous knowledge frequently includes useful problem-solving techniques that have been cultivated throughout time in particular communities. By implementing context based and specific solutions, knowledge can be implemented into the classroom which will helps students' in improving their critical thinking and problem-solving skills.
- **Understanding of Cultural variety:** Indigenous knowledge-based education promotes an awareness of cultural variety. Students learns about several different points of view, which promotes acceptance, comprehension, and a global perspective.
- **Environmental Responsibility:** Sustainable techniques and a thorough awareness of the surrounding environment are frequently included in indigenous knowledge. By teaching students to appreciate and protect natural resources, including this information into the classroom helps encourage responsible environmental behaviour.
- **Progress in Socioeconomic:** By identifying and making use of regional resources and customs, the integration of indigenous knowledge into education can support socioeconomic development. This approach encourages self-reliance and promotes sustainable development, Within the indigenous communities.
- **Conservation of Traditional Skills:** Traditional methods of farming, handicrafts, and storytelling are examples of skills that have been passed

down through the years as part of Indigenous knowledge. Using these abilities in education aids in the transmission of important cultural practices to forthcoming generations.

The points mention above draws attention to the diverse and valuable contributions that indigenous knowledge can make to the development of an inclusive, culturally aware, and successful educational system.

CONCLUSION

This study concludes by highlighting the transformative potential of incorporating indigenous knowledge into formal education systems and highlighting its role in promoting cultural sustainability, empowering communities, and improving the quality of education as a whole. A significant obstacle to acknowledging the great contributions of indigenous knowledge has been its historical marginalization within educational environments. But in order to close this gap, a paradigm change toward inclusivity and significance in culture is suggested. The study draws attention to the various aspects of indigenous knowledge, from its cultural significance and holistic teaching methods to the preservation of traditional skills and methods for solving problems.

For empowering the indigenous communities Education can help as a tool, by fostering the cultural pride, and building sustainability through the combination of indigenous knowledge into education. The review of literatures examined in this research, show promising results, such as enhanced cultural resilience, higher levels of pride in one's culture, and better academic achievement. In addition, inclusion of indigenous knowledge in classrooms fosters a greater awareness and respect and acceptance for cultural diversity.

A variety of perspectives are presented to students, encouraging acceptance, understanding, and an awareness of global issues. Indigenous knowledge places a strong emphasis on environmental responsibility, which is in line with the pressing need for sustainable practices and resource conservation. This study promotes the importance of indigenous knowledge's recognition and integration into the educational system, adding to the ongoing discourse on education. It urges communities, educators, and authorities to collaborate together to acknowledge the abundance of knowledge embedded in indigenous traditions. By doing so education can then effectively serve as a catalyst for identity development, empowerment, and the preservation of cultural heritage.

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Chapter-14

Concept Maps: As Indigenous Technology and Innovation: A Literature Review.

Dushyant Pal

Research Scholar, Amity Institute of Rehabilitation Sciences, AUUP

Deepthi Ahuja

Assistant Professor, Amity Institute of Rehabilitation Sciences, Amity University.

Abstract

Background: Children having specific learning disabilities (SLD) generally demonstrate issues in acquiring new knowledge and retaining that information in a traditional educational setting. Education technology plays a very important role in the learning process of children with SLD. Now the use of concept maps has been increased significantly as it helps to make the topics easier and makes teaching process effective and visualized for the children.

Objective: The aim of this research survey was to find out the awareness, usage and impact of concept maps among children with Specific Learning Disabilities and how it is helping the students in removing barriers in the learning process.

Method: A literature search was done from the various articles, research papers, case studies, surveys conducted by researchers, experimental studies, done using the concept maps among the students with Specific learning disabilities from the Google scholar, research gate, web of science from the last ten years.

Results: The study highlighted the role of concept maps to bridge the gap in educational outcomes for the children with SLD. The study shows the positive impact while using the concept maps in the teaching learning process. The students were able to achieve higher achievement scores compared to pre-test compared to the traditional chalk and duster method.

Conclusion: This research showed that the integration of concept maps promises an avenue to foster meaningful learning experience to the children with SLD also it is now evident that the 21st century classrooms are incomplete without the blend of technology as this shift from teaching in big paragraphs is now shifting

to the simple and easy to understand concept maps. The concept maps used by the teaching professional plays a crucial role to removing the barriers and

Keywords- *Concept maps, Indigenous technology and innovation, Student with disabilities.*

INTRODUCTION

Concept Maps- Concept maps are one of those effective and useful tool that can be used to simplify the concept in an easier way, it plays a very crucial role in the field of special education where the students are coming from different disabilities and the sharing of accurate knowledge should be there, by the help of concept maps this can be done easily by the teaching professionals. The concept maps are also known as mind maps or cognitive maps. They are being used to show the connection between two pieces of information with the help of lines, arrows and nodes and bit of information. It shows the major or the important points about any particular topic which makes It easier to understand the whole concept in less time. It helps the student in learning as well as in the problem solving which help the students in real life. This study assesses the concepts or concept maps' values and adaptability for use in education and other disciplines. The graphical representation of knowledge that aids in information organization as well as comprehension is called a concept map. Concept maps may be used to simplify complicated information, which supports students' learning processes and facilitates the exploration of ideas across a range of fields, including business and research in addition to education. The primary goal of utilizing these concept maps is to support learners in actively engaging with that specific idea without getting distracted by other material that isn't relevant to the topic being taught; this is a component of active learning. Concept maps facilitate the retention of complex ideas and topics by providing a visual representation of the information, helping students and learners grasp the fundamental concepts and reasoning. Concept maps may be utilized to foster critical, creative thinking and practical problem-solving outside of the classroom and institutional setting.

Concept maps serve as a kind of empty canvas on which you can sketch ideas for critical thinking exercises, problem-solving exercises, and target-based planning exercises including creativity. Students must use their imaginations since they must evaluate every possibility that relates

to the subject matter or that may be included in the idea map. Concept maps and creativity are two tools that may be used to solve challenges, and both students and professionals can benefit from this approach. In our technologically sophisticated environment, concept maps serve as a guide to help them comprehend and remember the knowledge. It helps students become deeply knowledgeable about the subject, enhances their creativity, sharpens their capacity for solving problems, and motivates students to learn actively even when they are studying difficult subjects. Concept maps offer great potential for those who learn visually and may guide students with their many ways of presenting the information that aid in learning and comprehending the topic. They can play a crucial part in the constantly changing field of teaching and education. The concept map is not useful in just for education and only for students with disabilities but it is also being used in the inclusive classroom because it caters for the kinds of learners whether, they are students with or without disabilities. The use of concept maps can be helpful for making strategies in different discipline and teachers are being benefited by the concept maps because it saves time and planning becomes easier. Also with the help of technology and creativity the concept maps can be crafted in an innovative and attractive way which grabs the attention of the child and creates an urge to learn through them.

INDIGENOUS TECHNOLOGY AND INNOVATION

Indigenous technology and innovation encapsulate a dynamic spectrum of traditional knowledge, practices, and inventive solutions developed by indigenous or native communities to address their specific needs within cultural, environmental, and social contexts. These elements are deeply interwoven with the identity, history, and values of indigenous peoples, reflecting their unique ways of understanding and interacting with the world. At the heart of indigenous technology is a profound connection to cultural traditions and heritage. It serves as a tangible expression of the intimate relationship between indigenous communities and their surroundings, emphasizing the interconnectedness of people, land, and spirituality. Whether in the Arctic tundra, Amazon rainforest, or Australian outback, indigenous technologies are forged within the crucible of cultural identity, passed down through generations as a living legacy.

Sustainability and environmental harmony are fundamental principles guiding indigenous technological practices. These communities are often stewards of their ecosystems, developing innovations that work in harmony with the environment. From sustainable agricultural practices that align with natural cycles to resource management techniques that prioritize long-term ecological balance, indigenous technology reflects an ethos of responsible custodianship of the Earth's resources.

A holistic approach distinguishes indigenous technology, addressing various facets of life, including food production, medicine, housing, and craftsmanship. This comprehensive perspective is grounded in the understanding that various elements of life are interconnected and interdependent. Innovations often serve multiple purposes within the community, reflecting a holistic worldview that integrates practicality with cultural and spiritual significance. Artisanal and craft traditions showcase indigenous innovations in creating tools, clothing, and artifacts using locally available materials. These practices are not just utilitarian but are imbued with cultural symbols, stories, and aesthetic considerations. The innovations in craftsmanship demonstrate the ingenuity and adaptability of indigenous communities, showcasing the ability to thrive in diverse environments through creative expression. Adaptation and resilience are hallmarks of indigenous innovation. Throughout history, indigenous communities have faced myriad challenges, including changes in climate, colonization, and displacement. In response, indigenous technology has evolved, demonstrating a capacity for innovation and adaptation over time. This resilience is not only a testament to the ingenuity of these communities but also a source of inspiration for addressing contemporary global challenges.

In the modern era, there is a growing recognition of the value of indigenous knowledge in addressing global issues such as climate change, biodiversity loss, and sustainable development. Collaborations between indigenous communities and external entities can foster knowledge exchange, leading to innovations that benefit both indigenous and broader societies. However, this recognition also brings forth challenges, including the risk of cultural appropriation and the need for equitable partnerships that respect and empower indigenous voices.

In conclusion, indigenous technology and innovation represent a profound intersection of cultural identity, sustainability, and inventive

solutions. Valuing and respecting indigenous knowledge systems not only contributes to the preservation of diverse cultures but also offers pathways to more sustainable and culturally inclusive approaches to technology and innovation on a global scale. As the world seeks solutions to complex challenges, the wisdom embedded in indigenous technology provides valuable insights for building a more harmonious and interconnected future.

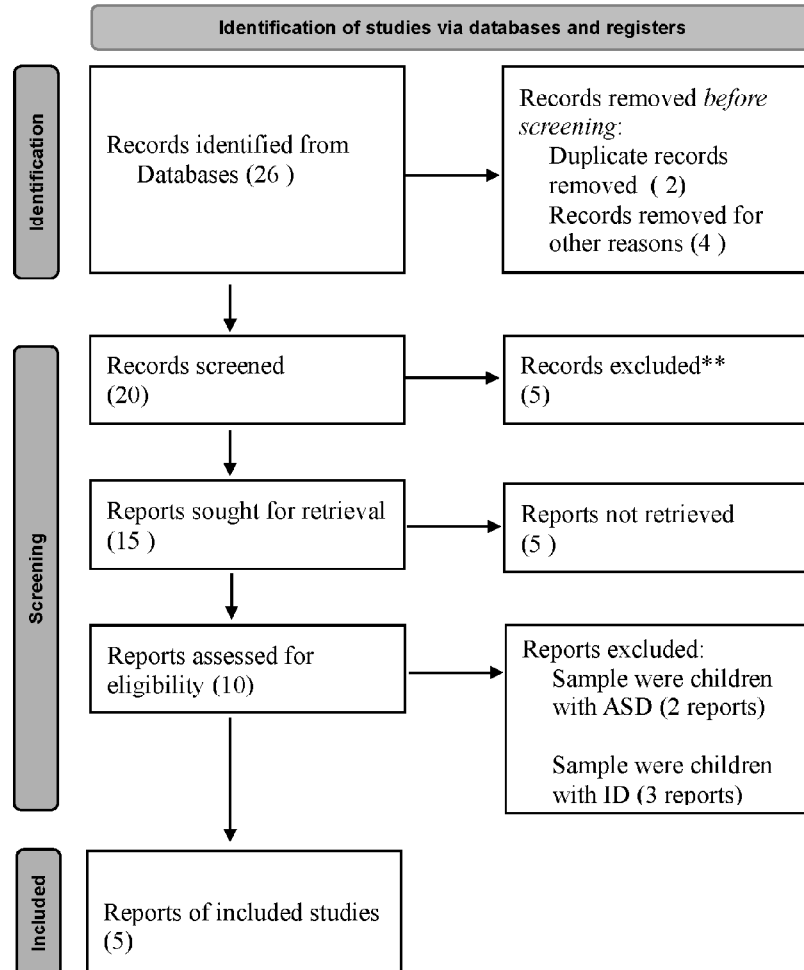
SPECIFIC LEARNING DISABILITIES

Students with Specific Learning Disabilities (SLD) are those who have difficulty with cognitive issues that affect their ability to process language in both spoken and written forms, which includes reading, writing, and performing mathematical calculations. As a result, they generally do poorly in school and develop low self-esteem because their subconscious mind tells them that they are not good enough. Teachers can support these students through using a wide range of tools and techniques for instruction. A conglomeration of neurological conditions known as specific learning disabilities can have an impact on an individual's personal and professional life. This condition is also known as the "hidden disability," as opposed to impairments such as autism, cerebral palsy, or intellectual disabilities, which are readily identifiable, this condition is always concealed. Through a battery of tests, only a qualified educator can determine if a kid has certain disabilities or not. Prenatal or postnatal conditions, such as injuries to the mother or child or chemical or drug overconsumption, may be the cause of various disorders. Additionally, the low birth weight may be the cause of it. A youngster with certain learning disabilities might be identified by their actions or accomplishments. These kids exhibit reluctance while speaking and a lack of confidence in themselves.

METHODOLOGY

Table 1: Searched database and yield reports

Serial Number	Database Searched	Yield Reports
1.	Google scholar	09
2.	Research gate	06
3.	Marshall digital scholar	05
4.	Taylor and Francis Online	06
Total	04	26



REVIEW OF LITERATURE

Lusk(2014): The study shows that the concept maps is very useful tool while teaching the students with special need. The pupils in the tenth grade were split up into two groups: the experimental group, which used graphic organizers, and the control group, which received instruction using the traditional technique. Both groups had both males and girls. Following a 4-week intervention period for both groups, students in both groups were given a post-test questionnaire consisting of 25 items. The research study shows that there is significant improvement between the pre-test and the post-test although both the groups shows a positive improvement

but the experimental group was much ahead than the controlled group. In the conclusion he have stated that the concept maps when used with indigenous knowledge can be helpful for the students with disabilities. The use of indigenous innovation can be helpful for making the concept maps attractive for the students.

Mann(2014): The study shows that the concept maps along with sequence chain cab be helpful in the performance of the learner when the concept mapping is used while teaching to the group in the school. A total of 92 eighth-grade students, 48 of whom were male and 44 of whom were female, were included in the sample size for the study. The students were then split into two groups: an experimental group and a controlled group. Following completion of the pre-test, which consisted of questions drawn from the three chapters of the West Virginia state book, the intervention was administered for six weeks. According to data gathered following the post-test, both students with and without disabilities scored better than they did on the pre-test, and graphic organizers helped students understand the reading material.

Ponze, mayor, and Lopez(2014): The study shows that the concept maps are is helpful when there is a blend of the indigenous technology when they used the computer based concept maps in the class the students were able to improve their skills in the reading and comprehension and writing. A sample of 2,468 pupils from 12 different schools were used in the study. In each school, the intervention was provided for the whole scholastic semester. Following the intervention, a standardized test was administered to gauge improvements in reading and comprehension skills. The results demonstrated that the group receiving computer-based instruction surpassed the group receiving traditional instruction by a significant margin.

Casteleyn, Mottart, and Valcke (2013) The study shows that the graphic organizers are more effective in the learning than the traditional chalk and duster method and also from the audio recorded method of teaching. A representative sample of thirty-eight intermediate EFL learners was used for the study, and these learners were further separated into two groups. Concept maps will be used to provide the intervention to one group, while audio recordings will be used for the other. Both groups received a multiple-choice vocabulary questionnaire following a four-week intervention; the results indicate that while both groups' vocabulary knowledge improved between the pre- and post-tests, there was still a substantial gap between them.

Askin A.(2007) have discovered in his research that using concept mapping to teach social science concepts at the school level can be advantageous. Twenty-three fifth-graders from Turkey's Ata Elementary School in Trabzon were used in his study. He has selected the subject of temperature and heat. He split the group into two, and after giving each group several lessons, the first group studied using the chalk and duster approach, and the second group received instruction using the concept mapping method. Based on a 20-question pre- and post-test, the conclusion was reached. According to his findings, both groups did well in comparison to the pre-test; however, there was a difference between the experimental group and the group that received instruction using the conventional method: the experimental group did better in the post-test. It led him to the conclusion that educating kids with SLD can benefit greatly from idea mapping.

CONCLUSION

In the realm of special education, concept maps have been essential in helping children with special needs better comprehend topics by making them simpler and easier to understand. These days, innovative and simple-to-understand content is being produced using contemporary computing technologies. The study demonstrates how educators are teaching Social Studies to children with SLD using concept maps, and they have observed a favorable effect on the kids' academic growth in the subject. According to Lusk's study, the group that received idea mapping instruction surpassed the control group by a substantial margin. In a different research, Mann used a sample size of eight students, four males and four girls. He discovered that the group that received instruction using concept maps was able to complete tasks better and had higher accomplishment levels. Every study came to the same conclusion: concept maps are incredibly beneficial for kids with special needs. Concept maps are becoming more and more popular due to their positive effects on the learning process, which include providing instructors and students with extra support since they make teaching simpler. In order to enhance their creativity and help them remember the material when needed, students are now teaching themselves how to make idea maps for themselves. The improvement of the learning process through the application of idea maps, when done correctly, is another theme of this theme paper.

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Chapter-15

How Mythological Stories Contribute to the Indian Knowledge System for Children with Learning Disability

Honey Kasana,

Student, M.Ed. Special Education (Learning Disability), Amity Institute of Rehabilitation Sciences, Amity University

Sourabh Kumar Mishra,

Assistant Professor, Amity Institute of Rehabilitation Sciences, Amity University.

Abstract

Mythological stories, also known as myths or legends, are ancient tales passed down through centuries in various civilizations worldwide. These stories often feature gods, goddesses, heroes, and strange creatures, and explain the beginnings of the planet, natural events, and cultural practices. They can be found in folklore, religious writings, and oral traditions, providing insights into collective consciousness and values. These stories often contain important moral, spiritual, and intellectual messages that still impact people today. Mythological tales have been crucial in forming people's perceptions of the world and their place in it, whether they are creation stories from indigenous civilizations or Indian epics like the Ramayana and Mahabharata. Particularly for children with learning difficulties, mythological stories offer a unique and significant addition to the Indian knowledge system. These stories offer a multi-sensory and captivating learning environment because of their inherent moral dimensions, cultural depth, and visual complexity. Better comprehension and retention are facilitated by this method, especially for children with cognitive difficulties who frequently have various learning styles. Mythological stories have cultural significance that cultivates a feeling of identity, belonging, and connection to Indian ancestry, so providing a significant framework for education. The aim of this research is to examine and comprehend the distinctive contributions made by mythical stories to the Indian knowledge system, with particular attention to how these stories affect children who have learning difficulties.

INTRODUCTION

In India, myths are more than just stories about gods and heroes; they are also repositories of spiritual knowledge, moral lessons, and cultural legacy. These stories have been handed down through the decades, influencing millions of people's lives and forming the nation's collective consciousness. There is a hidden possibility among all of this rich mythology and legend, one that has great promise for kids with learning impairments. The enormous effects that mythical stories can have on the education and development of children who are struggling academically have come to the attention of educators, psychologists, and advocates in recent years. Learning-disabled children frequently struggle with typical educational resources that may not meet their specific cognitive needs or learning styles. Nonetheless, mythical tales provide an engaging and all-encompassing method of education that surpasses limitations related to language, aptitude, and understanding. These stories foster inquiry, creativity, and development with their rich visuals, engrossing stories, and universal themes.

The everlasting themes of heroism, compassion, resilience, and the never-ending conflict between good and evil are at the core of Indian mythology, and they speak to individuals of all ages and cultures. These tales are living, breathing things that change and adapt to the demands of new generations rather than being static relics from the past. Mythological tales provide a rich and varied learning experience for kids with learning difficulties, stimulating their senses, fostering their imagination, and advancing their cognitive and emotional growth.

Children with learning difficulties can study complicated concepts in a safe and supportive atmosphere by delving into the world of myth and legend. By dissecting characters and their motivations, they can improve their language abilities through narrative and debate; by empathizing with the victories and hardships of the heroes and heroines, they can build emotional intelligence and critical thinking skills. In addition, legendary tales give kids with learning difficulties a feeling of cultural identification and belonging. In a world where people with disabilities are frequently marginalized, these stories serve as a potent reminder of their inherent value and dignity as contributing members of the community. Children with learning difficulties can have a greater understanding of the diversity of human experience and a sense of pride in their cultural heritage by engaging with mythical stories.

The numerous ways that mythical tales add to the Indian knowledge system for kids with learning difficulties will be thoroughly examined in this essay. These stories provide a multitude of chances for personal development, from improving cognitive abilities to encouraging social and emotional growth.

MYTHOLOGICAL STORIES

Indian mythology is a rich fabric of cultures, faiths, and customs, and the stories within it are as varied and colorful as the nation itself. Ancient literature like the Vedas, the Ramayana, the Mahabharata, and the Puranas, which are filled with stories of gods, goddesses, demons, and heroic figures, are the foundation of Indian mythology. These tales offer profound insights into the essence of existence and the human predicament, and they are much more than just light entertainment. They are infused with profound spiritual and philosophical importance. Indian mythology contains a huge pantheon of deities, each of whom represents a distinct facet of the divine: the nurturing and protecting mother goddess Devi, the fiery and strong Shiva, and the kind and merciful Vishnu. These deities are not cold, impersonal entities; rather, they are deeply engaged in human lives, engaging, mentoring, and occasionally even taking on human form in order to preserve justice and bring cosmic equilibrium back. Legendary heroes such as Rama, Krishna, and Arjuna stand beside the heavenly creatures, their deeds serving as examples of virtue, bravery, and responsibility. Timeless concepts like dharma (goodness), karma (activity and its consequences), moksha (liberation), and the never-ending conflict between good and evil are at the core of Indian mythology.

These tales are not merely artifacts of the past; rather, they are still shaping the social, religious, and cultural environment of contemporary India, impacting everything from literature and art to customs and celebrations.

REVIEW OF LITERATURE

Steven Walker²⁰⁰⁹ conducted a study on Young people's mental health: The spiritual power of fairy stories, myths, and legends. This study suggests that young people experiencing emotional and psychological distress can benefit from incorporating world myths, folklore, and fairy tales into their therapeutic approach. Fairies in folklore often serve as healers and intermediaries between the natural world and human affairs. However, when used metaphorically, these mythological creatures can terrify children and

cause psychological harm. The essay suggests that mental health professionals can use these narratives innovatively and sensitively to cultural differences.

(Altima.Gracy Khare.al) conducted a study on the Influence of Cultural and Mythological Folklore on Indian Societal Values.According to this study, Moral consciousness is a crucial aspect of human experience and is believed to be brought back to society by gods. Philosophical and theological communities have long studied morality's rational foundations. Religion plays a significant role in Indian society, teaching behavioral ideals that empower individuals to overcome life's challenges. Understanding the diversity of Indians and civilizations is essential, as a single exercise performed in one place doesn't guarantee its application in another.

(Avioni, Grazzani,,Ornaghi,2017) conducted a study on Social and emotional learning for children with learning disability: Implications for inclusion. This paper discusses the key role of social and emotional learning programs for children with Learning Disability (LD).To help children with learning disabilities (LD), this study addresses the critical role that social and emotional learning programs play. The challenges that children with learning disabilities may have in the classroom are covered in the first section of the essay. These challenges include low self-efficacy and self-esteem, problems with friendship and social isolation, and externalized and internalized behavior problems.

Following that, the relationship between social and emotional learning curricula and learning disabilities is examined, highlighting the advantages of social and emotional learning for LD students. In order to support students with LD's academic and social inclusion, the paper's conclusion emphasizes the necessity of universal social and emotional learning.

(Madhuri Kulkarni, Sarika Kalantre, Shubhangi Upadhye.al 2001) conducted a study Approach to learning disability. This study states that One of the main reasons why school-age children perform poorly academically is learning disabilities (LD). Developmental abnormalities known as learning disabilities typically appear during the course of a student's regular schooling. These impairments cause a big discrepancy between an individual's actual potential and daily performance. Dyslexia, dysgraphia, and dyscalculia are impairments that affect reading, writing, and math. These conditions can be caused by neurological abnormalities, perinatal issues, or genetic susceptibility. Diagnosis involves medical checks, vision and hearing tests, and academic achievement analysis. Education testing and psycho-behavioral assessments are crucial steps. Experts interpret these tests. Most children

learn to deal with disabilities through Individualised Remedial Education Plans (IEPs), which help them integrate into regular schooling.

Curt Dudley-Marling and Don Dippo conducted a study on *What Learning Disability Does: Sustaining the Ideology of Schooling*. The article explores the relationship between learning disabilities and schooling assumptions and social and political contexts. It argues that learning disabilities explain contradictions and anomalies in schooling, sustaining dominant assumptions in schooling and society. The field of learning disabilities maintains a status quo where inequitable distribution of social goods is seen as a natural consequence of an “equitable” meritocracy. The authors urge learning disabilities practitioners to support students by actively confronting inequities in schooling and society.

(Nancy K. Barga 1996) conducted a study *Students with Learning Disabilities in Education: Managing a Disability*. The study examined the management of learning-disabled students from kindergarten to college, focusing on their success in the classroom. Nine students from a public four-year institution were studied using qualitative research techniques. The findings revealed that students faced gatekeeping, stigmatization, and labeling during their school years. They used both constructive and destructive coping strategies, with positive ones including specific strategies, self-improvement techniques, and relying on supporters. The study highlights the importance of understanding and addressing the unique challenges faced by these students.

Negative coping strategies caused stress for the pupils and were referred to as “passing.” Pupils used passing strategies in order to get through school without disclosing their impairment. The findings of this study highlight the necessity for these students to self-advocate and have important ramifications for university instructors and school administrators who, in accordance with federal legislation, provide assistance for students with LD.

Robert B. Brooks conducted a study on *Storytelling and the Therapeutic Process for Children with Learning Disabilities*. According to this study, Psychotherapists often adapt their intervention strategies to meet the unique learning needs of children and teenagers with learning difficulties. They must consider the interconnected relationships between cognitive and emotional functioning. The Creative Characters therapeutic storytelling technique is particularly beneficial for learning-impaired children and adolescents. This method involves telling stories that capture key aspects of the child’s reality, enhancing emotional and cognitive development, and boosting self-worth.

Kanu Priya, 2023 conducted a study on *Mythology for Children's Education: A Study of Select Indian English Mythological Texts for Children*. This study explores the role of mythology in literature, particularly in Indian English children's literature, in teaching children about environmental, social, and personal development. It highlights how mythology helps shape young people's identities and promotes positive interactions with the outside world.

The essay examines kid-friendly books that use Indian mythology to teach life lessons, highlighting its importance in understanding human nature and fostering national identity. This essay explores various interpretations of Indian mythology, aiming to teach children about the environment, society, and personal development. It highlights the timeless relevance of mythology, which can be used to instill national identity and help address contemporary issues, thereby enhancing their understanding and problem-solving abilities.

ROLE OF MYTHOLOGICAL STORIES IN THE INDIAN KNOWLEDGE SYSTEM

Mythological tales are essential to the Indian knowledge system because they preserve cultural legacy, impart moral principles, stimulate critical thinking, encourage creativity, incorporate interdisciplinary learning, celebrate diversity, and stimulate individual and collective development.

Transmission of Cultural Heritage: India's cultural heritage is preserved through mythological stories, which act as archives for antiquated customs, beliefs, and ideals. Children are taught about the nation's many religious traditions, historical occurrences, and social mores through these stories, which helps them feel more rooted in their culture.

Moral and Ethical Education: The deeds of gods, heroes, and other mythological creatures are replete with moral lessons and ethical conundrums found in Indian mythology. Children learn about morality (dharma), karma (responsibility), compassion, honesty, and integrity via interacting with these stories. These lessons offer a basis for moral judgment calls and personal growth.

Investigation of Universal Themes: Mythological narratives delve into ageless subjects that cut across societal divides, such as friendship, love, selflessness, and the pursuit of wisdom and enlightenment. Children learn about the universal themes of the human condition and the interdependence of all beings by looking at these issues through the prism of Indian mythology.

Development of Critical Thinking abilities: Children learn to understand symbolism, comprehend allegory, and identify underlying themes when they analyze mythological stories, which calls for the development of critical thinking abilities. Through their interaction with intricate stories and a wide range of characters, students learn to think critically, analyze data, and assess opposing viewpoints.

Promotion of Creativity and Imagination: Children's imaginations and creativity are sparked by mythological stories, which encourage them to imagine fanciful worlds, write original stories, and express themselves via art, music, and storytelling. Children who use their natural creativity are able to acquire critical cognitive abilities and cultivate a lifelong love of learning.

Integrating Multidisciplinary Education: Indian mythology covers a broad spectrum of topics, such as literature, philosophy, geography, history, and religion. Children participate in interdisciplinary learning through the study of mythical stories, bridging the gaps between different academic fields and developing a comprehensive awareness of the universe.

Cultural Diversity and Inclusion: The diverse range of stories found in India's mythology, which originates from various languages, regions, and religious traditions, is a reflection of the nation's cultural diversity. Children develop an understanding of and respect for cultural diversity through the study of mythological stories from a variety of backgrounds, which promotes inclusivity and empathy.

8. Inspiration for Progress and Innovation: Stories from mythology frequently tell,

heroism, and inventiveness, demonstrating the victory of human resourcefulness over misfortune. Children are inspired to follow their dreams, overcome challenges, and make valuable contributions to society by these tales

LEARNING DISABILITY

Neurodevelopmental disorders known as learning disabilities impact a person's capacity to effectively acquire, process, retain, or communicate information. These disorders can have an impact on an individual's academic achievement, social relationships, and day-to-day functioning. These problems result from variations in how the brain interprets and reacts to information, not from a lack of intelligence or effort traits.

Types include some of the following:

Dyslexia: Impairs reading comprehension and language processing, leading to issues with spelling, word decoding, and understanding.

Dyscalculia: Impairs mathematical aptitude, resulting in difficulties with computation, problem-solving, and comprehending numerical ideas.

Dysgraphia: Impairs writing abilities; causes problems with handwriting, spelling, and planning ideas on paper.

Auditory Processing Disorder (APD) Language development, comprehension, and following directions can all be impacted by Auditory Processing Disorder (APD), which is characterized by difficulties processing and interpreting auditory information.

Visual Processing Disorder (VPD): Causes problems with reading, writing, and spatial awareness by impairing the capacity to accurately interpret visual information.

CONTRIBUTION OF THE MYTHOLOGICAL STORIES IN THE INDIAN KNOWLEDGE SYSTEM FOR CHILDREN WITH LEARNING DISABILITY

The Indian knowledge system heavily relies on mythological stories, which are particularly beneficial for children with learning difficulties since they meet their individual requirements and learning preferences.

Engagement and Interest: Children with learning difficulties can find great enjoyment and focus in mythological stories since they frequently contain vivid imagery, colorful characters, and fantastical themes. These tales provide a captivating and engrossing experience that can pique interest and cultivate a passion for education.

Sensory Stimulation: Multimodal learning experiences are beneficial for a lot of kids with learning problems. Mythological stories offer a multimodal feast that appeals to several senses, making learning more approachable and pleasurable. They do this by combining dramatic storylines, vivid sights, and captivating sounds.

Simplified Concepts: Allegory, metaphor, and symbolism are frequently used in mythological stories to convey abstract and difficult concepts. This can aid in the simplification of complex ideas and help children with learning difficulties who might have trouble understanding language or abstract thought processes by making them more tangible.

Moral and Social teachings: Moral and social teachings imparting virtues like bravery, kindness, honesty, and empathy are frequently found in mythological legends. Children with learning disabilities can learn and practice social skills, emotional regulation, and moral reasoning in a supportive and safe environment with the help of these stories.

Cultural Connection and Identity: Mythological stories can provide a feeling of identity and belonging for kids with learning difficulties, who may struggle with social skills and self-esteem. These tales are an essential component of Indian culture and history, giving learning-disabled kids a common cultural point of reference and a reason to be proud of who they are.

Therapeutic Potential: For kids with learning difficulties, mythological tales can be therapeutically beneficial. They can be used as instruments for stress alleviation, emotional expression, and the improvement of coping mechanisms. Children with learning difficulties may find solace, motivation, and empowerment in these stories by connecting with the characters and their struggles.

CONCLUSION

In the context of the Indian knowledge system, mythological tales are extremely important, especially for young children who struggle with learning difficulties. These stories, which are rich in symbolism and cultural legacy, provide a stimulating way to engage young brains who might not be able to succeed in more conventional educational environments. The power of mythical stories to arouse strong emotions, vivid images, and sensory experiences is one of its most amazing qualities. This multifaceted teaching method is particularly effective for children with learning impairments. Children can immerse themselves in a world that transcends the limitations of their disability through the vibrant characters, fantastical locations, and epic adventures contained in these books. This fosters a sense of wonder and curiosity that fires their intellectual growth. These moral teachings broaden their perspective on the world and offer a framework for handling difficulties in life with dignity and honor. Furthermore, myths provide children with learning difficulties with a stronger sense of connection to their heritage and roots by acting as a portal to cultural heritage and identity. Through delving into the myths and stories of their ancestors, young kids can cultivate a positive sense of identity and self-worth by strengthening their sense of pride in and belonging to their cultural heritage. In addition, mythical tales are a very useful tool for teachers and other carers who work with kids who have learning difficulties because of their versatility.

These stories can be adapted to fit a variety of learning preferences and methods through storytelling, role-playing, art, or music, offering a customized and inclusive approach to teaching. All things considered, mythical tales are a veritable gold mine of insight and motivation, providing kids with learning difficulties with a means of exploration, development, and self-actualization inside the intricate web of Indian knowledge.

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Chapter-16

**Promoting Indigenous Knowledge Through
Indian Knowledge System [IKS]**

Aashima Rawat

Student, Integrated B.Ed. M.Ed. Special Education (Intellectual Disability),
Amity Institute of Rehabilitation Sciences, Amity University Uttar Pradesh

Professor Dr. Jayanti Pujari

Director and Professor, Amity Institute of Rehabilitation Sciences,
Amity University Uttar Pradesh.

Abstract

The present paper delves into the intricate structure of Indigenous knowledge within the context of the Indian Knowledge System, aiming to shed light on the importance of preserving and promoting traditional wisdom. Through a comprehensive thematic analysis of existing literature, this study seeks to unravel the multifaceted dimensions of Indigenous knowledge, exploring its role in sustaining cultural heritage, ecological harmony, and community resilience. The thematic analysis method employed in this research methodically synthesizes insights from a wide range of scholarly publications, including ethnographic investigations, narratives of history, and research from multiple disciplines.

The research scrutinizes the challenges faced by Indigenous knowledge in the contemporary landscape, including issues of cultural erosion, marginalization, and the impact of globalization. The thematic analysis highlights the importance of education in reviving Indigenous knowledge. The research examines several initiatives and pedagogical approaches that have been successful in bringing Indigenous knowledge into both formal and informal educational contexts.

This research paper contributes to the ongoing discourse on the preservation and promotion of Indigenous knowledge through the lens of the Indian Knowledge System. Through the synthesis of varied viewpoints and the utilization of an extensive range of research, the study offers a thorough understanding of the obstacles and prospects linked with Indigenous knowledge.

Keywords: *Ethnographic Investigation, Indigenous Knowledge, Indian Knowledge Systems, Marginalization*

Introduction

Indigenous knowledge System is referred to as a collective body of information, abilities, customs, and inventions created, and conserved within a specific community with common historical, cultural, and geographic links. This knowledge, which is usually passed down orally through the previous generation into the next, is deeply ingrained in the traditions and life experiences of the native people. It is increasingly essential to acknowledge and protect Indigenous knowledge systems in the dynamic world of global knowledge sharing. Indigenous Knowledge (IK), which has its foundation in the customs, methods, and knowledge of regional groups, offers priceless insights into resilient cultures and sustainable living. In the context of India, a country rich in cultural diversity and traditional knowledge, the IKS is essential for advancing Indigenous Knowledge and preserving the heritage of Indigenous cultures.

The wide and varied array of ancient wisdom, and customs that have developed over centuries on the Indian subcontinent is represented by Indian Knowledge System (IKS). This knowledge system, which have their roots in India's rich philosophical, scientific, and cultural legacy, cover a broad spectrum of subjects, including mathematics, astronomy, philosophy, medicine, ecology, and agriculture. IKS have a profound influence on people's worldviews and daily lives, being intricately woven into the nation's sacred, social, and cultural framework.

India, with its myriad ethnic groups and distinct regional cultures, boasts a wealth of traditional knowledge systems that have sustained communities for generations. The collective learning included in old books, stories from the past, customs, and regional discoveries is summarized through the Indian Knowledge System. By integrating this rich tapestry of knowledge into modern-day frameworks, there exists a unique opportunity to bridge the gap between tradition and modernity, unlocking the potential for sustainable development while respecting the cultural integrity of indigenous communities.

A strong understanding of India's future goals with regards to education, wellness, environmental sustainability, and other areas will be included in "Knowledge of India," together with information about prehistoric India along with its impacts to today's India and the country's achievements and problems. These components will be accurately and scientifically integrated into the curriculum of the schools; specifically, Indian Knowledge Systems, comprising ethnic wisdom as well as indigenous and traditional methods of

instruction, will be studied and integrated into the subjects of astronomy, mathematics, the study of philosophy, meditation and yoga, healthcare, technology, literary works, sports, and governance, politics, & conservation (National Education Policy 2020).

The students are encouraged to view courses in a larger context by being able to recognize how intertwined and interdependent information is due to the integration of IKS in colleges and universities. Active investigation, logical reasoning, and critical thinking contribute to the IKS. Through the study of IKS, students may cultivate their intellectual agility and creativity by learning how to tackle problems from a variety of viewpoints and developing their analytical abilities. Studying IKS in the context of modern education, fosters interdisciplinary research that may lead to a harmonious synthesis of diverse knowledge systems. One such program is the five-year integrated B.Sc.-M.Sc. program in Biology and Ayurveda provided by the Department of Sanskrit & Indic Studies established in year 2020 in JNU. (Kumar, 2023).

It is recommended that IKS courses at the post graduate and under graduate levels account for 5% of a student's total credits in accordance with the UGC guidelines. The apex body has planned to educate more than 1.5 million educators on IKS before 2025, and recently launched a virtual IKS MOOC course. A few research projects pertaining to conventional Indian knowledge, especially those concerning architecture and agriculture, have also been directed and supported by IKS.

The government of India has launched Bharatiya Khel, a project to bring 75 traditional Indian sports into classrooms throughout the nation, in accordance with the IKS and National Education Policy (NEP). There will be interschool tournaments, involving a single seasonal game chosen each month. Certificates of appreciation will be awarded to the top-performing instructors and schools. The 75 native games come from various regions of the nation. The intention goes beyond merely endorsing Indian video games in classrooms. The real goal is to increase inclusivity in school sports activities. For example, popular school activities like badminton and basketball lack infrastructure in rural schools. Their ability to participate should not be restricted. As a result, It is suggested that physical education instructors at their schools implement regional games (Murthy,2022).

IKS integration is emphasized in programs at all educational levels under the 2020 implementation of the Indian National Education Policy (NEP). The National Credit Framework (NCF) has enabled students to receive credit in programs that cover ancient Indian disciplines and arts.

The Goal for the year 2047 of Bharatiya Rasayanasastra program also includes IKS. The higher education system of India is shaped and governed in large part by the University Grants Commission. The Indian Knowledge System (IKS) needs to be included into curriculum at all educational levels, and Indian languages, artistic endeavors, and traditions should be encouraged (NEP 2020).

Indigenous knowledge (IK) is information that's specific to an ethnic group that is gathered by locals via experiences, unofficial experiments, and close observation of the surroundings in a particular culture. The real knowledge of a particular population is what comprises more recent encounters with contemporary technologies along with experiences based on traditions. The local population, which includes women, cattle herders, landless laborers, farmers, and rural artisans, are the guardians of indigenous knowledge systems. They addressed the idea of indigenous knowledge and the different ways that African communities employ it in a variety of contexts, and the need for reforming indigenous knowledge. Additionally, they have put out several crucial points to think about going forward such as strengthen local communities' ability to create, disseminate, and use their IK, to expand on the aforementioned agenda, plan an international IK conference, create an innovation budget to encourage effective IK practices etc. (Chikaire Et al., 2012).

Colleges and universities may help students develop an awareness of social obligation, empathetic thinking and moral judgment by integrating the values outlined in IKS through their courses. The direction and leadership of higher education in India are greatly influenced by the statutory body. The NEP 2020 has put a great focus on the advancement of Indian dialects art forms, and cultures and has recommended integrating the IKS within curriculum at all educational levels. The UGC has been actively advocating for measures to support and preserve the rich legacy of IKS in many disciplines, that have been handed down via generations of information producers and practitioners, in order to assist the smooth integration of the IKS with modern day topics (Kumar, 2023).

More than 1,000 university professors around the country are being prepared with an overview of Indian traditions, culture and way of life, to allow them to offer appropriate classes about Indian knowledge systems for both the undergraduate and graduate degrees from the upcoming academics session. According to sources in the Ministry of Education's Indian Knowledge Systems (IKS) division, the training is being provided in light of the University Grants Commission's intentions to launch two

credit courses that will provide an overview of Indian culture and customs in the first years of both UG and PG programs at universities across the nation. Over the course of the next two years, UGC actually plans to train 15 lakh teachers in IKS (Jigeesh and Chakrabarty, 2023).

Limitation of the reviewed literature

Regardless of the mistaken belief that everything done by indigenous people is inherently harmonious with the environment, IK is occasionally accepted without question. There is historical proof showing indigenous peoples have over farmed, overgrazed, or overcultivated the land, all of which are environmental crimes. To believe that IK is always “good,” “right,” or “sustainable” is false. Wider social and economic influences can also undermine indigenous knowledge. The world’s cultures are becoming more and more homogenized due to factors including the expansion of domestic and worldwide markets, the establishment of religious and educational institutions, and the effects of other development processes (Grenier, 1998). Under circumstances of environmental deterioration, IK that was formerly well-adapted and successful for sustaining a living in a given ecosystem might become unsuitable (Thrupp, 1989).

Furthermore, another critical challenge is the lack of recognition and institutional support for IKS within mainstream educational, governmental, and research institutions. The dominance of Western-centric knowledge paradigms often marginalizes indigenous knowledge, hindering its integration into policy-making and development initiatives. Lastly, much of the traditional knowledge within IKS is transmitted orally or documented in indigenous languages, which may pose challenges for accessibility and dissemination. Language barriers can impede efforts to translate and integrate indigenous knowledge into formal educational curricula or research programs.

Analysis

The research paper “Promoting Indigenous Knowledge through Indian Knowledge System [IKS]” explores the vital role of Indigenous Knowledge Systems (IKS) in preserving and promoting traditional wisdom in India. It emphasizes the need for integrating IKS into mainstream education and policy frameworks to ensure its continued relevance. The paper discusses the diverse facets of IKS, ranging from medicinal practices to sustainable agriculture, highlighting its potential contributions to contemporary challenges, its ability to sustain the cultural heritage for the community and maintaining ecological harmony. By advocating for the recognition and

incorporation of IKS, the research underscores the significance of respecting and leveraging indigenous knowledge for holistic societal development and cultural preservation.

Conclusion

The study “Promoting Indigenous Knowledge through Indian Knowledge System [IKS]” emphasizes how important it is to recognize and incorporate Indigenous Knowledge Systems into modern processes. Considering the rich conventional wisdom ingrained in IKS, the research promotes a paradigm change in policymaking and education. The study calls for a comprehensive strategy to guarantee the ongoing preservation and development of indigenous knowledge, highlighting its potential benefits to a range of industries, including healthcare and agriculture. The article argues that adopting IKS not only improves cultural heritage but also provides creative answers to current problems, promoting a more inclusive and sustainable future by encouraging a symbiotic link between modern education and traditional concepts.

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Chapter-17

**The Implementation of SQ4R Technique for
the Improvement of Reading Skills,
Comprehension and Attention Span
of CWLD in Inclusive Setup**

Arisha Usmani,

M.Ed. Special Education Scholar, Amity Institute of Rehabilitation Sciences, Amity
University Uttar Pradesh.

Anuj Srivastava,

Assistant Professor, Amity Institute of Rehabilitation Sciences,
Amity University Uttar Pradesh.

Abstract

This research paper aims to investigate the effect of the SQ4R technique on the improvement of reading comprehension and attention span of children with learning disabilities in an inclusive setup. The SQ4R(the S-survey, Q-question ,R-read,R-recite,R- review, R-write)technique is a well-known reading strategy that helps students to comprehend and retain information better. Inclusive education is a growing trend in the education system, where children with disabilities are educated in the same classroom as their non-disabled peers. This study will explore the effectiveness of the SQ4R technique in improving the reading comprehension and attention span of children with learning disabilities in an inclusive setting. The SQ4R technique is relevant to the indigenous knowledge in current scenarios by providing the students different intrusions at the same time to learn. The study has reviewed thirty-two (32) research articles through searching both online and offline journals.All the review papers which were published in the period of 2023 to 2016 were given due consideration in this review study. The findings of this study will contribute to the development of effective teaching strategies for inclusive education and will preserve indigenous knowledge in learning.

Keywords:- Implementation, SQ4R, Technique, Improvement, Reading skills, Comprehension, Attention span, Children with learning disabilities, indigenous knowledge,Inclusive setup.

INTRODUCTION

Learning disabilities are a common problem among children in inclusive settings. Children with learning disabilities often struggle with reading comprehension and attention span, which can negatively impact their academic performance and overall quality of life. The SQ4R technique is a reading comprehension strategy that has been shown to be effective in improving reading comprehension and attention span in children with learning disabilities. The purpose of this research paper is to examine the effect of the SQ4R technique on the improvement of reading comprehension and attention span of children with learning disabilities in an inclusive set up. The paper will review the literature on the SQ4R technique, learning disabilities, and inclusive education. It will also present the methodology used in the study, including the sample size, data collection methods, and data analysis techniques. Finally, the paper will discuss the findings of the study and their implications for educators and parents of children with learning disabilities in inclusive settings.

Reading comprehension and attention span are two important skills that are essential for academic success. Children with learning disabilities often struggle with these skills, which can lead to poor academic performance and low self-esteem. Inclusive education is a model of education that aims to provide equal opportunities for students with disabilities to learn alongside their peers without disabilities. However, these students often require specialized instruction and support to meet their unique needs.

One instructional strategy that has been shown to be effective in improving reading comprehension and attention span is the SQ4R technique. SQ4R stands for Survey, Question, Read, Recite, Review, and Reflect. This technique involves a series of steps that help students to actively engage with the material they are reading, which can improve their comprehension and retention of information.

The purpose of this research paper is to investigate the effect of the SQ4R technique on the improvement of reading comprehension and attention span of children with learning disabilities in an inclusive set up.

The research will be done with thematic study based on the analysis of various studies conducted. The findings of this study will contribute to the understanding of the effectiveness of the SQ4R technique in improving reading comprehension and attention span of children with learning disabilities in inclusive classrooms. The results of this study may have implications for instructional practices in inclusive classrooms and may

inform the development of interventions to support the academic success of students with learning disabilities.

SQ4R TECHNIQUE

SQ4R is a study technique that stands for Survey, Question, Read, Recite, Review. It is a method of active reading and studying that helps students comprehend and retain information more effectively.

1. Survey: Skim through the material to get an idea of what it is about. Look at headings, subheadings, and any bold or italicized words.
2. Question: Formulate questions based on the headings and subheadings. This helps to focus your attention and gives you a purpose for reading.
3. Read: Read the material carefully, paying attention to the information that answers your questions.
4. Recite: After reading a section, try to recall the information and answer your questions without looking back at the text.
5. Write : the students are supposed to write whatever they can recall and remember from the text they read.
6. Review: After finishing the entire reading, review the material by summarizing the main points and answering any remaining questions.



Fig. 1.1 describing the sq4r.

The SQ4R technique is a study method that was developed by Francis P. Robinson, an American education psychologist, in the 1940s. The acronym

SQ4R stands for Survey, Question, Read, Reflect, Recite, and Review. The technique is designed to help students improve their reading comprehension and retention of information by actively engaging with the material.

The SQ4R technique involves several steps. First, students survey the material by skimming through the headings, subheadings, and any bold or italicized text to get a general idea of what the reading is about. Next, they generate questions based on the material they have surveyed. These questions help to focus their attention on the most important information and provide a framework for understanding the material.

After generating questions, students read the material carefully, paying close attention to the answers to their questions. They then reflect on what they have read, making connections to their own experiences and knowledge. Next, they recite the information they have learned, either by summarizing it in their own words or by answering their questions out loud.

Finally, students review the material to reinforce their learning and ensure that they have retained the information. The SQ4R technique has been shown to be effective in improving reading comprehension and retention of information, making it a valuable tool for students of all ages and academic levels.

Overall, the SQ4E technique is a comprehensive study method that helps learners to engage with the material, to understand it better, and to retain the information effectively.

READING SKILLS

Reading skills refer to the ability to understand written text, interpret its meaning, and extract relevant information from it. These skills include decoding words, recognising vocabulary, understanding sentence structure, identifying main ideas and supporting details, making inferences, and drawing conclusions. Good reading skills are essential for academic success, as well as for everyday life activities such as reading instructions, emails, and news articles.

Reading skills refer to the abilities and strategies that individuals use to understand, interpret, and analyse written text. These skills include:

1. **Phonemic Awareness:** The ability to identify and manipulate individual sounds in words.
2. **Phonics:** The ability to associate letters with their corresponding sounds.
3. **Vocabulary:** The knowledge of words and their meanings.

4. Fluency: The ability to read with accuracy, speed, and expression.
5. Comprehension: The ability to understand and interpret the meaning of text.
6. Critical Thinking: The ability to analyse and evaluate the content of text.
7. Active Reading: The ability to engage with the text by asking questions, making connections, and predicting outcomes.
8. Note-taking: The ability to summarize and record important information from the text.
9. Skimming and Scanning: The ability to quickly locate and identify specific information in the text.
10. Metacognition: The ability to reflect on one's own reading process and make adjustments as needed.

COMPREHENSION

Comprehension is a dynamic process in which information from the text and knowledge possessed by the reader interact to enable the reader to construct meaning before, during, and after reading. Comprehension is the complex cognitive process involving the intentional interaction between reader and text to extract meaning.

The ability to utilize lower order reading processes (including decoding and vocabulary knowledge) and higher order reading processes (including relation of text content to schema and conscious controllable processing) to understand concepts and ideas (Pressley, 2000).

Reading comprehension refers to the ability to understand information presented in written form. While this process usually entails understanding textbook assignments, reading comprehension skills also may affect one's interpretation of directions on exams, labs, and homework assignments and completion of job applications or questionnaires.

We define reading comprehension as the process of simultaneously extracting and constructing meaning through interaction and involvement with written language.

ATTENTION SPAN

Attention span refers to the length of time a person can focus on a particular task or activity without becoming distracted or losing interest. It is the amount of time that an individual can concentrate on a specific task

or stimulus before their attention starts to wander. Attention span can vary depending on factors such as age, cognitive ability, and the nature of the task or activity. For example, young children typically have shorter attention spans than adults, and tasks that are repetitive or uninteresting may be more challenging to maintain attention on than tasks that are engaging or novel.

Attention span refers to the amount of time a person can concentrate on a task or activity without becoming distracted or losing focus. It is the length of time a person can pay attention to something before their mind wanders, or they become bored. The attention span can vary depending on the individual and the task at hand.

CHILDREN WITH LEARNING DISABILITY

Children with learning disabilities have difficulty processing and retaining information, which can affect their ability to learn and perform in school. Some common learning disabilities include dyslexia, dyscalculia, and attention deficit hyperactivity disorder (ADHD). These children may struggle with reading, writing, math, and organising information. It is important for parents and educators to provide support and accommodations to help these children succeed academically and socially. This may include specialized instruction, assistive technology, and individualised learning plans.

A learning disability is a neurological disorder that affects a person's ability to learn or use specific skills, such as reading, writing, math, or communication. It is not related to intelligence or lack of effort, but rather a difference in how the brain processes information. Learning disabilities can range from mild to severe and can affect different areas of learning. People with learning disabilities may require specialized instruction and support to succeed in school, work, and daily life.

Children with learning disabilities have unique characteristics that can affect their academic performance and social interactions. Some of the common characteristics of children with learning disabilities include:

- 1. Difficulty with reading, writing, or math:** Children with learning disabilities may struggle with basic academic skills, such as reading, writing, or math. For example, a child with dyslexia may have difficulty reading and comprehending written text, while a child with dyscalculia may struggle with basic math concepts.
- 2. Poor memory:** Children with learning disabilities may have difficulty remembering information, such as instructions, facts, or dates. For example, a child with ADHD may have trouble remembering to complete tasks or follow through on instructions.

3. Poor attention span: Children with learning disabilities may have difficulty focusing on tasks or paying attention in class. For example, a child with ADHD may have trouble staying focused on a lesson or activity for an extended period of time.
4. Difficulty with organization and planning: Children with learning disabilities may struggle with organising their thoughts and planning out tasks. For example, a child with executive functioning difficulties may have trouble organising their schoolwork or planning out their day.
5. Social difficulties: Children with learning disabilities may struggle with social interactions and making friends. For example, a child with autism may have difficulty understanding social cues or engaging in conversation with peers.
6. Low self-esteem: Children with learning disabilities may struggle with low self-esteem and feelings of inadequacy. For example, a child who consistently receives poor grades or struggles with basic academic skills may feel discouraged and frustrated.

It is important to note that each child with a learning disability is unique and may exhibit a combination of these characteristics to varying degrees. Additionally, children with learning disabilities may also have strengths and talents in other areas, such as art, music, or athletics.

The Rights of Persons with Disabilities (RPWD) Act, 2016, provides the following definition for "learning disability" under Section 2(i):

"Learning disability" refers to a condition typically occurring in children recognized by an imperfect development of basic psychological processes involved in understanding or in using spoken or written language. This disorder may manifest itself as a difficulty to listen, think, speak, read, write, spell, or do mathematical calculations. It includes conditions like perceptual disabilities, dyslexia, dysgraphia, dyscalculia, and developmental aphasia.

It's important to note that the RPWD Act of 2016 in India defines and protects the rights of persons with disabilities, including those with learning disabilities, and ensures they receive appropriate support and accommodations.

ISSUES FACED BY CWLD IN READING, COMPREHENSION AND ATTENTION SPAN: -

Children with learning disabilities in reading comprehension and attention span face a range of challenges that can impact their academic and social development. Some of the key issues they may face include:

1. Difficulty with decoding: Children with learning disabilities in reading comprehension may struggle with decoding words, which can make it difficult for them to understand the meaning of what they are reading.
2. Poor working memory: Children with attention span difficulties may have trouble retaining information in their short-term memory, which can make it hard for them to follow along with complex texts or instructions.
3. Limited vocabulary: Children with learning disabilities in reading comprehension may have a limited vocabulary, which can make it difficult for them to understand the meaning of unfamiliar words or concepts.
4. Poor comprehension skills: Children with learning disabilities in reading comprehension may struggle to understand the main idea of a text or to make connections between different parts of a story or article.
5. Difficulty with sustained attention: Children with attention span difficulties may have trouble staying focused on a task or activity for an extended period of time, which can impact their ability to learn and retain information.
6. Poor motivation: Children with learning disabilities in reading comprehension and attention span may become discouraged or disengaged from learning if they feel like they are not making progress or if they are struggling to keep up with their peers.

Children with learning disabilities in reading comprehension and attention span require specialized support and interventions to help them overcome these challenges and reach their full potential. This may include individualised instruction, accommodations, and assistive technologies, as well as ongoing monitoring and assessment to track their progress and adjust their support as needed.

SQ4R TECHNIQUE FOR NEUROTYPICAL CHILDREN

The SQ4R technique can be helpful for neurotypical children as well as children with learning disabilities. The technique helps children to actively engage with the material they are reading, which can improve comprehension and retention. Additionally, the SQ4R technique can help children develop effective study habits and strategies that can be useful throughout their academic careers.

The SQ4R technique is a study strategy that can be helpful for neurotypical children who are looking to improve their reading comprehension and retention. The steps of the SQ4R technique are as follows:

1. **Survey:** Before reading a text, have the child survey the material by looking at headings, subheadings, and any visual aids such as graphs or charts. This will help them get an overview of the content and prepare them for what they are about to read.
2. **Question:** Encourage the child to generate questions based on the material they have surveyed. This will help them focus their reading and give them a purpose for reading.
3. **Read:** Have the child read the text carefully, paying attention to the questions they generated and looking for answers to those questions.
4. **Recite:** After reading a section of the text, have the child recite or summarize what they have just read in their own words. This will help them reinforce their understanding of the material.
5. **Reflect:** Encourage the child to reflect on what they have learned so far and how it relates to their prior knowledge or experiences.
6. **Review:** Once the child has finished reading the entire text, have them review the material by going back over their questions and answers, as well as any notes or summaries they have made.

By following the SQ4R technique, neurotypical children can improve their reading comprehension, retention, and overall understanding of the material they are studying. It can also help them develop critical thinking skills and become more engaged and active learners.

SQ4R TECHNIQUE FOR CHILDREN WITH LEARNING DISABILITY

The SQ4R technique can be helpful for children with learning disabilities. The technique is designed to help students actively engage with the material they are reading, which can improve comprehension and retention. For children with learning disabilities, this can be particularly helpful as they may struggle with these skills. The SQ4R technique can also help children with learning disabilities develop effective study habits and strategies that can be useful throughout their academic careers. However, it is important to note that the technique may need to be adapted or modified to meet the specific needs of each individual child.

The SQ4R technique can be helpful for children with learning disabilities in several ways:

1. **Improving comprehension:** SQ4R helps children with learning disabilities to comprehend the material better by breaking it down into smaller, more manageable chunks. This technique encourages them to actively engage with the material and think critically about what they are reading.
2. **Enhancing memory:** SQ4R helps children with learning disabilities to remember the material better by using repetition and active recall. This technique encourages them to review the material multiple times, which helps to reinforce the information in their memory.
3. **Reducing anxiety:** SQ4R can help reduce anxiety in children with learning disabilities by providing them with a structured approach to studying. This technique helps them to feel more in control of their learning and reduces the stress associated with feeling overwhelmed by the material.
4. **Increasing motivation:** SQ4R can help increase motivation in children with learning disabilities by making the material more interesting and engaging. This technique encourages them to take an active role in their learning and helps them to see the value in what they are studying.

Overall, the SQ4R technique can be a valuable tool for children with learning disabilities as it helps to improve comprehension, enhance memory, reduce anxiety, and increase motivation.

INCLUSIVE SETUP

An inclusive set up refers to a social or physical environment that is designed to accommodate and welcome people from diverse backgrounds, abilities, and identities. It involves creating an atmosphere that promotes equity, diversity, and inclusion, and ensures that everyone feels valued, respected, and supported. This can include things like accessible facilities, diverse representation in leadership and decision-making, and policies and practices that promote inclusivity. An inclusive set up is important in creating a sense of belonging and community, and in promoting equal opportunities for all individuals.

An inclusive setup refers to a physical or virtual environment that is designed to accommodate and welcome people of all abilities, backgrounds, and identities. It involves creating an environment that is accessible, safe, and respectful for everyone, regardless of their race, gender, age, religion, sexual orientation, or disability. An inclusive setup may involve providing

accommodations such as wheelchair ramps, closed captioning, or sign language interpreters, as well as promoting diversity and equity through policies, practices, and attitudes. The goal of an inclusive setup is to create a sense of belonging and community where everyone feels valued and supported.

Inclusive education in India is unfortunately exclusive to children with disabilities. The number of children with disabilities (CWD) enrolled in school significantly declines with each successive level of schooling. CWD rarely progress beyond primary school, and only 9% complete secondary education. There are fewer girls with disabilities in schools than boys. Due to lack of inclusive schools, children with special needs (CWSN) have no other option than the National Institute of Open Schooling (NIOS).

SQ4R TECHNIQUE RELEVANT TO INDIGENOUS KNOWLEDGE

The SQ4R method, which stands for Investigate, Ask, Read, Read, Review, is a multidisciplinary learning method that can be used reflectively to engage and improve citizens' knowledge. In the context of an indigenous perspective, "Survey" Some of the work involved exploring a variety of resources, such as Indigenous literature, oral history and community information, to gain a holistic view of the topic. "Question" The steps encourage students to generate questions related to Indigenous ways of knowing and promote a deeper understanding of the cultural context. and quit;Read" The setting allows people to immerse themselves in the heritage of indigenous peoples, learning from a variety of sources, including elders, storytellers and traditional texts.

"Check" In this section, students will be able to memorise, articulate and reinforce their understanding of citizenship education. This process is important for oral cultures, where information is often transmitted orally and in social conversations. By sharing the knowledge gained, one has the opportunity to maintain and perpetuate the wisdom of the citizenry. "Check" The final part of the SQ4R process, Stage, encourages reflection on the whole learning process, encouraging students to re-examine and strengthen their understanding of citizenship education.

SQ4R Technology and adaptation play an important role in connecting basic knowledge with new research opportunities. Indigenous knowledge, embedded in cultural and oral traditions, can be seamlessly woven into the fabric of SQ4R culture. "the research" For example, this may involve exploring different Indigenous perspectives on specific issues and promoting diversity within Indigenous communities. This inclusive approach ensures

a comprehensive understanding that transcends contexts and encompasses the richness of indigenous education systems.

"Questions" At this point, students can use the values and principles embedded in Indigenous culture to ask questions about the interconnectedness of all things. This is consistent with many indigenous world-views that emphasise oneness, reciprocity, and deep connection with the natural world. "Read" The sessions will be immersive experiences that explore Indigenous stories, myths and legends, allowing students to understand the depth and complexity of Indigenous knowledge.

"Check" At this stage, oral techniques become central as students verbally express their understanding of basic concepts. This walk not only emphasizes individual learning, but also connects with the indigenous nature of indigenous communities, where knowledge is shared through storytelling and communication. becomes a form of cultural expression, fostering a sense of community and wisdom.

Finally, "Overview" The sessions offer opportunities for students to reflect on their journeys in synthesising citizenship education. This process of reflection is important for understanding the growth of indigenous consciousness and the importance of ongoing dialogue with indigenous communities. It promotes a respectful and reciprocal approach to learning and emphasizes the need for humility and openness to diverse perspectives in Indigenous education systems.

Hence, the SQ4R technique, when applied with sensitivity and cultural awareness, serves as a bridge between academic study methods and the profound wealth of indigenous knowledge. It honours the diversity of indigenous perspectives, promotes active engagement with oral traditions, and fosters a deeper appreciation for the interconnectedness that lies at the heart of many indigenous world-views.

REVIEW OF LITERATURE

Churat,et.al, (2022) the authors aimed to examine the effectiveness of SQ4R technique in improving critical reading skills of 11th grade students. Her SQ4R model, which consists of six phases (investigate, question, read, answer, record, and review), was used to design learning activities for the reading course. Thirty-one Thai w grade 11 participated in the study. This study found that the SQ4R model had a positive impact on the participants' critical reading skills. Students' average scores increased significantly from pretest to post test, demonstrating the effectiveness of

this model. Additionally, students e satisfaction with the SQ4R technique as a teaching approach. These results suggest that the SQ4R model has the potential to improve students' critical reading skills and promote positive learning experiences.

Khusniyah (2020) focuses on the application of SQ4R strategies in English reading comprehension courses delivered via Zoom application. This study adopted a qualitative approach and used observation, documentation, and interviews to collect data. Five English reading comprehension teachers from UIN Mataram participated. The results showed that 80% of teachers had a positive attitude towards his SQ4R strategy, which led to visible improvements in students' reading comprehension. This paper suggests that his SQ4R strategy, which includes voting, questioning, reading, recording, reciting, and reviewing, is an effective approach to improving reading comprehension skills in online learning environments such as Zoom. This study also discusses the advantages and disadvantages of this strategy and highlights the importance of a systematic approach to improving reading comprehension.

Manik & Senqmbela (2019) we investigated the effects of two teaching methods, the snowball throwing method and the SQ4R method, on high school students' reading comprehension, focusing on news texts. The study found that both methods significantly improved students' reading comprehension, with the snowball method being more effective. This study involved 12th grade students from SMA Negeri 1 Kuala and collected data using a reading comprehension test that was analyzed using a t-test. The snowball toss method and her SQ4R method have been found to improve students' reading comprehension compared to traditional instructional approaches.

Erlina (2018) stated that Reading comprehension is an important skill that supports academic success, especially for students studying Arabic. Due to the importance of Arabic in Islamic studies and academic discourse, reading comprehension in Arabic is essential. Unfortunately, many students find Arabic writing difficult. This is often due to a limited vocabulary or a poor understanding of Arabic morphology and syntax. In response to these challenges, Nova Erlina conducted an action research study using her SQ4R (Survey, Question, Read, Recite, Review) learning method. The SQ4R technique aims to promote independent and active learning while focusing on reading comprehension skills. Erlina modified this technique in Sq4r by adding a post-research phase in which she uses a dictionary to find and understand vocabulary. This modification significantly improved students' reading comprehension using three cycles. Reading comprehension

can be divided into literal understanding, interpretive understanding, applied understanding, and critical understanding. The results of this study showed that students' abilities at these levels of understanding improved significantly. The results of this study highlight the importance of innovative and systematic approaches such as SQ4R and SQ4R techniques for improving reading comprehension. These techniques not only promote independent learning, but also help students build a way for reading Arabic, ultimately promoting academic success. Educational institutions are encouraged to consider adopting such methods to address the challenges students face in understanding foreign language texts.

In a research paper titled "Effect of SQ4R Technique on Reading Comprehension in Grade 4" by Başar & Gürbüz (2017), the authors state that the effect of SQ4R technique (Investigation, Questioning, Reading, Reflection, Recitation, Review of Grade-Grade Reading Comprehension). The study conducted in Turkey involved 57 of her students from two different groups. Pretest results showed no significant differences between the experimental and control groups. However, after his 10-week intervention with the SQ4R method, the experimental group was found to have significantly improved their reading comprehension compared to the control group. Additionally, this study found that the SQ4R technique had a lasting impact on reading comprehension. Additionally, the study found that students who read more pages each month improved their reading comprehension. This result suggests that the SQ4R method is a valuable tool for improving reading comprehension in elementary school students and emphasizes the importance of encouraging students to read. This study also raises the implications of integrating SQ4R techniques into educational practice and suggests further research at different educational levels and using different reading comprehension techniques.

The purpose of the study conducted by Khusniyah & Lustyantie(2017) was to examine the impact of the SQ4R (Survey, Question, Read, Record, Recite, Review) strategy on second semester students' reading comprehension. The study used an action research method and involved 34 students. Research results showed that the SQ4R strategy significantly improved English reading comprehension. This study also identified different levels of comprehension skills, such as literal understanding, interpretive understanding, and critical understanding, and showed that the SQ4R strategy had a positive impact on each level. This suggests that the SQ4R strategy may be an effective approach to improving reading comprehension.

The study conducted by Simbolona & Marbun (2017) entitled “Implementation of the SQ4R Model to Improve Reading Comprehension of Elementary School Students” addresses the important theme of improving reading comprehension of 5th grade students. The researchers used her SQ4R model, which includes surveys, questions, reading, reflection, memorisation, and review, as a way to improve reading comprehension. The study involved 30 of her students from SDN Medan Johor province and spanned two cycles including planning, implementation, observation and reflection stages. The results showed that the SQ4R model led to significant improvements in students' reading comprehension. Overall, this study provides valuable insights into effective teaching methods to improve reading comprehension in elementary school students. This emphasizes the importance of students actively participating in the learning process. This study is consistent with previous research demonstrated the improvement in reading comprehension. Teachers and educators should consider implementing this approach in their classrooms to improve their students' reading comprehension.

The study, “Assessing Reading Comprehension e SQ4R Model,” by wang, wu, chein & huang (2017) aims to use the SQ4R (Survey, Question, Read, Reflect, Recite, Review) model to improve the reading comprehension of fifth grade students in Indonesia. is focused on. Thirty students from SDN Medan Johor participated in the study. Data were collected through observations, pre-tests, and post-tests to assess how this model affected student performance. The results showed that the SQ4R model can increase students' motivation, make them more active in class, and improve their reading comprehension. In the first test, only 26.66% of the students completed the reading comprehension, but this percentage increased significantly as the study progressed. This study highlights the importance of reading comprehension skills in the education system and highlights the potential of the SQ4R model as an effective tool to improve students' reading comprehension skills. Despite the initial challenges, this study shows that a structured approach like SQ4R can have a positive impact on students' reading comprehension. Further research may explore optimal implementation methods for continuous improvement.

ROLE OF SQ4R TECHNIQUE IN INDIGENOUS KNOWLEDGE DEVELOPMENT

SQ4R technology plays a critical role in the development of indigenous knowledge by providing a structured and adaptive framework that aligns with the unique characteristics of indigenous knowledge systems. As a method

to improve understanding and retention, SQ4R promotes a respectful and culturally sensitive approach to learning, thereby promoting the retention, enrichment and dissemination of indigenous knowledge.

In summary, the SQ4R technique plays a transformative role in the development of Indigenous knowledge by providing a structured and adaptive approach that respects cultural nuances and engages with Indigenous perspectives. Through its stages, SQ4R fosters a deeper understanding of indigenous wisdom, actively engages students in the preservation of cultural knowledge, and contributes to the ongoing development and enrichment of indigenous perspectives.

CONCLUSION

In conclusion, this research paper has delved into the critical issue of learning disabilities among children in inclusive settings, with a specific focus on reading comprehension and attention span. The SQ4R technique emerged as a promising strategy to address these challenges, offering a structured and effective approach to enhance comprehension and retention.

By examining the literature, discussing the SQ4R technique, and investigating its impact on children with learning disabilities, this study contributes valuable insights. The findings underscore the significance of SQ4R in improving reading skills, comprehension, and attention span, not only for neurotypical children but also for those with learning disabilities.

The challenges faced by children with learning disabilities in reading, comprehension, and attention span are multifaceted, encompassing issues like decoding difficulties, poor working memory, and limited vocabulary. This study emphasizes the importance of tailored support and interventions, recognising the unique needs of each child with a learning disability.

Furthermore, the SQ4R technique has been explored in the context of indigenous knowledge, demonstrating its adaptability and potential to bridge academic study methods with the richness of indigenous perspectives. By incorporating SQ4R in the learning process, there is an opportunity to respect and preserve indigenous wisdom, fostering a deeper appreciation for interconnectedness and cultural diversity.

Hence, the SQ4R technique proves to be a versatile tool that goes beyond enhancing academic skills; it fosters inclusivity, actively engages learners, and respects diverse knowledge systems. The implications of this study extend to educators, parents, and policymakers, emphasizing the

need for tailored approaches in inclusive settings to ensure the academic success and well-being of all children, regardless of their learning abilities.

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Chapter-18

**UDL for Indigenous Pedagogies:
Creating Technology Enabled
Learning Environment**

Bhawna Sharma

Student, M.Ed Special Education (Learning Disability),
Amity Institute of Rehabilitation Sciences, Amity University Uttar Pradesh

Dr. Anusuya K. Yadav

Assistant Professor, Amity Institute of Rehabilitation Sciences,
Amity University Uttar Pradesh.

Abstract

By using UDL, educators may support the natural needs and autonomy of all learners and give due weight to the demands of Indigenous students. This allows educators to make room in their curriculum for indigenous pedagogies. Rather than being prescriptive, UDL promotes the implementation of its principles to enhance fairness and inclusion, remove obstacles to learning, and advance learning mastery. To improve inclusivity, engagement, and knowledge transmission by combining UDL with Indigenous pedagogies can enhance the learning experiences of diverse learners, further to create an educational experience that is more egalitarian and culturally sensitive. The study focuses to review a thorough framework which can be created to incorporate UDL into learning environments that are enabled by technology, with an emphasis on matching these principles with the cultural quirks that are unique to Indigenous education. For the purpose of assisting Indigenous pupils in the classroom, Universal Design for Learning may provide a framework that is culturally sustainable. The findings yield that UDL concepts can be successfully used, as evidenced by the participants' increased engagement, retention of information, and general learning outcomes, showing effectiveness of combining UDL with Indigenous instructional traditions. Findings also reveal that combination of UDL and Indigenous pedagogies have great potential to create a technologically enabled learning environment that is Inclusive and culturally sensitive, making

the educational landscape more equitable and sustainable, celebrating cultural diversity and empowering Indigenous learners.

Keywords: *Universal Design for Learning (UDL), Indigenous Pedagogies, Technology-Enabled, Learning Environment.*

Introduction

The educational framework known as Universal Design for Learning (UDL) directs the development of adaptable learning spaces and surroundings that can take into account individual learning differences. David H. Rose, Ed.D. of the Harvard Graduate School of Education and the Center for Applied Special Technology (CAST) provided the initial definition of it in the 1990s. Using a range of instructional strategies, Universal Design for Learning (UDL) aims to eliminate any obstacles to learning. It's about incorporating flexibility that may be modified to suit the requirements and strengths of each individual. Although this method of instruction or workplace training isn't expressly designed for those with unique learning and thought processes, it can be particularly beneficial for kids with special needs. It's helpful to know what UDL isn't in order to comprehend what it is. You could be confused by the word universal. It could seem like there's just one technique to instruct every learner. However, children with these problems, including those who have not received a formal diagnosis, may find it very beneficial. Additionally, it might be very beneficial for English language learners.

UDL derives from neuroscience, which suggests that the brain's three neuro-networks— affective, recognition, and strategic—are responsible for learning. Every brain network is linked to a Universal Design of Learning principle:

1. **Engagement** (The “why” of learning): This theory questions why learning matters and how it connects to each student's unique goals and motivations while defending the affective network. The goal of implementing a range of engagement techniques is to boost each student's motivation and excitement for studying. Providing alternatives to draw attention, putting in effort and persistence, and exercising self-control are a few tactics. Students pay attention to what is being taught and are motivated to study more when teaching is delivered well.
2. **Representation** (The “what” of learning): This concept focuses on the “what” of learning—that is, the resources, information, and abilities required for students to effectively finish the course—and supports the

recognition network. This concept is around providing opportunities for perception, language and symbols, and understanding, in addition to other means of content and information delivery. In summary, this recognition network facilitates learners' information gathering.

3. **Action and expression** (The “how” of learning): This concept centres on the “how” of learning: how will students engage in diverse learning tasks and demonstrate their understanding and expertise? Giving students alternative means of communicating what they know is the main goal of this concept. This means providing students with opportunities for mobility, executive functioning, and expressive and communicative expression. Action and expression come into play when students complete exercises and assessments that allow them to practice abilities and apply newly gained knowledge.

Indigenous Pedagogies

Indigenous pedagogies offer a profound approach to education rooted in the wisdom, traditions, and cultural practices of Indigenous communities. These pedagogies prioritize a holistic understanding of knowledge, emphasizing interconnectedness with the land, community, and spirituality.

1. Personal and Holistic:

- Places a strong emphasis on all aspects of development, including mental, physical, emotional, and spiritual development.
- Challenges prevailing beliefs that downplay spiritual development.

2. Experiential:

- Emphasizes doing in order to learn.
- Encourages students to gain knowledge by doing, observing, reflecting, and then doing it again.

3. Place-based Learning:

- Emphasizes the connection between location, experience, and knowledge by tying learning to a particular location.

4. Intergenerational:

- Recognizes the vital role that Traditional Peoples and Elders play in transferring knowledge and wisdom.
- In Indigenous societies, elders are still highly esteemed as educators.

Indigenous Teaching Methods for Online Education:**Advantages:**

- Enables cooperation with larger populations.
- Gives pupils a flexible and less scary environment.
- Provides a variety of digital platforms for experience sharing.

Problems:

- Dangers of online education neglecting place-based learning.
- Learning remotely can have an impersonal quality and lack the genuineness of in-person interactions.
- In typical classrooms, it is difficult to replicate the sense of community and interconnectedness.

Wise Practices:

- **Knowing Oneself:** Teachers need to examine their own positionality and be aware of their prejudices and privileges.
- Learning objectives, activities, evaluation, connections, structure, and accessibility issues for a comprehensive, Indigenous-focused education are all taken into account while designing a course.
- **Including Local Knowledge:** Make connections between the local Indigenous communities' cultures and the courses you teach.
- **Collaboration:** To ensure meaningful collaboration, cultivate relationships and trust with Indigenous populations.
- **The Proper Application of Indigenous Pedagogies**
- Using Indigenous knowledge and resources with respect and permission.
- Establishing ties with Indigenous tribes to guarantee the non-exploitation of their culture.

Technology-Enabled Learning Environments

In the modern era, technology has revolutionized the way we learn and teach. Significant changes have occurred as a result of the introduction of technology into education, making it possible to provide more dynamic, interactive, and customized learning opportunities. The term “technology-enabled learning environment” describes how different technological tools, resources, and platforms can be seamlessly incorporated into educational environments to improve teaching and learning. The main ideas and advantages

of developing a technology-enabled learning environment will be covered in this introduction, along with some of the difficulties and factors to be taken into account when putting it into practice.

Important elements of a Learning Environment Assisted by Technology:

- ✓ Digital information and Resources: Thanks to technology, people may access a huge library of digital information, including interactive multimedia, e-books, movies, and simulations.
- ✓ Learning Management Systems (LMS): These systems offer a central location for organizing course materials, homework, quizzes, and instructor-student contact. They make it possible for distant collaboration and involvement as well as smooth online learning experiences.
- ✓ Collaborative Tools and Communication Platforms: Regardless of physical location, technologies like instant messaging, discussion boards, and video conferencing help students and teachers communicate and work together. In virtual environments, these tools encourage peer learning and active participation.
- ✓ Adaptive learning technologies: These platforms tailor the learning experience to each student's needs, preferences, and performance by using algorithms and data analytics. With the use of these tools, teachers may provide individualized instruction and facilitate differentiated learning pathways.

Advantages of a Learning Environment Enhanced by Technology:

- ✓ Enhanced Flexibility and Accessibility: Students can access learning resources at any time and from any location thanks to technology, which also makes it possible for them to learn at their own speed and take into account a variety of schedules and learning preferences.
- ✓ Enhanced Interactivity and Engagement: Gamified learning scenarios, interactive multimedia content, and group projects pique students' interest and encourage active participation in the classroom.
- ✓ Data-Driven Insights: Thanks to technology, information about student performance, involvement, and advancement can be gathered and analyzed. Teachers can use these insights to evaluate student learning results, pinpoint areas that need work, and successfully tailor instruction.
- ✓ Facilitation of Lifelong Learning: Technology equips students to succeed in a society that is becoming more and more digital and knowledge-driven by encouraging self-directed learning strategies and digital literacy abilities.

Establishing a technology-enabled learning environment has many advantages, but it also presents infrastructure, digital equality, cyber security, and pedagogical integration issues. However, educators may use technology to build inclusive, dynamic learning environments that equip students to excel in the digital era with careful planning, professional development, and on-going support.

Review of Literature

Tessaro & Restoule (2022) This study shows how to successfully include Medicine Wheel teachings and other Indigenous pedagogies into a massive open online course (MOOC). The MOOC effectively addressed the spiritual, emotional, and physical elements of the Medicine Wheel through experiential and self-reflective exercises, defying the conventional emphasis on intellectual learning in online courses. The findings advocate for the use of Indigenous pedagogies in the establishment and redevelopment of MOOCs, emphasizing holistic approaches to education.

Hasan, Khan, and Malik (2023) claimed that this article covers the concept of universal design of learning and its application in inclusive classrooms. Universal Design for Learning is adaptable, interactive, and shifts from traditional to blended learning to fit a range of learning styles. Universal Design for Learning aims to provide all students with equal learning experiences that align with their aptitudes and learning styles by eliminating barriers in the educational process. Equal opportunity is provided by inclusive education, but its pedagogical flexibility is limited. Viewed as a paradigm change in inclusive education, Universal Design for Learning has the ability to promote more flexible and inclusive teaching and learning practices.

Lambert, Mcniff, Schuck, Imm & Zimmerman (2023) In this research report said that following a professional development workshop, the beliefs, and practices of educators on Universal Design for Learning were studied using design research and methodology. According to the research, educators' perspectives on Universal Design for Learning have shifted from viewing it as a rigid framework to viewing it as a dynamic "way of thinking" that emphasizes being quickly responsive to students' access needs. The study also stressed the importance of teachers critically analysing their own deficiency viewpoints on children with disabilities, and the usefulness of empathy interviews in understanding kids and building relationships. This study emphasizes the need for more investigation into teachers' understanding of Universal Design for Learning.

Krishan & Sharma (2023) The current study in Himachal Pradesh, India, looked at 429 teachers working in inclusive environments and their knowledge of Universal Design for Learning (UDL). The results, which were obtained by using descriptive research methodologies and a purposive sample strategy, showed that instructors' knowledge of UDL was restricted. Compared to their general education peers, special education teachers showed notably greater levels of UDL awareness.

Funk, J, & Woodroffe, T. (2023) The Differentiated Indigenous Pedagogies project explores the complexities of integrating Indigenous knowledge and perspectives into Australian education, particularly in the Northern Territory. This research intends to fill in the knowledge gaps that exist among non-Indigenous teachers while acknowledging the variety within Indigenous language groups and areas. Through an examination of existing Indigenous pedagogies, the research finds recurring themes to direct educators toward more relational, reconciliatory, and respectful methods of instruction.

Findings and Conclusion

The findings yield that UDL concepts can be successfully used, as evidenced by the participants' increased engagement, retention of information, and general learning outcomes, showing effectiveness of combining UDL with Indigenous instructional traditions. Findings also reveal that combination of UDL and Indigenous pedagogies have great potential to create a technologically enabled learning environment that is Inclusive and culturally sensitive, making the educational landscape more equitable and sustainable, celebrating cultural diversity and empowering Indigenous learners.

To develop inclusive and culturally appropriate educational experiences, the research paper "UDL for Indigenous Pedagogies: Creating Technology-Enabled Learning Environments" explores the integration of Universal Design for Learning (UDL) principles with Indigenous pedagogies. The study emphasizes the significance of integrating Indigenous perspectives, values, and methods of knowing into educational technology design and implementation through a synthesis of the literature and useful insights. Educators can use technology to accommodate a range of learning styles, skills, and cultural backgrounds while honouring Indigenous knowledge systems by adopting UDL frameworks. The study emphasizes how important it is for Indigenous communities, educators, and technology producers to work together to co-create learning environments that respect cultural diversity and promote fair educational opportunities.

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Chapter-19

Use of Brain Breaks in Relation to Indigenous Knowledge in Current Scenario

Katyani Singh

M.Ed. Special Education Scholar, Amity Institute of Rehabilitation Sciences,
Amity University Uttar Pradesh.

Anuj Srivastava

Assistant Professor, Amity Institute of Rehabilitation Sciences,
Amity University Uttar Pradesh.

Abstract

Indigenous Knowledge is that system of education which is imparted to us from the Ancient era, our Vedic culture worked to expand their intellectual horizon, during breaks they were given aesthetic and physical training, which has now become an important part of our school curriculum. One of the prominent universities of ancient India Nalanda university lead stress on physical activities such as- swimming and yoga. In current scenario researches emphasises on breaks, whose origin is in history of physical education. They have always been a part of any education system and such breaks are vital for brain to function well to its fullest potential. Breaks helps an individual to energize their body and mind energies, also helps children to refocus on the task. Brain research reveals that a person is only able to retain certain pieces of information at one time. Brain Breaks also helps children with Autism Spectrum Disorder to reduce repetitive behaviour and helps children in making the process of transition from one task to another smooth. Hence one can say that Brain breaks behavioural strategy helps in enhancing quality of education by implementing Brain Breaks into the school curriculum as it has gained its roots from our rich indigenous knowledge. This study focuses on to see the impact of brain breaks behavioural strategy on transitional behaviour among children with Autism Spectrum Disorder. The researcher reviewed 30 articles for the purpose of this study. All the research papers were published form the year 2013 to 2023 were given due consideration in this review study. After reviewing various articles it was seen that after applying brain breaks at primary classroom level it increased the self -efficiency of students and also enhanced

their academic progress, cognitive skills, there was a drastic decrease negative behaviour among children at primary level, it improved quality of education, also helped in keep motivation of students high.

Keywords: Children with Autism Spectrum Disorder, Transition, Behaviour, Brain Breaks indigenous Knowledge system.

1.1 INTRODUCTION

Let the children be free; encourage them; let them run outside when it is raining; let them remove their shoes when they find a puddle of water; when the grass of the meadows is wet with dew, let them run on it and trample with it with their bare feet; let them rest peacefully when a tree invites them to sleep beneath its shade; let them shout and laugh when the sun wakes them in morning - Maria Montessori

2.1 MEANING OF BRAIN BREAKS

Brain breaks is also known as movement breaks which helps the students to engage in movement activities in order to remove lethargy among the students. This gives brain rest after working continuously for hours. The breaks generally involves stretching and breathing exercises, as well as small cardio that the students can do while simply standing at their seats. Movement allows them to refocus or get their “wiggles” out but energizes them and gives them a chance to increase their focus for the next activity or task (Maddox, 2019).

Brain breaks activities involves- strength or aerobic training and concentration. In some studies, it has been found that it has increased students’ interest in physical activity. (Mutab & Rezaei, 2023) (p.2)

In order to cope well with the immediate environment it very important to design for them a different behavioural strategy which is very essential so, that they can deal well in the school as well at home, both individually as a child and when working in a group. One of an evidence based strategy which is generally provided to the non- disabled population around the globe is called brain breaks.

2.1.1 Indigenous Knowledge System and Brain Breaks

Indigenous Knowledge is traditional knowledge which passes from one generation to another. This system of knowledge is very vast and is something which is only experienced by hearing from someone elder to us or through our own observations. This knowledge is usually passed on

from one generation to another with the help of informal mode of education and with the help of story -telling. This knowledge based experiences which they experienced in their entire life. Physical activities are always found useful for children and Adults. Physical exercise helps them to boost their energy level and help them stay focused in the task which they are performing. Hence when we say though brain breaks seems to be a modern strategy which used around the globe today has its roots in the indigenous Knowledge systems which is now proven effective to help children do academically well in the classroom. This system of knowledge not only helps in making our curriculum rich and valuable for our generations to come but also helps in improving quality of education and also it helps in increasing knowledge sharing among the masses who are yet to be reached to. And they are deprived form the opportunity of giving education too. Implementing such systems in our Indian education system helps students to build connection with our past rituals, customs, and culture which was part of our golden past. Thus, one can say that strategy like Brain breaks has a deep relation with the indigenous system of knowledge which was somewhere lost when technology entered in this modern era. Brain breaks strategy if implemented in our Indian Education system will bring wonders for children who are having special needs to bring stability in their lives but it will also pave way for general students to excel in their co- scholastic and academics by implementing brain breaks into their curriculum and making this behavioural strategy as part of their lives.

3.1 NEED OF THIS STUDY

This study is important to be conducted to see the of brain breaks behaviour strategy as an indigenous knowledge in current classroom environment it was seen that brain breaks is proven effective in sustaining focus and it has also proven that it improves classroom behaviour in a study conducted by (Barker, 2021). This strategy can be used effectively with children of primary school by using these brain breaks there is significant improvements in academic performance and also in behavior enhancement in the classroom (Glapa et. al.,2018). This behavioural strategy is very effective for children with ADHD. Less studies are being done on children with ASD. That's why also this research is significant to be conducted. Brain breaks is beneficial for all students in general as it helps the students to sustain focus, and also helps in reduction of their frustration levels if they are frustrated with a problem, and helps them to complete all the tasks at hand (Madox, 2019). Elementary school children sit for longer duration of academic instruction

on a daily basis. These children often become more fidgety or restless, which can create more distracting behavior and can increase instances of off-task behavior (Goh et al., 2016) (Barker, 2021 p.9) Weslake and Christian (2015) found out that physical activity and relaxation and breathing brain breaks were more effective at helping students stay on-task than content-related brain breaks (p. 44) (Wall, 2020, p.8)

3.2 REVIEW OF LITERATURE

Mutab and Rezaei (2023) done a study titled *The Effect of Brain Breaks on Academic Progress, Self-Efficacy, and Interest in Physical Activity of Primary School Students*. Objective of study is to examine the effect of brain breaks on academic progress, self-efficacy, and interest in physical activity among students of primary school. Quasi-experimental research with pre-test, post-test, control group design were used. Female students used in study was of different standards- fourth, fifth and sixth classes. Random sampling technique was used and One hundred twenty seven (127) samples were collected from Dezful city. A Self-Efficacy Questionnaire for Children, along with Children's Attraction to Physical Activity Questionnaire were implemented. It concluded that students remain active throughout the day a notable difference seen in the results between the experimental and control group. The pre-test mean score increased to 59 in comparison to mean score of control group, mean increased to 52.21 in comparison with pre-test of control group, the post- test mean score in experimental group increased to 4.83. Academic progress and development of self- efficiency among girls at the primary level was seen.

Neal (2022) in their study titled *Middle School Teachers' Perceptions of Brain-Based Learning and the Implementation of Physical Brain Breaks as a Classroom Management Strategy*. Aim of this study was to develop a clear understanding on perspectives of teachers on physical brain breaks at middle school level. It used qualitative method design to gather information using surveys and interviews. A good understanding regarding the perspectives of teachers on physical brain breaks was gathered. Total 155 schools were selected for survey. In total fifty-one (51) teachers took part in filling survey of middle schools in north -west California. Google forms were primarily used to collect the data. A link after completion of the google form was used for the participants who like to participate in focus group to collect more information on brain breaks learning theory. It was found that teachers felt refreshed and was able to focus back to work. Teachers shared their relationship develop well with students while making them participate in

the brain breaks activities, teachers also said that brain breaks resulted in increase in rate of engagement among students in classroom.

Barker (2021) titled brain breaks improve student behavior and focus this study was conducted to determine the effect of brain breaks, or physical activity breaks, when applied as a transition to learning centers in the preschool classroom. The research design used for this study was four-way factorial design on fifteen preschool students, statistical analysis techniques, cross-tabulation method, the counting method were some methods used by the researcher in examining data. The research clearly showed that there was a change in behavior and focus with application of brain breaks; students who were given intervention show a decrease in their off-task behavior from the beginning till the end of study in a manner that was statistically noteworthy.

Kasperek (2021) done a study on brain breaks and student engagement. Objective of study was to establish the relationship between brain breaks and student engagement, specifically on-task and off-task behaviors. Different literatures were reviewed as a research design. It was a qualitative study in which data was collected using tally-mark system, total 23 samples were taken who were under 18 years of age. The place research was a middle school situated in Nebraska. A paired-samples t-test was done in order to do comparison between the total number of off-task behaviors. There was no specific questionnaire or research tool used for items analysis but the analysis was done using M.S. spreadsheet. This study concluded the application of brain breaks did have a positive effect on students' engagement by decreasing off-task behaviors.

Resza (2021) conducted a study titled Impact of brain breaks to supporting the physical activity during the Covid-19 Pandemic in elementary school. Objective of this study, to design a physical activity in children to improve their learning, motor skills, fitness, and cultural culture. Descriptive quantitative research along with survey techniques were used. One- ninety four (194) students of elementary level were sample size between age range of 4 to 6 years of schools located at various parts of DKI Jakarta. A modified Attitudes to Physical Activity Scale (APAS) scale with 7 indicators was used to collect the data to meet need of students living in Jakarta. It was concluded that brain breaks has a positive effect on students, helps in aiding them to do physical activities during COVID-19. The study also revealed that brain breaks increased the learning of students and was effective, results showed that brain breaks increased level of motivation among students. Some recommendations were given to develop research on brain breaks

especially in Indonesia so that level of activity is enhanced among the students at elementary level to see improvement in quality of education.

Allen (2020) in his study titled *Impacting Student On-Task Behaviors Through Classroom Based Physical Activity and Movement*. Aim of study was to see impact of physical Activity and Movement on student's on-task behaviors. The research design used was evidence research study. Both the qualitative and quantitative approaches were used for data collection. Sixteen (16) students got consent from the parents to participate who belong to kindergarten of school in suburban area and were between the ages of five to six years. A quantitative measuring tool was used for initial data collection another tool used was a qualitative tool for the secondary purpose. These two approaches included teacher observation and videotaping. The result concluded that high amount of brain breaks had a positive effect on students on task behaviors which were motivating and such behaviours were also rewarded. Students feeling tired, students got absent for more than one day, limited time frame for data collection were some of the significant limitations mentioned in this study.

Rizal et.al (2019) conducted a study on the effect of brain breaks on physical activity behaviour among primary school children assessed the effect of brain breaks physical activity solutions (BBPAS) on the stages of change, resolution balance, processes of change, self-belief and free-time exercise among Malay ethnic primary school children. Quasi experimental research design was used. Total three hundred twenty two (322) samples were collected out of which 177 children were given intervention and 145 were part of control group in state of Kelantan, Malaysia and age was between 10 - 11 years. The data was analyzed by using mixed factorial analysis of variance (ANOVA). This study clearly specifies that the tool BBPAS can be used to enhance physical activity behaviour for stages of change, pros (perceived benefits), mental process, behavioural process and inner feeling.

Vance (2019) done a study named *The Effect of Brain Breaks on Behavioral Disruptions in Second Grade Students*. Objective behind this study was to see the impact of brain breaks on behavior disruptions among children of second grade. The research design used was quasi-experimental design to find out the effect of brain breaks on disruptive behaviours. The variables used in this study was independent and dependent variables. Independent variable was brain breaks and dependent variable was different types of disrupted behaviours. There were ten (10) students who were selected as samples for this research. These students were in grade five and was between 7 to 8 years of age range, four were females and six were

males. These samples were collected from elementary school situated in a suburban area of Arundel County Maryland. Research tools used in this study was developed by the researcher on his own. Disruptive behaviours were observed by the researcher on his own. To collect the data form the observation the researcher used tally marks. The self- developed instrument was used to analyze the data which was collected. Go noodle website was used to do yoga and meditation using this website. The results concluded that there was no a significant effect of brain breaks on disruption of behaviour. One of the limitations of this study was this study was conducted for a very short duration of time which resulted in difficulty in analyzing of data which was being collected. Another limitation which was faced by the researcher was that the sample size which was used was very small.

Trambley (2017) a study titled as Breaks in The Elementary Classroom and Their Effect on Student Behavior. Aim of this study to assess how short mental breaks (i.e., free time, a guided exercise video, meditation) in the classroom affect inappropriate classroom behavior. The research design used is a single-case A-B-A-B design. Students were observed by the researcher in 10-minute intervals. Inappropriate classroom behavior was recorded with the help of frequency counts during 10 minute intervals. Brain Breaks was taken as an independent variable in this research. These scheduled brain breaks were videos which was played using the education website Go Noodle. Videos were shown to the whole class every 20 minutes for duration of 5 minutes on the days when the intervention took place. The dependent variable was inappropriate classroom behavior. Twenty- three (23) students of 5th grade out of which three students the place of research was Central California data belonged to the same class and were the target students for this study who showed inappropriate behaviours was collected using tally sheet. Tools used for data collection was four-point Likert scale (i.e., 1 = strongly disagree to 4 = strongly agree) social validity questionnaire was also used which was filed by the teachers. It was found out after more robust guided videos such as dance and exercise the behavior decrease was not as significant unlike after more peaceful videos such as yoga and meditation. Without breaks students showed an increase in inappropriate classroom behavior. Once the breaks were incorporated the inappropriate behavior went down.

Weslake & Christian (2015) titled brain breaks: help or hindrance, aimed at implementation of three different forms of brain breaks to counter student enjoyment/engagement, and to know how much time it took for students to refocalise on their work. The research design and method were

modified to provide an impartial and trustworthy answer to the research questions designed by the researcher. It used case study approach to collect the data by using various instruments such as- student surveys, timed records to examine refocus times, and the teachers anecdotal notes. Twenty- six (26) students were samples of this research conducted in a NSW primary school Australia. The results showed that the three types of brain breaks used in this classroom-based research, it was linked to the subject content and average amounts of movement which was done which resulted in providing both enjoyment and refocus time to students.

O' Brien (2014) titled their study as effects of brain break activities on second grade students' focus and behavior. The purpose of this study was to include student brain breaks into a school day. The research design used in this study was survey based design which was used in the study. This study reviewed various journals and research articles to support his study. Methodology used in this research was an action based research program. Pre intervention interview and post intervention survey was given to the students. Students taken for this study was of the second grade. School which was chosen for this was second grade students of school in California. Research tools used were both the qualitative and quantitative tools were used in the research. The result concluded that the effect of brain breaks have resulted in high level of concentration at work. Brain breaks helps in increasing the success level of students.

Donner (2013) conducted a study titled determining effectiveness of brain breaks on student performance. The main objective of the research was to find out the efficacy of brain breaks during course of instruction on the total knowledge retention of students of high school. This research was done using quantitative study in order to check the effectiveness of Brain Breaks on student's assessment scores after a duration of lecture. For this study the researcher took an independent variable which was the condition of the students either receiving brain breaks or not receiving brain breaks on the other hand the dependent variable was the student test scores. Samples taken for this study were of four 12th grade class each class containing 24 to 29 students N= 108. Both males and females were taken as part of sample in age range of 16-18 years. The samples were divided into groups two categories were made one group contained those with a break and other without a break i.e. 54 samples in each group. Place of research was Maryville. Research tools used in this study were assessment question which were created by the researcher from the lecture session. Assessment

questions were given at end to collect their responses. T-test was used as a Statistical method. This study found out that there was no prominent change found in student's retention level after the application of brain breaks. It was found that students who received lectures with brain breaks were found to be more active then students who did not received brain breaks.

EDUCATIONAL IMPLICATIONS AND IMPORTANCE OF BRAIN BREAKS IN CLASSROOMS MENTIONED IN REVIEW OF LITERATURES

Brain breaks are found to be effective as they are full of enjoyment and fun for children with and without disabilities. Such breaks have potential to modify student's sedentary behaviour. Body fitness improved drastically. It can be easily implemented as it is cost effective. Students is able to focus and stay on task for longer duration. It helps students to make transition an easier process.

It also helped students to enhance the productivity of students. Brain breaks also helps students to refocus on the task which they were performing. In a study which was carried out in the year 2019 it revealed that brain breaks developed willingness among students to learn. In a study done by Podnar et.al. 2018 on-task behavior significantly increased up to 9% after becoming part of a physical activity break. 95% of teachers believed that their students enjoyed participating in the breaks and 91%of teachers intended to continue using the Brain Breaks, even upon completion of the study (Kasperek 2021). It also helps in providing a conducive environment in the classroom according to the opinions shared by the teachers. With implementation of brain breaks inappropriate classroom behaviour declined.

CONCLUSION

Indigenous Knowledge is known as a foundation stone for our current education system. Brain breaks which is a part of our Indigenous Knowledge has been gathered form our ancient text. Brain breaks are one of the emerging behavioural strategy which is being used since a decade in the western culture. But there is a great need to introduce such Indigenous Knowledge which was given in our ancient text in our classroom environment and most specifically to children who need it the most. After COVID-19 the need for physical activities among children have increased because now most of the time we see children who are busy with their smartphones because of which they sideline doing physical activities.

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Chapter-20

**Indigenous Knowledge and Technological
Innovation Using Animated Videos:
A Systematic Review**

Mehak Vohra

Student, M.Ed. Special Education (Learning Disability), Amity Institute of Rehabilitation
Sciences, Amity University Uttar Pradesh

Dr. Anusuya K. Yadav

Assistant Professor, Amity Institute of Rehabilitation Sciences,
Amity University Uttar Pradesh.

Abstract

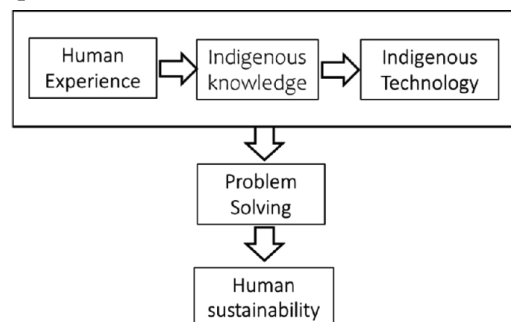
Indigenous knowledge refers to the unique traditional information systems and practices that Indigenous communities have developed and maintained over generations. This knowledge spans many fields, including ecology, agriculture, medicine, spirituality, astronomy and more. It is deeply rooted in the specific cultural, social and environmental conditions of each indigenous community. Indigenous knowledge and technological innovation play pivotal roles in transforming inclusive education from an abstract concept to a detailed and effective reality. involves exploring the intersection of traditional indigenous knowledge and modern technological innovation through specially animated videos. The aim of this study is to provide a holistic understanding of how animated videos act as a channel to preserve, disseminate and integrate indigenous wisdom with modern technology. Through a systematic analysis of the existing literature, the review seeks to reveal the various ways in which animated videos bridge the gap between indigenous knowledge and cutting-edge technology. A synthesis of findings illuminates the potential impacts, challenges, and opportunities of this unique fusion, and provides insights for researchers, educators, and practitioners interested in promoting the harmonious coexistence of tradition and innovation. So, study clearly show the Exploring the intersection of civic knowledge and innovation through animated video. A systematic review of the existing literature will be conducted to identify key

themes, trends and findings related to the integration of indigenous knowledge into technological advancement, with an emphasis on the use of cartoon video.

Keywords: Indigenous knowledge, Technological Innovation, Animated Video, Systematic Review

INTRODUCTION

Indigenous knowledge is the comprehension, abilities, and ideologies that have been cultivated by communities that have had extensive interactions with their natural environment. Local knowledge helps rural and indigenous peoples make decisions regarding basic daily necessities. This information is essential to a cultural complex that includes social interactions, language, categorization schemes, resource usage, rituals, and spirituality. Technology has made it easier for Indigenous knowledge to be seamlessly incorporated into educational programs and public discourse. Indigenous cultures are revitalized and greater social understanding and appreciation are fostered by the synergy between ancient wisdom and cutting-edge technology. This study focuses on how animated videos might help close the generational and cultural divide and promote a greater understanding of Indigenous knowledge in a global setting. In an increasingly globalized world, using technology to conserve and magnify Indigenous wisdom through animated storytelling has the potential to advance cultural diversity, inclusion, and sustainable development. Indigenous techniques play a key role in preserving cultural heritage, sustaining local economies and addressing community-specific challenges. However, a systematic and inclusive evaluation of these technologies presents unique challenges. Traditional assessment methods often struggle to capture the holistic nature of these innovations. This study proposes the integration of animated videos to improve the systematic review process.



Indigenous technology is the traditional knowledge and methods that Native American people have used for millennia to traverse their

environments. It includes a wide range of practical skills, such as artisanship and agriculture. Indigenous technology, which has its roots in cultural history, is frequently passed down orally and via first-hand experiences in the community. Conversely, animated videos are digital multimedia assets that use animation methods to tell stories or provide information. Animated videos are a contemporary form of education and communication that employ visual storytelling in a virtual environment. Although Indigenous technology is ingrained in concrete activities and cultural history, animated movies offer a digital medium for knowledge distribution and preservation, combining traditional knowledge with modern technology.

REVIEW OF LITERATURE

Marini, Khairunisa, Yarmi, Safitri & Lestari (2023) conducted a study titled on Animation video based on PowToon to upgrade student learning achievement research study aimed at enhancing student learning outcomes in science classes through the use of technology-based learning media, specifically animated videos. The study involved 53 students aged 10-11 and utilized experiments to measure the effectiveness of the produced video. Data collection was conducted through interviews. The results indicated a significant difference between pre-test and post-test scores, suggesting that using animated videos created with PowToon positively impacted student learning. Overall, the research suggests that integrating technology like animation videos into science education can improve students' understanding of scientific concepts.

Anisa, Malik, Putri, Hafiz (2023) conducted a study titled on Ani maker Animation Video Design as a Digital-Based Learning Media with the Theme of Comparison and Scale in Elementary School study aimed to evaluate the efficacy of utilizing digital-based teaching materials created with Ani maker-assisted animated videos for teaching Comparison and Scale to fifth-grade elementary school students. This was prompted by recurring issues concerning the effectiveness of the teaching and learning process, along with the increasing demand for teachers to adapt to technological advancements by incorporating more dynamic learning systems in the classroom. The research followed the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) with a focus on developing teaching materials. The study was conducted among elementary school students in Langkat Regency. These results suggest that Animaker-based animation videos on Comparison and Scale are deemed suitable for integration into classroom teaching materials.

Lutomia, Bravo (2017) conducted a study titled *Communities of Practice and Indigenous Knowledge: A Case Study of Empowering Women in Processing Shea Butter Using Scientific Animations* and their finding indicates “Scientific Animations Without Borders” (SAWBO), which represents an innovative approach to capturing, preserving, and disseminating indigenous knowledge globally. SAWBO leverages state-of-the-art technology to create short animations showcasing scientific best practices, while also incorporating traditional indigenous knowledge. These animations are accessible through video-capable cell phones or portable projection systems, providing a versatile and widely accessible means of knowledge dissemination.

Metha, Alter, Semali & Marezki (2014) conducted a study titled *Academic IK Connections: Bringing Indigenous Knowledge and Perspectives into the Classroom* highlights the significance of integrating indigenous knowledge into academic settings, particularly in the context of promoting global-mindedness and addressing community challenges. It critiques the dominance of positivist thinking in academia, which tends to marginalize other ways of knowing. The paper applauds initiatives like Penn State’s Academic IK Connections, which showcases the value of indigenous knowledge through engaging stories and diverse perspectives. It argues that incorporating such knowledge into classrooms can enrich learning experiences and foster a more inclusive understanding of different philosophies and epistemologies.

TRADITIONAL WISDOM IN PRACTICE VS. ANIMATED VIDEOS: DIGITAL NARRATIVES IN MOTION

Original technology and animated videos serve different purposes and work in different contexts. Indigenous technology involves the development and use of technical solutions originating from a particular community or region, often using local knowledge and resources to solve local problems. It is deeply rooted in cultural traditions, sustainability and adaptation to the local environment. Animated videos, on the other hand, are forms of multimedia communication and entertainment created using computer-generated imagery (CGI), illustrations, or motion graphics. They are often used to convey stories, information or messages in a visually interesting and accessible way.

Indigenous technology prioritizes combining traditional knowledge and practices with modern tools and techniques to meet practical needs such as sustainable agriculture, healthcare or communication infrastructure. These techniques are often developed collaboratively within the community and

are adapted to local conditions and reflect the values, customs and beliefs of the people. Animated videos are a versatile medium used in various contexts, including entertainment, education, marketing and advertising. They rely on digital animation software and techniques to create visual stories that are easily shared and understood by different audiences. While animated videos may contain cultural elements or depict indigenous stories, they are not inherently tied to specific cultural or technological traditions in the same way that indigenous technology is.

Nature and Origin	Indigenous Technology: This is the collective term for the customs, knowledge, and abilities that Indigenous people have built up over many generations in order to survive and adapt to their unique settings. Indigenous technology frequently consists of devices, methods, and creations that are specially designed for regional ecosystems and cultural settings.	Videos that have been animated are a type of digital multimedia material produced using animation methods. A contemporary, technologically advanced medium for narrative, instruction, and communication can be animated videos.
Purpose and Function	Indigenous Technology: Developed primarily for pragmatic applications, indigenous technology meets the resource management, cultural expression, and survival demands of indigenous societies. It includes a broad range of activities, including craft, building, agriculture, and medical expertise.	Animated videos: Designed with communication, education, and entertainment in mind, animated videos tell stories or impart information through visual storytelling. They may be used for a variety of things, including as entertaining audiences or clarifying difficult subjects.
Medium and Format	Indigenous Technology: Usually embodied in concrete things or behaviour's, such tools, farming methods, construction techniques, etc. Native American technology employs a wide range of media, including plants, wood, stone, and more.	Animated Videos: Animated videos are digital and virtual and are produced using classic animation techniques or computer-generated imagery. They are the result of contemporary technology and are frequently accessed via technological gadget
Transmission Knowledge	Indigenous Technology: Information is passed down verbally, via practical apprenticeship, and through in-community experience learning. It is ingrained in cultural customs and has been handed down through the ages.	Videos with animation: Information is communicated both visually and aurally, reaching a larger audience. In order to close the gaps between generations and cultures, animated films may be an effective method for recording, conserving, and disseminating Indigenous knowledge.

Indigenous technology is typically passed down orally and via first-hand experiences in the community. Animated videos, on the other hand, are a type of digital multimedia material that use animation to tell stories or transmit information. Animated films employ visual storytelling in a

virtual realm, primarily serving as a contemporary form of education and communication. Animated movies offer a digital platform for knowledge diffusion and preservation, combining ancient wisdom with modern technology, even though Indigenous technology is firmly ingrained in practical practices and cultural legacy.

INDIGENOUS KNOWLEDGE: FOSTERING SUSTAINABLE TECHNOLOGY INNOVATION

Indigenous wisdom, which has its roots in the customs of many groups, has long been a source of environmentally friendly methods and original perspectives on the natural world. The profound understanding of ecosystems, biodiversity, and the complex interactions between humans and the environment are all included in this knowledge that has been passed down through the centuries. Indigenous knowledge is especially fascinating because it may encourage technical innovation while maintaining balance with the environment. By utilizing the innate knowledge accumulated over generations of living with their environment, indigenous societies frequently create technologies that are ideally suited to their unique local conditions. This information not only helps communities adapt to a variety of difficulties, including climate change, resource shortages, and biodiversity loss, but it also promotes environmental consciousness.

Indigenous knowledge represents a wealth of traditional wisdom that has been passed down from generation to generation in Indigenous communities. This knowledge includes a deep understanding of local ecosystems, biodiversity and sustainable practices perfected over centuries of coexistence with nature. When indigenous knowledge is integrated into resource management strategies, it provides unique insights and approaches that complement traditional scientific methods and promote more holistic and effective solutions to sustainability challenges. Indigenous knowledge emphasizes a deep respect for the connection between all living things and the environment. It recognizes the complex relationships between people. This worldview often leads to practices that prioritize harmony and balance and strive to preserve the health and sustainability of ecosystems for current and future generations.

HARNESSING INDIGENOUS KNOWLEDGE FOR TECHNOLOGICAL INNOVATION

An animated film is a dynamic means of illustrating the complex relationship between conventional knowledge and contemporary developments. Vibrant

cartoons representing many indigenous civilizations, their relationship to environment, and the richness of information passed down through the years might open the film. Animated sequences might show particular occasions where indigenous knowledge influences technology advancement as the story progresses. For instance, images may portray conventional farming methods, such as agroforestry, and then smoothly switch to animated depictions of cutting-edge, sustainable agricultural technology that are based on these methods.

Animated representations of pharmaceutical innovations influenced by these folk treatments could follow a segment highlighting traditional medical procedures and the utilization of regional flora and herbs. For example, the animation may show indigenous people working together to conserve water, use renewable energy, or manage garbage in order to highlight the community-centric approach. This would emphasize how indigenous knowledge-derived technical solutions support social cohesiveness and cultural preservation in addition to improving the environment. To visually depict the coexistence of the old and the new, a combination of historic art forms and contemporary animation methods might be used throughout the animated film. A narrated screenplay or subtitles combined with captivating animations may successfully communicate the information and make the intricate link between indigenous knowledge and technical innovation understandable and captivating to a wide range of viewers.

SYSTEMATIC EVALUATION OF INDIGENOUS TECHNOLOGIES THROUGH ANIMATED VIDEOS

A systematic review of animated videos exploring the intersection of Indigenous Knowledge and Technological Innovation reveals a compelling narrative that transcends traditional boundaries. These animated productions intricately weave together vibrant depictions of diverse indigenous cultures, their profound connection to the natural world, and the invaluable knowledge passed down through generations. The methodical investigation is presented with vibrant images that provide examples of how traditional knowledge may spur innovation in technology. The animated videos consistently highlight the harmonious integration of heritage and innovation, whether they are showcasing sustainable agricultural practices, traditional medical knowledge inspiring breakthroughs, or community-driven efforts in areas like water conservation and renewable energy. The use of varied animation styles effectively communicates the coexistence of ancient wisdom and contemporary solutions. Overall, the systematic review underscores the

potential of animated videos as a powerful medium to disseminate the intricate relationship between Indigenous Knowledge and Technological Innovation, fostering a deeper understanding and appreciation for the synthesis of tradition and progress. is an engrossing investigation, via the fascinating medium of animation, of the dynamic interaction between old knowledge and technological innovations. These films are effective mediums for illustrating the complex interrelationship between indigenous knowledge and technology advancement. By combining brilliant graphics and compelling narration, animated animations clearly illustrate the rich fabric of varied indigenous cultures and their profound relationship to the natural environment. They brilliantly explain how ancient traditions, firmly based in sustainable agriculture, medical expertise, and community-driven initiatives, inspire cutting-edge technical solutions. Animation makes it possible to seamlessly combine the ancient and the new, fusing modern advancement with cultural legacy.

These movies not only educate but also promote a better awareness and respect for the significant contributions of indigenous wisdom. animated videos provide a scalable and easy-to-use way to share assessment results with others. These videos can effectively communicate the results of the assessment process in a visually appealing and easily digestible format, whether directed at groups, researchers or indigenous communities. It promotes transparency, inclusion and exchange of information and fosters cooperation and mutual understanding between stakeholders involved in the evaluation and use of indigenous technologies. Animated videos provide a versatile and impressive way to systematically evaluate indigenous technologies. Combining visual storytelling, step-by-step presentations, and cultural context, these videos can enhance understanding, facilitate in-depth evaluation, and promote meaningful engagement with Indigenous information systems and technologies.

CONCLUSION

Indigenous Knowledge and Technological Innovation Using Animated Videos provides a comprehensive analysis of the intersection between traditional indigenous knowledge systems and modern technological advancements, specifically through the medium of animated videos. The review delves into how indigenous communities leverage animated videos to preserve, disseminate, and innovate upon their traditional knowledge in diverse fields. By synthesizing existing literature, the review highlights the potential of animated videos as a powerful tool for bridging cultural gaps,

empowering indigenous voices, and fostering sustainable development. Moreover, it underscores the importance of respectful collaboration and ethical considerations in the utilization of indigenous knowledge within technological innovations, aiming for mutual benefit and cultural preservation.

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Chapter-21

The Perspectives of Teachers and Principals Regarding Technological Services Provided to Children with Special Needs in Context to Indigenous Technology & Innovation

Prachi Sharma

Integrated B.Ed. M.Ed. Special Education Scholar, Amity Institute of
Rehabilitation Sciences, Amity University, Uttar Pradesh.

Anuj Srivastava

Assistant Professor, Amity Institute of Rehabilitation Sciences,
Amity University, Uttar Pradesh.

Abstract

The term “indigenous technology” means to use the technology in multiple dimensions to improve the lives of every individual. The application of various technical tools and methodologies is integral to facilitating and improving educational outcomes. This study investigates the perspectives of administrators and teachers regarding technological services for children with special needs in context to indigenous technology and innovation. The researcher examined a total of thirty publications for this analysis, encompassing all review papers published from 2009 to 2023. The research papers emphasized that the sole distinguishing factor between private and public schools was the presence of the AT sub-scale. The results of the study also suggest that addressing several key issues is essential for exploring the contemporary perspective on how educational technology (ICT/ET) can enhance inclusivity. This underscores the significance of Special Education in the current educational landscape and advocates for promoting diversity within the classroom. Instructors, even those who have been trained to understand student characteristics and recommended engagement strategies, demonstrate positive attitudes, creativity, adaptability, and proficient use of technology.

Keywords: *Perspective, Indigenous Technology and Innovation, Technological Services, Teachers, Principals, Children with Special Needs.*

INTRODUCTION

In every society, education is universally recognized as crucial for unlocking human potential. The evolution of the education sector is intricately linked to the advancement of national wealth and economic development. Education empowers individuals to effectively handle not only the fundamental resources in their surroundings but also their own capacities. While principals and instructors in schools may have varied perspectives on the utilization of technical services for students with special needs, there are a few commonly shared concepts:

- 1. Improved Learning Opportunities:** A significant number of educators and school leaders perceive ICT as a valuable tool for delivering personalized learning experiences to children with special needs. Utilizing technology allows for the presentation of dynamic and engaging content, accommodating diverse learning styles and proficiency levels.
- 2. Tailored Assistance:** Educators and administrators can employ technology to offer customized support, enabling students with special needs to access learning materials in ways that align with their individual requirements and pace.
- 3. Professional Advancement:** While some educators may be enthusiastic about the potential for professional growth through the incorporation of ICT in special education, others may exhibit reluctance towards adopting new tools.
- 4. Evaluation and Monitoring:** Teachers may hold divergent views on utilizing technology to monitor and assess the academic progress of students with special needs. While some appreciate the insights and information technology can provide, others may be cautious about placing excessive emphasis on numerical metrics.
- 5. Flexibility of Technology:** Teachers and school leaders might express reservations about the ease of adapting technology to cater to diverse special needs. Ensuring that the technology is inclusive and aligns with various requirements is a common concern.

INDIGENOUS TECHNOLOGY & INNOVATION

Indigenous technology and innovation involve developing and applying technological solutions and creative ideas that originate from and are influenced by the traditions, expertise, and life experiences of a specific indigenous group or culture. It focuses on addressing contemporary challenges

by utilizing traditional knowledge and customs to create solutions that are relevant to the unique circumstances faced by indigenous peoples. Indigenous innovation and technology often have deep connections to cultural values, sustainability, and community engagement, reflecting the needs and identity of the indigenous community.

The following are important facets of indigenous innovation and technology:

1. **Cultural Relevance:** Indigenous technologies are crafted with attention to the environmental, social, and cultural settings of the communities they cater to. They are uniquely adapted to address the needs and challenges specific to those communities, reflecting the values and lifestyle of the indigenous people.
2. **Incorporation of Traditional Knowledge:** Indigenous innovations often leverage traditional knowledge that has been transmitted through generations. This may encompass practices related to agriculture, resource management, healthcare, and various daily routines.
3. **Sustainability:** Indigenous technologies often prioritize environmental harmony and sustainability, aiming to minimize negative impacts on the environment and promote long-term resilience.
4. **Community Involvement:** Active participation of community members is a common practice in the development and utilization of indigenous technology. Decision-making, implementation, and maintenance processes are often guided by the community.

TECHNOLOGY IN EDUCATION

The fundamental components of technology in education include:

1. **Virtual Learning Platforms:** Educators have the ability to establish a virtual classroom for delivering lectures, assigning tasks, and conducting assessments through online platforms and learning management systems (LMS). Students can engage in flexible and asynchronous learning by accessing content remotely.
2. **Interactive Whiteboards and Smartboards:** These electronic devices empower teachers to display multimedia content, engage students in interactive activities, and enhance presentations, replacing traditional chalkboards and whiteboards.
3. **Educational Apps and Software:** Numerous instructional programs are accessible, covering subjects like science, mathematics, and

language development. These technologies offer personalized learning experiences, interactive simulations, and real-time feedback.

4. **Online Materials:** Abundant educational resources, including articles, videos, and research tools, can be accessed on the internet. Swift access to information benefits both educators and students, fostering individual study and exploration.
5. **Distance Learning:** In contemporary times, technological progress has heightened the importance of distance learning. Virtual classrooms, online collaboration tools, and video conferencing capabilities enable real-time communication and interactive engagement between teachers and students, regardless of geographical locations.
6. **Adaptive Learning Systems:** Utilizing technology, adaptive learning systems evaluate the progress of each student and adapt the learning process accordingly. Efficiently addressing diverse learning needs is achieved by adjusting the pace and content.
7. **Virtual and Augmented Reality:** These immersive technologies offer students virtual experiences that enhance understanding and engagement by bringing abstract concepts to life. Virtual reality has the capability to simulate intricate procedures, historical events, and scientific phenomena.
8. **Collaborative Platforms:** Online systems like Google Workspace and Microsoft Teams serve as examples of tools that facilitate communication and interaction between educators and students. They provide avenues for discussions, document sharing, and collaborative project development.

TECHNOLOGY IN EDUCATION FOR CHILDREN WITH SPECIAL NEEDS

The following outlines different ways in which technology can enrich and enhance the educational experiences of students with special needs:

1. **Adaptive Learning Software:** Specially designed educational software tailored for children with special needs has the capacity to adapt and cater to their unique learning requirements. These programs create a personalized learning environment by adjusting information, pacing, and difficulty levels based on the student's individual abilities.
2. **Assistive Technology Devices:** Devices crafted to support children with special needs in accessing and interacting with educational content. Examples include screen readers, speech-to-text software, and text-to-

speech software. These technological aids help overcome challenges related to communication, writing, and reading.

3. **Communication Apps:** Various applications designed for communication assist children facing difficulties in speech or language expression by utilizing visual symbols or graphics. These apps are particularly valuable for non-verbal students or those encountering challenges in verbal expression.
4. **Touchscreen gadgets and Interactive Whiteboards:** These technological innovations offer haptic and hands-on learning opportunities. Touchscreen technology makes it easier for kids with special needs to engage with others, making learning more dynamic and interesting.
5. **Virtual and Augmented Reality:** By creating virtual worlds that closely resemble real-world situations, immersive technology may provide special needs kids with chances for hands-on learning in an adaptable and supervised environment.
6. **Sensory Devices:** For certain special needs children, especially those who struggle with sensory processing, technology that includes sensory components might be helpful. Interactive sensory boards and other gadgets that arouse the senses through touch, sight, or sound may fall under this category.
7. **Customizable Learning Platforms:** Educational platforms and learning management systems with adaptable features can be modified to accommodate diverse learning needs. Teachers have the flexibility to customize assignments, assessments, and resources to address the individual requirements of each student.
8. **Educational Games and Applications:** Engaging games and applications that enhance the joy of learning can be advantageous for children with special needs. These resources provide an enjoyable and interactive way to reinforce academic subjects, often incorporating gamification elements to enhance engagement.
9. **Digital Storytelling Technologies:** These technologies offer an alternative means of self-expression for children who encounter challenges with traditional communication methods. The integration of multimedia components in these technologies enables a more comprehensive form of communication.
10. **Professional Development for Educators:** Training programs for teachers focus on integrating technology for students with special

needs and adopting inclusive teaching approaches. This ensures that educators are equipped with the necessary skills to effectively utilize these resources.

REVIEW OF LITERATURE

The researcher examined the relevant literature to establish the study's necessity, and the reviews were gathered on:

Campado et al. (2023) carried out a study on the integration of assistive technology in teaching learners with special educational needs and disabilities in the Philippines. This research delved into the integration of assistive technology (AT) in the education of students with special educational needs (LSEs) within selected schools in the Philippines. The objective was to identify the assistive technologies utilized in instructing students undergoing special education (SPED). The study also explored the perspectives of SPED instructors on the challenges they face and the resources available for integrating technology. Amid the challenges posed by the COVID-19 pandemic, twelve SPED instructors engaged in key informant or in-depth interviews. The results indicated that prevalent assistive technologies include conventional technology and interactive multimedia. Although high-tech resources and educational apps are utilized to some extent, their usage is relatively limited. The application of Applied Technology by instructors working with students with special educational needs (LSEN) contributes to student learning, fosters a sense of accomplishment in the classroom, and serves as a motivational factor.

Al-Dababneh & Al-Zboon (2022) in their study of using assistive technologies in the curriculum of children with specific learning disabilities served in inclusion settings: teacher's beliefs and professionalism. This study aims to investigate the professional attitudes and perspectives of Jordanian educators regarding the application of assistive technology (AT) in teaching students with specific learning disabilities (SLD) within inclusive classrooms. The researchers devised a scale named "teachers' beliefs and professionalism," comprising four subscales to fulfill the study's objectives. Following the completion of the study scale, fifteen instructors were interviewed, and the scale was completed by a randomly selected sample of 157 teachers specializing in specific learning disabilities (SLD). The results demonstrated a statistically significant correlation between professionalism and teachers' viewpoints. Additionally, there were no noteworthy differences among SLD instructors based on gender, level of experience, or the severity of impairment among their students. The findings

indicated that the sole distinction, favoring private schools, was associated with the presence of the AT sub-scale, as opposed to public schools.

Pandia et al. (2022) in their research studied about the educational services for Children with Special Needs in inclusive schools during a pandemic in Indonesia. The research incorporated case studies involving nine parents and nine accompanying teachers from four schools in Jakarta and Depok, utilizing a descriptive qualitative approach. Various data collection methods, such as observation, interviews, and document collection, were employed. The findings revealed that schools delivered educational services employing a combination of online and in-person face-to-face modalities, along with curriculum support and assignments, despite the challenges posed by the epidemic. The study underscored the diverse roles that parents undertook during the pandemic, encompassing managerial, instructional, mentoring, and caregiving responsibilities.

Milic (2021) carried out a study on teacher's inclusive, augmentative, assistive and IT competences in working with Children with special educational needs. The study sought to evaluate whether educators possessed the requisite competencies in information and communication technology to effectively meet the needs of children with special educational requirements. Employing a structured observational approach guided by specific protocols, the study involved 15 children aged 2 to 6, with the goal of identifying conditions such as autism, intellectual disabilities, visual and hearing impairments, as well as challenges in speech, language, reading, and writing. The results indicate that educators undergo training in personalized instruction, incorporating strategies and integrating learning and communication technologies. Significantly, there is an observable enhancement in teachers' performance and skills after receiving guidance, training, and support from professional associates at the resource center or school. Teachers demonstrate positive attitudes, creativity, adaptability, and proficient use of technology following training on student characteristics and recommended interaction methods.

Tony (2019) conducted research towards the teacher perspectives on the effectiveness of assistive technology to support children with specific learning disabilities. The systematic review aimed to evaluate and analyze teachers' viewpoints regarding the efficacy of assistive technology for children facing specific learning challenges. Employing a mixed-methods, qualitative approach for data collection, the study focused on participants aged 4 to 18 who had learning difficulties. The findings revealed teachers' perspectives on the impact of assistive technology on high school students

with special needs, particularly in terms of reading comprehension, functional task performance, and academic self-perception.

Quelhas et al. (2018) conducted a study on the contribution of ICT to improve learning of people with special educational needs: A comparative perspective between Public School and Private School. The study aimed to assess the effectiveness of Information and Communication Technology (ICT/ET) in diverse educational settings, with a specific focus on public and private schools. Utilizing questionnaires and observational methods, the research considered the distinctive attributes of research interviews. The findings highlighted the current perspective on the role of ICT/ET in promoting inclusivity, the significance of Special Education in contemporary society, and the encouragement of diversity within educational environments. The study emphasized the importance of addressing critical factors to ensure the successful implementation of such research.

Al-Moghyrah (2017) conducted a study towards the use of assistive technology for students with down syndrome at mainstream schools in Riyadh, Saudi Arabia: Teacher's Perspectives. This study aimed to investigate the perspectives of educators in Riyadh, Saudi Arabia, regarding the use of assistive technology for students diagnosed with Down syndrome. The research utilized a survey and literature review to gain insights into the predetermined research inquiries. The survey involved fifty educators selected from those working with students diagnosed with Down syndrome in schools located in Riyadh, Saudi Arabia. The survey results and insights from the literature review indicated widespread support among instructors for the adoption of assistive technology. Educators expressed confidence in the effectiveness of assistive technology as a valuable tool for supporting children with Down syndrome in both their educational and social endeavors. Those who integrated assistive technology into their teaching practices found it to be instrumental in improving the literacy skills of these children.

Jaya et al. (2017) carried out a study on collaborative learning for children with special needs through computer supported collaborative learning at Vocational High Schools. The primary objective was to identify the most effective approach for implementing a collaborative learning model employing Computer-Supported Collaborative Learning (CSCL) techniques in vocational schools catering to students with disabilities. The research employed an engineering methodology, comprising phases of analysis, design, implementation, and assessment. The study revealed a positive correlation between increased utilization of websites for group projects by both students and instructors and improved teamwork. The incorporation of

these platforms enhanced communication and interaction between teachers and students, whether in group settings or individual discussions.

Jansi & Raju (2016) carried out a study on the secondary teacher's perceptions of assistive technology use for students with learning disabilities. Using a mixed-methods strategy, the research employed surveys, interviews, and focus group questionnaires to examine four research issues. The sample included 600 educators from 120 schools, with twelve general education teachers involved in two focus groups. Additionally, interviews were conducted with four principals and four special education teachers chosen from specific schools in the Chennai and Kanchipuram districts. The results revealed that, despite the positive inclination of many instructors towards adopting assistive technology, a considerable proportion abstained from utilizing these technologies due to inadequate opportunities for professional development.

Alkahtani (2013) studied about teacher's knowledge and use of Assistive Technology for students with special educational needs. This research aimed to investigate the knowledge and competence of teachers in utilizing assistive technology. A total of 127 individuals contributed data through a self-report survey. To gain additional insights beyond the survey responses, three participants underwent interviews in addition to completing the survey. The results indicated that teachers lacked proficiency and knowledge in the utilization of assistive technology. The study emphasized the need for both pre-service and in-service training for educators to enhance their overall comprehension of using assistive technology and implementing universal design for learning for students with disabilities.

EDUCATION IMPLICATION OF INDIGENOUS TECHNOLOGY & INNOVATION IN LIVES OF CHILDREN WITH SPECIAL NEEDS

Children with special needs can experience significant advantages from indigenous technology as it provides inclusive and culturally suitable solutions customized to address their specific requirements. The positive impacts of native technology may include, among others:

- 1. Cultural Sensitivity:** Indigenous technology often incorporates cultural elements to enhance the connection and enjoyment of children with special needs. This cultural awareness can enhance their educational experiences and promote a sense of belonging within the community.
- 2. Tailoring for Diverse Needs:** Indigenous communities often have a deep understanding of the diversity within their own population.

Indigenous technology can be adapted to address the specific needs of children with various special needs, ensuring a more effective and personalized approach.

3. **Incorporation of Traditional Knowledge:** Indigenous cultures often hold traditional knowledge related to healing, community support, and treatment. Indigenous technologies can integrate these practices, offering children with special needs comprehensive and culturally appropriate solutions.
4. **Engagement of the Community:** Indigenous communities usually spearhead the development of new technologies. This approach, when applied to special needs contexts, involves the active participation of families, caregivers, and community members to establish a supportive network for children with special needs.
5. **Accessibility and Inclusivity:** Considering the diverse abilities and challenges faced by children with special needs, indigenous technology can be designed with a focus on accessibility. This could involve features such as user interfaces in multiple languages, alternative communication methods, and sensory-friendly design.

CONCLUSION

After thoroughly reviewing numerous articles on Information and Communication Technologies (ICTs) and technological services, it can be concluded that educators are confident in the effectiveness of assistive technology as a valuable asset for supporting children with special needs in both their social and academic endeavors. Those who integrated assistive technology in their classrooms witnessed notable improvements in the reading abilities of these children. While many educators supported the adoption of assistive technology, a significant number refrained from using these tools due to insufficient professional development. The predominant assistive technologies comprise interactive multimedia and traditional technology, with limited utilization of instructional applications and advanced tools. Despite the challenges presented by the pandemic, educational institutions persevered in delivering instruction through a blend of in-person and online methods, curriculum assistance, and assignments.

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Chapter-22

Integrating Puppet-Based Storytelling in Education Bridging Indigenous Knowledge System (IKS) and Sustainable Development

Priyal Verma

Student (Intgd B.Ed M.Ed Spl.Education(ID)
Amity Institute of Rehabilitation Sciences, Amity University Uttar Pradesh

Dr. Sampurna Guha

Assistance Professor, Amity Institute of Rehabilitation Sciences,
Amity University Uttar Pradesh

Abstract

The integration of puppet-based storytelling as a cutting-edge pedagogical strategy that bridges Indigenous Knowledge Systems (IKS) and Sustainable Development is examined in this abstract. This study explores puppetry's potential as a medium for passing down traditional information and encouraging sustainable ideals in learners, taking into account the rich cultural legacy that is ingrained in indigenous communities and the need for sustainable practices. Using an interdisciplinary framework, the study incorporates aspects of sustainable development, cultural studies, and education. By developing and putting into practice puppet-based storytelling activities, students are immersed in stories that encompass environmental stewardship, indigenous wisdom, and community resilience. This methodology not only breathes new life into established storytelling techniques but also functions as an engaging teaching aid that caters to a wide range of learning preferences. In order to transmit Indigenous Knowledge Systems, promote cultural pride, and inculcate a sense of responsibility towards sustainable development, the research attempts to assess how effective puppet-based storytelling is. It looks into how learners' attitudes are affected, how well they retain the information, and whether indigenous wisdom may be used in modern sustainable practices. Incorporating puppet-based storytelling into the classroom not only provides an inclusive and culturally sensitive teaching approach, but it also tackles the vital necessity of fostering sustainable values. This research aims to support a comprehensive approach to education that respects and integrates different cultural views while fostering

a commitment to sustainable behaviors among students by fusing traditional knowledge with contemporary instructional methodologies.

Keywords - Puppet- Based, Story-Telling, Inclusive, Education Bridging, Indigenous Knowledge System (IKS), Sustainable Development

Introduction

A compelling and culturally rich method of linking Indigenous Knowledge Systems (IKS) with Sustainable Development objectives is to incorporate puppet-based storytelling into the classroom. Indigenous wisdom, folklore, and traditional narratives may all be seamlessly incorporated into modern learning environments with the use of puppets, which are effective communication and educational instruments. Educators may create immersive experiences that vividly convey the information, values, and tales inherent in Indigenous cultures by utilizing the expressive power of puppetry. This combination provides a dynamic platform for teaching important lessons about environmental stewardship, sustainable practices, and community resilience, while also protecting and promoting Indigenous history. Students can interact with IKS in a visually and emotionally engaging way through puppet-based storytelling, which promotes a greater comprehension and appreciation for indigenous views.

This strategy fosters respect, cooperation, and understanding amongst cultures, fostering a feeling of global citizenship consistent with sustainable development ideals.

1.1 Puppet – Based Teaching Approach

A novel and useful technique for teacher training is the use of puppets in the classroom. Teachers can expand their pedagogical tools and improve their ability to attract and engage students by learning how to incorporate puppets through seminars and training sessions. This method stresses the educational advantages of utilizing puppets as teaching aids while also offering helpful ways for manipulating and telling stories with puppets. Teachers can learn how puppets can facilitate effective communication, inclusive instruction, and cultural awareness. The use of puppets in teaching training equips educators to design engaging, participatory, and culturally sensitive lessons that help students grow both intellectually and emotionally.

1.2 Indigenous Knowledge Systems (IKS)

Indigenous Knowledge Systems (IKS) are collections of the accumulated knowledge, customs, and understandings that indigenous people have

accumulated over many generations. With its roots in a close relationship with nature, spirituality, and society, IKS offers a comprehensive perspective on the world. Rather than being recorded in writing, this traditional knowledge is passed down orally through ceremonies, storytelling, and hands-on experiences. It spans a wide range of fields, including astronomy, agriculture, medicine, and sustainable resource management, and it reflects the complex connections that native societies have built with their environment. IKS prioritizes social harmony, communal well-being, and the sustainable use of natural resources. For indigenous peoples, this information is ingrained in cultural traditions that shape identity and provide a strong sense of belonging. In spite of decades of fortitude and adjustment, IKS is confronted with the obstacles of modernity, globalization, and the decline of traditional lifestyles. It is critical to acknowledge the value of IKS preservation and integration into a range of domains, such as education and sustainable development, for the benefit of indigenous communities' cultural legacy as well as for the advancement of a more inclusive, comprehensive, and sustainable strategy for tackling today's global issues

1.3 Sustainable Development

In order to meet the demands of the present without compromising the ability of future generations to meet their own needs, sustainable development is a comprehensive and forward-thinking approach. It recognizes the interdependence of various components and includes economic, social, and environmental aspects. The goal of sustainable development is to strike a balance between social justice, economic stability, and environmental preservation. It places a strong emphasis on promoting social inclusion, managing resources responsibly, and reducing environmental degradation. In order to solve issues like climate change, poverty, inequality, and biodiversity loss, governments, corporations, communities, and individuals must work together to achieve sustainable development. A resilient and peaceful future must be built via the pursuit of sustainable development as civilizations throughout the world struggle with the complexity of the modern world. It demands creative thinking, moral judgment, and a dedication to leaving a good legacy for future generations.

1.4 The significance of Indigenous Knowledge Systems (IKS) integration in the classroom

The incorporation of Indigenous Knowledge Systems (IKS) into the classroom is a critical step in promoting inclusive and culturally sensitive

education. It goes beyond simple curricular enrichment. IKS is fundamentally the collective knowledge, customs, and beliefs of indigenous people, providing a distinct and comprehensive perspective on the world. By integrating IKS into regular education, we recognize the rich diversity of human knowledge and experience and give indigenous students access to a learning environment that is both relevant and powerful. Since it becomes a means of passing on languages, customs, and cultural legacy to newer generations, this integration acts as a catalyst for cultural preservation, guaranteeing the survival of indigenous identities in the face of globalization. Additionally, the introduction of IKS gives all students the chance to gain from a variety of viewpoints, promoting a more thorough comprehension of the connections between human existence and the environment. IKS integration fosters environmental stewardship outside of the classroom because many indigenous knowledge systems are based on sustainable practices and a profound regard for the natural world. Students are encouraged to see subjects in a more integrated way through this holistic approach to education, which fosters critical thinking abilities and a feeling of global citizenship. In the end, educators contribute to the creation of a more inclusive, respectful, and successful educational system that not only embraces cultural diversity but also equips students to navigate a peaceful coexistence in our interconnected world by acknowledging and respecting the significance of IKS in the classroom.

1.5 The role of puppetry in connecting IKS with sustainable development

The dynamic and culturally relevant relationship that puppetry provides between Indigenous Knowledge Systems (IKS) and sustainable development offers a compelling conduit for the fusion of traditional wisdom and modern environmental concepts. Educators can effectively incorporate indigenous narratives, folklore, and ecological insights into sustainable development instruction by utilizing the expressive power of puppetry. As cultural ambassadors, puppets represent the rich history ingrained in IKS and transform it into approachable, eye-catching narratives. In addition to involving students on a visceral and emotional level, this dramatic form helps to close the gap between traditional indigenous traditions and contemporary environmental issues. As vehicles for narrative, puppets may eloquently illustrate the connections that exist between native American tribes and their natural surroundings while promoting conservation, sustainable living, and environmental stewardship. By means of this synthesis, puppetry surpasses its role as a mere form of entertainment and transforms into

a potent pedagogical instrument that not only conserves cultural legacy but also imparts vital knowledge on balancing human endeavours with the environment. Puppetry facilitates the application of indigenous wisdom in the classroom, changing students' perspectives and helping them grasp the mutually beneficial interaction between culture and the environment. Puppetry serves as a link between IKS and sustainable development, fostering inquisitiveness, empathy, and a cross-cultural appreciation that raises a new generation of ecologically conscious people who are sensitive to the knowledge ingrained in indigenous nations' traditions.

1.6 Puppetry's benefits in the classroom

There are several benefits to using puppetry in the classroom, including improved learning outcomes and the creation of a lively, stimulating learning atmosphere. The following are some major advantages of using puppetry in educational settings:

- **Enhanced Engagement:** By grabbing students' attention, puppets enhance the interactive and engaging nature of learning. Puppetry's tactile and visual components pique curiosity and produce an engaging learning environment that is unforgettable.
- **Effective Communication Tool:** Puppets are a useful tool for communicating ideas, particularly when they are abstract or difficult to understand. They offer a friendly, non-threatening environment that can promote student engagement and difficult issue conversations.
- **Thinking creatively and imaginative-** It is encouraged through puppetry. Pupils can write scripts, design their own puppet characters, and perform, encouraging self-expression and developing their capacity to think creatively.
- **Social and Emotional Development:** By giving pupils a secure and accepting environment on which to express themselves, puppetry promotes social and emotional development. Working together on puppetry projects promotes empathy, collaboration, and teamwork among the children.
- **Storytelling Techniques:** Using puppetry is a great way to hone your storytelling techniques. Pupils can enhance their storytelling skills, investigate other viewpoints, and write stories—all of which are beneficial for language learning and interpersonal interactions.

1.7 The possibilities for fostering cultural variety and understanding through puppet-based storytelling:

In a number of educational contexts, puppet-based storytelling has enormous potential to promote cultural diversity and understanding. Teachers can weave a rich tapestry of narratives that represent the range of human experiences by using puppets as cultural ambassadors. Students can interact with and learn about the subtleties of diverse customs, languages, and viewpoints through the use of puppets, which provide a tactile and visual depiction of diverse cultural traditions. Puppetry offers a venue for the study of cultural history through skilfully written stories, encouraging empathy and understanding among students. It acts as a universal medium that breaks down barriers of language, enabling people from many backgrounds to interact and share knowledge. Puppet-based storytelling also promotes teamwork and active engagement, allowing students to investigate and enjoy cultural variety as a group. Educators may foster an inclusive learning environment that respects and values the diverse cultures that make up the mosaic of human civilization by embracing this dynamic form of expression.

1.8 Use of puppet in promoting Indigenous Knowledge System (IKS) and Sustainable Development

The promotion of Indigenous Knowledge Systems (IKS) and Sustainable Development through puppetry is a potent and adaptable strategy that goes beyond conventional educational techniques. As engaging storytellers, cultural ambassadors, and instructional aids, puppets provide a special means of bridging the knowledge gap between indigenous knowledge and sustainable development objectives. Indigenous stories, folklore, and cultural customs can be vividly brought to life through puppet-based storytelling, giving students an immersive and interesting learning experience. Through the embodiment of traditional knowledge and the promotion of a strong bond with cultural heritage, puppets serve as conduits for the dissemination of IKS.

Furthermore, puppets are useful communicators when it comes to spreading information about sustainable development. They are able to provide visually striking and easily understandable examples of environmental stewardship, resource conservation, and community resilience.

By including sustainability topics into puppet shows, teachers can help kids develop environmental consciousness and values of responsibility, which will help create a generation that is more sensitive of the environment.

Furthermore, puppetry fosters intercultural understanding. Students can develop empathy and respect for multiple cultural perspectives by using puppets to portray a variety of characters from different indigenous groups. This method fosters a welcoming classroom atmosphere that values cultural variety and advances social cohesiveness.

In conclusion, the thoughtful application of puppetry can be a potent catalyst for the pedagogical integration of Indigenous Knowledge Systems and Sustainable Development. In addition to being a creative and entertaining medium for teaching learners about sustainable practices, environmental awareness, and cultural appreciation, puppets also serve to conserve and convey indigenous wisdom. This creative method helps to raise a generation that is not only aware of many cultures but also prepared to tackle global issues by using sustainability and cultural sensitivity as a lens.

Review Of Literature

- “Storytelling through ‘Wayang Golek’ Puppet Show: Practical Ways in Incorporating Character Education in Early Childhood,” by Halimah (2020), published on Taylor & Francis Online, offers a unique perspective on character education by exploring the integration of traditional “Wayang Golek” puppetry in early childhood pedagogy. The essay focuses on using “Wayang Golek,” a traditional Indonesian puppet play, as a storytelling technique to teach young learners about character. Halimah advocates for the incorporation of this traditional art form into early childhood classes in order to promote moral ideals, cultural knowledge, and character development in young children. One of Halimah’s article’s main features is its emphasis on cultural integration and the preservation of traditional art forms. The post contains useful information and recommendations. The essay focuses on using “Wayang Golek,” a traditional Indonesian puppet play, as a storytelling technique to teach young learners about character. Halimah advocates for the incorporation of this traditional art form into early childhood classes in order to promote moral ideals, cultural knowledge, and character development in young children.
- The scholarly work “Indigenous Knowledge Systems and Research Methodologies: Local Solutions and Global Opportunities,” authored by Martin, N. and Huaman, S.E. (2020) and published by Canadian Scholars’ Press, is regarded as a seminal contribution to the discourse on Indigenous knowledge and research methodologies. The writers deftly negotiate the challenging field of cultural context in research, making

a strong case for its critical role in comprehending Indigenous people. The book calls for a radical change in research methodology from traditional extractive approaches to a participatory one, encouraging scholars to actively interact with Indigenous communities and co-create knowledge. The investigation of how Indigenous knowledge, which is firmly anchored in cultural traditions, offers regional answers with global ramifications and presents a novel viewpoint on tackling modern issues, is particularly noteworthy. The book excels because of its comprehensive approach to knowledge, which cuts across disciplinary lines and promotes a more linked understanding. The writers also offer a critical analysis of research ethics, highlighting the significance of ethical issues in Indigenous research. All things considered, the study of Martin.N and Huaman. S.E. is a thorough and significant investigation of Indigenous knowledge, enhancing the scholarly environment with its insights and encouraging a more inclusive and respectful approach to research methodology.

- The International Journal of Social Welfare published an article by Krings and Schusler (2020) titled “Equity in Sustainable Development: Community Responses to Environmental Gentrification,” which provides a relevant and perceptive examination of the relationship between environmental gentrification and sustainable development. The writers skilfully negotiate the nuances of how environmental programs may unintentionally exacerbate social inequality in local communities. The paper highlights the significance of equality in sustainable development initiatives and throws light on the complex issues raised by environmental gentrification through a comprehensive analysis of community responses. Krings and Schusler make a substantial contribution to the social welfare debate by concentrating on the effects of such measures on disadvantaged people. The essay urges politicians and practitioners to think critically about the unexpected implications of sustainability programs. Academics, policymakers, and practitioners looking for a thorough understanding of the equity aspects of sustainable development will find the authors’ work to be a valuable resource due to their empirical approach and engagement with community responses, which improve the scholarly understanding of environmental gentrification.
- By examining the crucial role that indigenous knowledge plays in this context, Mohammad and Sultana’s (2018) paper, “Role of Indigenous Knowledge in Sustainable Development,” published in the

International Journal of Development Research, significantly advances the conversation on sustainable development. The writers deftly negotiate the complex interrelationships between traditional wisdom and sustainable development, offering insightful perspectives on the ways in which indigenous knowledge systems might support holistic development, community resilience, and environmental preservation. The significance of acknowledging and integrating indigenous ideas into conventional sustainable development techniques is emphasized by their work. Mohammad and Sultana's emphasis on the useful applications of indigenous knowledge highlights the possibility for more contextually and culturally sensitive approaches to development. The study offers a strong case for politicians, academics, and practitioners to work with indigenous people to promote a more successful and inclusive route toward sustainability. All things considered, Mohammad and Sultana's work makes a noteworthy addition to the academic literature in this area by greatly advancing our understanding of the linkages between indigenous knowledge and sustainable development.

- **Lillard, A.S. (2022).** In their study in 2022 titled "Pretending at Hand: How Children Perceive and Process Puppets," which was published in the journal *Cognitive Development* (Volume 63). This research looks into the fascinating world of puppet play and its impact on children's cognitive processes. Lillard's research dives into the interesting world of pretend play, concentrating specifically on how youngsters perceive and interact with puppets. Lillard's research is noteworthy for various reasons. For starters, it looks into the significance of puppets in children's pretend play, offering vital insights into how youngsters perceive these anthropomorphic representations.

Methodology:

- The current study was carried out using a review of relevant literature at the international level. The papers were sourced from databases like SAGE, IEEE, National Digital Library, and Google Scholar.

FINDINGS

- **Cultural Preservation:** By preserving Indigenous Knowledge Systems and passing them on to new generations, puppet-based storytelling can aid in the preservation of cultural history and customs.
- **Engagement and Participation:** Using puppets in the classroom frequently results in higher levels of involvement and engagement

from students. This kind of active learning can be very useful for explaining difficult ideas about sustainable development that are based on Indigenous viewpoints.

- **identification and Empowerment:** Students' feeling of identification and cultural pride may grow stronger when Indigenous storytelling techniques are incorporated. Their views on sustainable behaviors and environmental stewardship may benefit from this empowerment.
- **Community Involvement:** Using puppets in classrooms is one way to encourage community involvement. Community members working together on collaborative storytelling projects can improve relationships between schools and Indigenous communities by encouraging a feeling of shared accountability for sustainable development.

CONCLUSION

As a result, it appears that incorporating puppetry into teaching is a viable way to connect Indigenous Knowledge Systems (IKS) with Sustainable Development. This creative method to teaching not only makes it easier for ancient wisdom to be passed down, but it also helps pupils feel more deeply connected to their cultural background. Puppet-based storytelling is lively and engaging, which increases student participation and fosters a dynamic learning atmosphere. Students have a more comprehensive grasp of sustainable development and learn how social, cultural, and environmental factors are intertwined when Indigenous viewpoints are included into the classroom, especially through storytelling.

Additionally, using puppets gives students a way to feel empowered and strengthens their feeling of cultural pride and identity. This feeling of strength has the capacity to shape attitudes and actions, encouraging a dedication to environmentally friendly methods based on Indigenous wisdom. Furthermore, as puppet-based initiatives are collaborative in nature, community involvement is encouraged, which fortifies the bonds between educational institutions and Indigenous communities.

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Chapter-23

Assessing the Modern Use of Indigenous Knowledge in Drama Interventions for Children with Specific Learning Disabilities

Rashmi Sharma

Student of Intg. B.Ed. M.Ed Special Education (SLD), Amity University, Noida,

Saurabh Kumar Mishra

Assistant Professor, AIRS, Amity University, Noida

Abstract

This study explores the modern applicability of indigenous wisdom in the field of education and therapeutic interventions for developing and implementing drama-based therapies for children with learning difficulties. Acknowledging the distinct obstacles encountered by these kids, the study heavily emphasizes accepting cultural quirks and customs derived from native knowledge. The inquiry takes place in a context where traditional teaching methods might not be sufficient to meet the varied requirements of kids with learning difficulties. The research attempts to close this gap by focusing on indigenous knowledge and using traditional insights and cultural context to increase the efficacy of drama-based therapies. The study emphasizes the significance of comprehending and taking into account cultural nuances when designing interventions, acknowledging the inherent relationship between indigenous knowledge and cultural identity. In doing so, the study aims to develop a more sensitive and inclusive learning environment that takes into account the varied histories of kids with learning difficulties. In this investigation, traditional methods that are firmly ingrained in indigenous knowledge systems provide direction. The study looks at how the planning and execution of drama-based interventions might be influenced by these tried-and-true techniques, which are frequently founded in community practices and holistic viewpoints. Children with learning difficulties may benefit from a more purposeful and interesting school experience if this strategy is implemented. The goal of the project is to provide important insights that, in addition to meeting the educational needs of kids with learning difficulties, preserve traditional wisdom and the diversity of

cultures. This research determines how indigenous knowledge still has value in the field of education today, with a particular emphasis on drama-based therapies for kids with learning difficulties. The study hopes to open doors for a more effective, culturally aware, and inclusive educational environment through this investigation.

Keywords: Drama skills, inclusion, special education, creativity, indigenous knowledge, traditional.

INTRODUCTION

Indigenous knowledge of Drama

Indigenous knowledge refers to the unique, accumulated understanding, practices, and skills that have been developed over generations by specific communities or groups of people. This knowledge is deeply rooted in the community's cultural, social, and environmental contexts. Respecting indigenous knowledge of drama is crucial for acknowledging the cultural diversity and artistic expressions of these communities.

It involves recognizing the significance of traditional dramatic forms, the role of storytelling, and the cultural contexts that shape these expressions. Preserving and promoting indigenous knowledge of drama enhances the broader recognition of diverse cultural heritages and enriches human artistic expression.

Exploring Indigenous Wisdom in Education and Therapeutic Interventions

In the field of education and therapeutic interventions, there is a growing interest in the modern applicability of indigenous wisdom, particularly in the development and implementation of drama-based therapies for children with learning difficulties. This study addresses the distinct obstacles these children encounter by heavily emphasizing the acceptance of cultural quirks and customs derived from native knowledge.

The Need for Culturally Sensitive Approaches

In many educational contexts, traditional teaching methods may not be fully equipped to meet the varied requirements of children with learning difficulties. As a result, there is a need to bridge this gap by focusing on indigenous knowledge and leveraging traditional insights and cultural context to enhance the efficacy of drama-based therapies.

Significance of Cultural Nuances

Drama, as a form of artistic expression, serves as a powerful medium for cultural exploration and understanding. The significance of cultural nuances in drama lies in its ability to bring forth a rich tapestry of diverse traditions, beliefs, and practices. By incorporating cultural elements into theatrical performances, drama becomes a mirror reflecting the complexity and beauty of different societies. Cultural nuances in drama play a pivotal role in fostering inclusivity and representation. They allow for the authentic portrayal of various cultures, providing audiences with a glimpse into the stories and perspectives that shape different communities. This authenticity not only enriches the theatrical experience but also promotes a deeper appreciation for the diversity that exists in the world. Moreover, cultural nuances in drama contribute to the preservation and revitalization of heritage. Traditional stories, rituals, and customs woven into dramatic narratives become a means of passing down cultural knowledge from one generation to another. In this way, drama becomes a living archive, safeguarding the essence of cultures that might otherwise fade with time. Drama with cultural nuances has the power to transcend linguistic barriers. It communicates universal themes through culturally specific lenses, enabling audiences to connect emotionally and intellectually with narratives rooted in different traditions. This cross-cultural communication fosters empathy and a broader understanding of shared human experiences. In educational settings, incorporating cultural nuances into drama interventions is particularly impactful. For children with learning disabilities, understanding diverse cultural perspectives can enhance their cognitive development, empathy, and social skills. By embracing cultural diversity in drama, educators create an environment that celebrates differences and promotes a sense of belonging for every child. It acknowledges the inherent relationship between indigenous knowledge and cultural identity, emphasizing the development of a more sensitive and inclusive learning environment that respects the varied histories of children with learning difficulties.

Implementing drama-based therapies

Involve the use of drama techniques in the facilitation of personal development and therapeutic healing. These interventions are usually implemented with the assistance of trained therapists who have experience in using drama to identify and address a range of psychological and emotional issues. The interventions can be applied in a range of settings, including hospitals, schools, rehab centers, and community-based programs. The benefits

of drama-based therapies are numerous. Primarily, it empowers individuals and nurtures their creativity, enabling them to delve into self-exploration and gain deeper insights into their circumstances. This empowerment fosters enhanced self-esteem, confidence, and resilience. Additionally, drama-based therapies facilitate the development of a spectrum of interpersonal skills, including communication, problem-solving, and collaboration, which are instrumental in cultivating positive relationships and effecting social change. A pivotal aspect of drama-based therapy lies in its capacity to guide individuals in navigating and processing complex emotions within a supportive and non-judgmental setting. Through techniques such as role-playing, storytelling, and improvisation, participants can effectively identify and articulate their thoughts and feelings. These methods prove particularly beneficial for individuals grappling with challenges like trauma, addiction, anxiety, or depression, where conventional talk therapies may fall short.

Embracing Traditional Methods

Traditional methods firmly ingrained in indigenous knowledge systems provide a guiding light. The study delves into how the planning and execution of drama-based interventions might be influenced by these tried-and-true techniques, which are frequently founded in community practices and holistic viewpoints.

Potential Benefits for Children

It is believed that children with learning difficulties may benefit from a more purposeful and interesting school experience if this culturally sensitive strategy is implemented. By integrating indigenous wisdom into educational and therapeutic practices, the goal is to provide important insights that not only meet the educational needs of these children but also preserve traditional wisdom and the diversity of cultures.

A Call for Culturally Aware Education

Ultimately, this research aims to determine how indigenous knowledge still holds value in the field of education today, with a particular emphasis on drama-based therapies for children with learning difficulties. The study hopes to open doors for a more effective, culturally aware, and inclusive educational environment through this investigation.

Incorporating indigenous knowledge

The incorporation of indigenous knowledge into drama-based therapies for children with learning disabilities is gaining popularity in the fields

of education and therapeutic intervention. Drama-based pedagogies can engage educators, students, and communities in comprehending indigenous perspectives holistically, which results in healing, liberation, critical shifts, and empowerment for both indigenous and non-indigenous participants. Drama-based therapy can be improved to better suit the diverse needs of children with learning disabilities by drawing on traditional knowledge and cultural context. Incorporating indigenous knowledge into drama-based therapies for children with learning difficulties can provide important insights that meet the educational needs of these children while preserving traditional wisdom and the diversity of cultures. By promoting inclusivity, respecting cultural nuances, and providing effective support, this approach aims to create a more diverse, equitable, and inclusive educational environment.

REVIEW OF LITERATURE

Mahant et al. (2023) carried out a study titled “Teaching English POS in Indian Classrooms: Changing the Learning Atmosphere through Process Drama.” This investigation examines the effectiveness of instructing middle school students in an eastern Indian school in the components of English speech through the utilization of process drama. During the implementation phase, they developed lesson plans based on process drama, employing a structural technique, which were subsequently applied to seventh-grade English language learners. The study utilized a quasi-experimental design, employing a pre-test-post-test methodology for data collection. To gain a deeper understanding of the objectives and challenges associated with implementing process drama in a second language school, the instructor consistently recorded detailed field notes.

The intervention program, spanning twenty days, resulted in noteworthy advancements within the treatment group, showcasing unprecedented advantages compared to the traditional approach of teaching speech components through a structural method. Furthermore, insights from observational field notes were instrumental in elucidating both the constraints and effectiveness of employing process drama as an instructional tool in second-language classrooms. These observations underscored the favorable attitudes exhibited by learners towards language instruction grounded in process drama. The findings of this study hold significance for language educators, curriculum developers, and policymakers, providing valuable insights and actionable recommendations for the integration of process drama into second language teaching methodologies across diverse educational settings.

Loggoh, B. & Tham-Agyekum, E. K. (2011) conducted a study on “A review of the use of indigenous communication systems in development work: the case of drama, theatre and puppet shows”. Their study underscored the critical role of communication as a pivotal element in steering the course of development. Particularly in developing nations, indigenous communication systems are gaining increased relevance for specific purposes. The primary objective of the research was to explore the applications of indigenous communication, with a specific focus on puppetry, drama, and theatre. The study revealed that indigenous communication systems exhibit notable effectiveness in diverse areas such as family life education, information dissemination, sex education, addressing sensitive issues, enhancing self-efficacy, developing oral language proficiency, refining pronunciation and interpretation skills, and facilitating self-help communication projects. This is contrary to the prevalent belief that these systems are no longer pertinent. Despite the advent of contemporary communication technologies, the study advocates for a reconnection with African culture, emphasizing that indigenous communication methods continue to hold value and should be embraced accordingly.

Pendzik, S. (2022) researched on “Performance-based drama therapy: Autobiographical performance as a therapeutic intervention”. This research delves into Autobiographical Therapeutic Performance (ATP), a performance-oriented intervention embedded in the practice of drama therapy. The paper elucidates the core therapeutic elements of ATP, encompassing the narration of personal experiences, the transformation of material into artistic expressions, the embodiment and rehearsal of processed personal stories, public performance, and the integration of newfound insights during post-performance reflection. Additionally, the paper traces ATP’s origins to experimental theatre and grounds its characteristics in psychotherapeutic concepts. Notably, the paper cautions against the potential risks associated with the inappropriate use of this intervention. Autobiographical Therapeutic Performance (ATP) emerges as a distinctive therapeutic approach enabling individuals seeking personal growth and transformation to artistically represent the impactful experiences and negative messages that have influenced their lives.

Feniger-Schaal, R., & Orkibi, H. (2019). Researched on “Integrative systematic review of drama therapy intervention research” to foster psychological growth and transformation within the context of psychotherapeutic collaboration, drama therapy emerges as an active and experiential psychotherapeutic modality that purposefully and systematically

utilizes theater and drama processes. Currently positioned at a crucial juncture in its evolution, drama therapy is transitioning from the compilation of clinical reports, case studies, and vignettes towards establishing evidence-based practices supported by empirical studies. In contrast to other forms of psychotherapy and psychological interventions, research on drama therapy interventions remains somewhat limited. This study systematically reviewed drama therapy intervention research published over the last decade (2007-2017), employing an integrated approach that encompassed diverse papers with distinct approaches, client profiles, comparisons, interventions, and outcomes. Utilizing both manual and database searches, a total of twenty-four articles pertaining to theatre therapy interventions were identified. The findings encapsulate a comprehensive overview of various drama therapy techniques and the demographics they cater to. The paper additionally addresses critical methodological considerations arising from diverse research approaches. Over the past ten years, research on drama therapy has produced promising outcomes, affirming its efficacy as a beneficial treatment for a diverse population. Notably, 46% of the studies focus on individuals, both adults and children, grappling with cognitive impairments, developmental disabilities, or a combination thereof. The paper delves into limitations and proposes avenues for enhancing the future reporting of drama therapy and other intervention research by emphasizing improved methodology, specificity, and transparency.

MAJOR FINDINGS

The exploration of indigenous knowledge in drama unveils its critical role in steering developmental trajectories. Indigenous knowledge, deeply rooted in cultural, social, and environmental contexts, preserves and promotes diverse cultural heritages and human artistic expression. In educational and therapeutic interventions, a growing interest in the modern applicability of indigenous wisdom is evident, particularly in drama-based therapies for children with learning difficulties. The study highlights the need for culturally sensitive approaches, emphasizing the limitations of traditional teaching methods for children with learning difficulties. Cultural nuances in drama serve as a powerful medium for exploration and understanding, fostering inclusivity and representation. Drama, enriched with cultural elements, becomes a living archive, preserving the essence of diverse cultures. Implementing drama-based therapies involves using drama techniques for personal development and therapeutic healing. Traditional methods rooted in indigenous knowledge offer valuable insights, influencing the planning

and execution of drama interventions. This approach aims to create a more effective, culturally aware, and inclusive educational environment.

CONCLUSION

The incorporation of indigenous knowledge into drama-based therapies for children with learning difficulties emerges as a promising avenue. Traditional methods deeply rooted in indigenous knowledge systems offer a guiding light, influencing the planning and execution of interventions. This approach not only enhances the educational experience for children with learning difficulties but also preserves traditional wisdom and diverse cultural expressions. As the studies advocate, the intersection of drama, indigenous knowledge, and education holds immense potential. By embracing cultural diversity, respecting traditional methods, and integrating indigenous wisdom, educational environments become more than spaces for learning—they become platforms for celebrating differences, fostering inclusivity, and preserving the richness of human cultural expression. This collective approach echoes a call for a more culturally aware, sensitive, and inclusive educational landscape that acknowledges and embraces the inherent relationship between indigenous knowledge and the diverse identities of learners.

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Chapter-24

Exploring Inclusive Indigenous Educational Strategies for Diverse Learners: A Case Study on Enhancing Social and Creative Skills Using Clay-Art in Students with SLD

Ruby Sharma

Student, Integrated B.Ed. M.Ed. Special Education (Specific Learning Disability),
Amity Institute of Rehabilitation Sciences, Amity University

Saurabh Kumar Mishra

Assistant Professor, Amity Institute of Rehabilitation Sciences, Amity University.

Abstract

This case investigation highlights the capacity for transformation that Indigenous knowledge possesses, as well as its function in promoting holistic development in the context of education by means of clay art. With a focus on students with Specific Learning Disabilities (SLD), this study explores how adding Indigenous viewpoints to the curriculum can improve students' social and creative abilities. The study, which is based on the values of inclusivity and cultural sensitivity, welcomes the depth of Indigenous knowledge to offer a comprehensive educational experience. Clay-art activities imbued with Indigenous cultural aspects are conducted with a broad group of students with SLD using qualitative approaches like participant observation, interviews, and artifact analysis. Through a careful examination of pre- and post-intervention data that include both quantitative and qualitative markers, the research assesses the students' social and creative development. Initial results show that the integration of Indigenous viewpoints positively correlates with the overall development of social and creative skills in students with SLD. Clay art that incorporates cultural themes not only fosters a deeper appreciation for variety and a sense of belonging among students, but also advances a more comprehensive knowledge of holistic education.

Keywords: *Indigenous knowledge, Holistic development, Clay art education, Specific Learning Disabilities (SLD), Social skills, Creative skills.*

INTRODUCTION

The exploration of inclusive and holistic approaches to learning has become increasingly important in the ever-changing world of education. Understanding that every student has different needs, teachers are always looking for new and creative ways to support students' social and creative growth in addition to meeting their academic obligations. This study explores how Indigenous knowledge might be transformational in the context of education, concentrating on children who have Specific Learning Disabilities (SLD). This project is to investigate how the inclusion of Indigenous perspectives in the curriculum can improve the educational experience through the medium of clay art, with a focus on improving the social and creative skills of children who are struggling academically.

Indigenous knowledge stands as a reservoir of wisdom deeply rooted within specific communities, providing a unique lens through which individuals comprehend and engage with their environment. This knowledge, intricately tied to the collective experiences and traditions of a community, plays a pivotal role in communication, decision-making, and problem-solving within the ecosystem it serves. Embedded in cultural heritage, Indigenous knowledge is dynamic, capable of being reproduced, discovered, lost, and perpetuated through oral transmission across successive generations.

Fundamentally, indigenous knowledge is a multidimensional guide that provides understanding of various facets of human existence within a particular ecosystem. It addresses a wide range of topics that transcend traditional boundaries, including education, soil sciences, development, health, agriculture, architecture, cottage industry, and the wise application of relevant technology for resource utilization, in addition to natural phenomena, flora, and fauna. Every aspect of Indigenous knowledge encompasses a distinct set of customs, beliefs, and abilities that support the community's sustainability and resilience.

CLAY-MODELING

CLAY MODELING is a dynamic and interactive art form where objects, sculptures, or sculptures are fashioned out of flexible clay. Using their hands or sculpting tools, artists or casual users mold the clay to create beautiful forms and textures. Often, the clay is cemented into a permanent piece of art by burning it in a kiln. Clay modeling is utilized in sculpting, ceramics, and art education due to its versatility.

In education, clay modeling is a versatile, experiential approach that fosters students' creativity, cognitive abilities, and sensory development. It involves using mouldable clay to make distinctive shapes, making it an engaging and unique learning experience. Students benefit greatly from this tactile form of art because it fosters artistic expression, resolving issues and the growth of fine-motor abilities. Because clay modeling is not only an artistic endeavour but also a means of enhancing the integration of senses, communication, and cognitive abilities, it is an important tool for holistic development and education in the classroom.

Inclusive Education:

Inclusive education is a pedagogical philosophy and practice that aims to provide equitable learning opportunities for all students, regardless of their abilities, backgrounds, or differences. In inclusive classrooms, students with diverse abilities, including those with disabilities, learn side by side with their peers in a supportive and collaborative setting. The focus is on recognizing and addressing the unique strengths and challenges of each learner, fostering a community that values diversity as an enriching aspect of the learning experience.

Importance of Incorporating Indigenous Perspectives in Education:

Incorporating Indigenous perspectives in education is crucial for fostering a comprehensive and culturally sensitive learning environment. Indigenous knowledge systems, deeply rooted in the histories, traditions, and worldviews of specific communities, bring a unique richness to the educational landscape. Integrating Indigenous perspectives acknowledges and respects the diversity of cultures and ways of knowing, enhancing the overall quality of education for all students.

By incorporating Indigenous perspectives, education becomes more inclusive and relevant, providing students with a broader understanding of the world. This integration contributes to the preservation and revitalization of Indigenous cultures, fostering cultural pride and identity among Indigenous students. Moreover, it promotes a holistic approach to learning that goes beyond conventional academic knowledge, incorporating values, traditions, and connections to the natural environment.

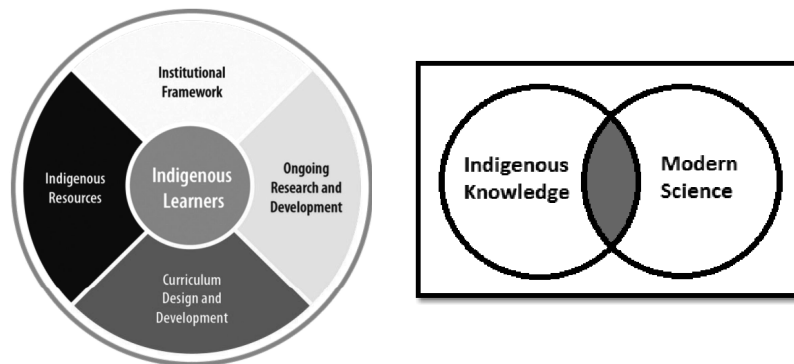
Clay-Art as a Pedagogical Tool

Artistic activities, such as clay art, offer a hands-on and sensory-rich experience, allowing students to explore concepts in a tangible and meaningful

manner. Beyond its aesthetic value, art contributes to the development of cognitive, emotional, and social skills, making it a versatile and valuable pedagogical tool. The incorporation of hands-on activities, specifically clay art, into the educational framework brings forth a range of benefits. These activities facilitate experiential learning, allowing students to actively construct their understanding of concepts through direct engagement with materials. In the case of clay art, the tactile nature of the medium promotes sensory exploration and fine motor skill development. The hands-on nature also caters to diverse learning styles, providing an alternative avenue for expression and comprehension. Furthermore, clay art encourages creativity, problem-solving, and collaboration, fostering a holistic development that extends beyond traditional academic domains. Its tactile nature accommodates various sensory preferences, making it accessible to students with diverse needs, including those with sensory processing differences. The malleability of clay allows for flexibility in expression, providing a medium through which students can communicate and understand concepts in ways that may be challenging through conventional methods. Additionally, the collaborative nature of clay art activities promotes social interaction.

Integrating Indigenous Knowledge into the Curriculum:

Integrating Indigenous knowledge into the curriculum provide structured approaches to ensure a meaningful and respectful incorporation of Indigenous perspectives. These frameworks often emphasize collaboration with Indigenous communities, engagement with Elders and Knowledge Keepers, and the inclusion of diverse Indigenous voices. The frameworks guide educators in designing curricula that reflect the cultural diversity, histories, and contributions of Indigenous peoples. They also encourage the incorporation of Indigenous languages, traditional ecological knowledge, and experiential learning opportunities.



Elements of Clay and their Impact on CWSLD

Elements	Impact on CWSLD (Children with Special Learning Disabilities)
FORM (Shape)	- Allows exploration and manipulation of shapes, improving fine motor skills.
	- Addresses the challenge of fine motor skills for some students with special needs.
TEXTURE	- Provides sensory experience, aiding sensory integration skills.
	- Enables communication through texture exploration, especially for non-verbal children.
CONTRAST	- Enhances visual discrimination skills, supporting tasks like reading and attention.
	- Improves concentration and understanding of visual information.
CREATIVITY	- Encourages self-expression and conveying thoughts, fostering creativity and problem-solving.
	- Promotes cognitive development through imagination, planning, and execution of art projects.
JOINING TECHNIQUES	- Enhances ability to follow instructions and sequences, benefiting cognitive development.
	- Promotes social collaboration and communication among students.

REVIEW OF LITERATURE

Nan, J. K. M., & Ho, R. T. H. (2017). There is persuasive evidence of the therapeutic potential of creative therapies in a study on the impact of clay art therapy on people with major depressive disorder. The results are encouraging and emphasize the advantages of clay art therapy for lowering depressive symptoms, promoting psychological wellbeing, and improving quality of life in MDD sufferers. The study makes a major contribution to the fields of mental health and art therapy thanks to its rigorous approach, important findings, and useful consequences. To better integrate clay art therapy into comprehensive mental health care approaches and to understand the mechanisms underlying these beneficial outcomes, additional study is required.

Kimport, E. R., & Robbins, S. J. (2012). A study on the efficacy of creative clay work for reducing negative mood provides solid evidence for the therapeutic advantages of engaging in artistic pursuits. The results show that creative clay activity can successfully reduce depressive mood states, offering a useful and constructive method of mood regulation. The

study makes a major contribution to the disciplines of art therapy and mood management thanks to its meticulous approach, important findings, and beneficial implications. It is necessary to conduct more study to uncover the precise mechanisms and target demographics for these artistic interventions.

Akhan, L. U., Kurtuncu, M., & Celik, S. (2015). A study on the impact of clay art therapy on patients with neurology shows the potential advantages of creative interventions for treating emotional wellbeing. According to the research, art therapy with clay can be useful in lowering feelings of hopelessness and presents a novel way to improve the emotional well-being of patients with neurology. Despite the lack of a control group in the study's design, it offers insightful questions that must be answered before art therapy is used in healthcare settings. To better understand the causes and mechanisms of the observed decrease in hopelessness in this patient population, more research is required.

Anderson, A., & Yates, G. C. R. (2006). Study on the effects of interactive teaching on young children's creative artmaking, specifically with clay modeling, presents compelling evidence for the benefits of interactive teaching methods. The findings demonstrate that pedagogical approaches based on principles of social modeling and cognitive learning can significantly enhance creativity in children's artwork, covering aspects like technical competency, decorative competency, and aesthetic appeal. This research offers practical implications for educators and underscores the potential of interactive teaching in fostering creativity in young learners, making it a valuable contribution to the fields of art education and child development. Further research could explore the long-term effects and generalizability of these findings in various educational settings.

T.K. Venkata Subramanian et al., (2016). Highlighted Painting, as a dynamic and profound medium deeply interwoven with the cultural fabric of the Indian Subcontinent. It goes beyond being a mere form of artistic expression; it serves as a tangible bridge connecting the present to the past, a visual repository of values, beliefs, and human creativity. The metaphorical significance of painting as a "bridge to our past" underscores its role in preserving and narrating the evolving cultural heritage of the region. This visual language becomes a tangible artifact within the broader tangible material culture, unveiling the complexities of societal thought processes and ways of life. The comparison with sculpture, emphasizing the accessibility of painting, marks a significant cultural leap in human history, portraying it as a chosen medium for expression during the Stone Age. In contemporary Indian literature, the term 'Alekhya' encapsulates painting as

more than a static representation, rather a dynamic expression of an artist's instinct and emotion, intricately linked with social expression and cultural heritage. Collectively, these insights underscore the enduring significance of painting as a cultural force that shapes, reflects, and transcends the cultural identity of the Indian Subcontinent across millennia.

Peerapat Suputtitada (2021) emphasised on “Clay Art Therapy for Physical, Psychological, and Cognitive Improvement” explores the intersection of physiological and psychological well-being through the lens of clay art therapy. Touch, a fundamental human experience, is highlighted as integral to problem-solving, memories, and overall health. The review underscores the neurological impact of clay art therapy, positing its ability to enhance gamma power and activate memory processes. Specific health conditions, such as stroke, epilepsy, and Parkinson's disease, showcase the therapy's efficacy in reducing cortisol levels, improving mood, and alleviating symptoms. Furthermore, the literature emphasizes clay art therapy's role in promoting emotional well-being in chronic conditions like cancer, advocating for increased research and implementation. Particularly relevant during the COVID-19 pandemic, the study suggests that the accessibility of clay art therapy makes it a viable and impactful tool for individuals seeking holistic improvement at home.

MAJOR FINDINGS

The investigation into inclusive Indigenous educational strategies reveals several noteworthy findings. Foremost, the study underscores the transformational power inherent in Indigenous knowledge, emphasizing its pivotal role in fostering holistic development within an educational context. The infusion of Indigenous perspectives into the curriculum, particularly through the medium of clay art, emerges as a valuable tool for enhancing the social and creative skills of students grappling with Specific Learning Disabilities (SLD). This signifies a departure from conventional approaches, highlighting the potential of culturally sensitive educational strategies to bring about meaningful change.

Through a meticulous analysis of pre- and post-intervention data, incorporating both quantitative and qualitative measures, the research establishes a positive correlation between the integration of Indigenous viewpoints and the overall development of social and creative skills in students with SLD. This finding not only validates the efficacy of incorporating Indigenous knowledge but also emphasizes the multifaceted impact it can have on diverse learners. It provides empirical support for the argument

that inclusivity and cultural sensitivity contribute to a more enriching and comprehensive educational experience.

The study further reveals that clay art activities, infused with Indigenous cultural aspects, extend beyond the enhancement of social and creative skills. They contribute to the cultivation of a deeper appreciation for diversity and a sense of belonging among students. This aligns with the foundational values of inclusivity and cultural sensitivity that underpin the research. The fostering of a sense of belonging is particularly crucial in promoting a positive learning environment, ensuring that students with SLD feel valued and included.

In advancing holistic education, the integration of Indigenous knowledge emerges as a driving force. The study suggests that incorporating cultural themes in clay art not only fosters academic growth but also contributes to the holistic development of students. This nuanced approach to education acknowledges the importance of cultural context in the learning process, challenging traditional paradigms by recognizing the interconnectedness of academic, social, and creative dimensions.

CONCLUSION

The research delves into the profound impact of cultural sensitivity and inclusivity, focusing particularly on students with Specific Learning Disabilities (SLD). Through a meticulous examination of the integration of Indigenous perspectives within the curriculum, facilitated by clay art activities, the study reveals a multifaceted set of findings that bear implications for the broader landscape of education.

At the forefront, the study affirms the transformative power intrinsic to Indigenous knowledge. The Indigenous lens emerges not merely as an adjunct to traditional educational practices but as a catalytic force capable of fostering holistic development. The integration of Indigenous perspectives, when carefully interwoven into the fabric of education, serves as a conduit for nurturing social and creative skills in students with SLD. This departure from a conventional approach suggests that Indigenous knowledge carries an inherent capacity for engagement, resonating with the diverse needs of learners grappling with specific challenges.

Crucially, the positive correlation unveiled through the analysis of pre- and post-intervention data illuminates the tangible impact of Indigenous viewpoints on the overall development of students with SLD. The study thus positions cultural sensitivity and inclusivity as fundamental pillars in

creating an enriched educational experience. The validation of this correlation, supported by both quantitative and qualitative measures, underscores the empirical grounding of the research findings.

The study further extends its purview to the cultural dimensions of education, exploring how clay art activities infused with Indigenous cultural aspects transcend traditional pedagogical boundaries. Beyond the enhancement of social and creative skills, these activities contribute significantly to the cultivation of a deeper appreciation for diversity and a profound sense of belonging among students. The recognition of the interconnectedness between cultural themes, academic growth, and holistic student development challenges prevailing educational paradigms.

In advancing holistic education, the study advocates for a paradigm shift that acknowledges and integrates the diverse tapestry of Indigenous knowledge. The incorporation of cultural themes into clay art becomes a microcosm of this holistic approach, challenging the compartmentalization of academic, social, and creative dimensions. This recognition of the interplay between cultural context and learning processes suggests a more nuanced and interconnected model of education, signalling a departure from the reductionist tendencies that have often dominated traditional educational frameworks.

As the research navigates the complex terrain of inclusive education, it becomes a clarion call for educators, policymakers, and stakeholders to reevaluate and reimagine educational practices. The study invites a shift towards a more comprehensive and culturally sensitive approach, recognizing that education extends beyond the mere acquisition of knowledge to encompass the holistic well-being of learners. The findings implore educators to view Indigenous knowledge not as a supplementary facet but as an integral and dynamic force that enriches the educational experience.

In conclusion, this study contributes to the evolving discourse on inclusive Indigenous educational strategies, echoing the sentiment that education is a transformative and dynamic process. By weaving together, the threads of cultural sensitivity, inclusivity, and Indigenous knowledge, the study paints a vivid picture of an educational landscape that values the diversity of learners. The exploration of clay art activities as a conduit for these transformative strategies provides a tangible and experiential dimension to the theoretical framework.

In the grand tapestry of education, where each thread contributes to the richness of the whole, this study stands as an advocate for change.

It encourages a re-evaluation of educational paradigms and a recognition of the interconnectedness of knowledge, culture, and holistic development. As educators embark on the journey of shaping young minds, the study beckons them to embrace the transformative potential embedded in Indigenous knowledge, fostering not only academic growth but also a profound and lasting impact on the lives of diverse learners.

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Chapter-25

**Mindfulness And Indigenous Knowledge:
Facilitating Holistic Development**

Sakshi Bhuria

Student, Integrated B.Ed. M.Ed. Special Education (Intellectual Disability),
Amity Institute of Rehabilitation Sciences, Amity University Uttar Pradesh

Dr. Anusuya K. Yadav

Assistant Professor, Amity Institute of Rehabilitation Sciences,
Amity University Uttar Pradesh.

Abstract

Within the merging currents of ancient Indigenous wisdom and the contemporary mindfulness movement lies a promising junction ripe with transformative potential. Integrating mindfulness practices into the educational system can lead to holistic development in the growing generation. It is reasoned that indigenous communities around the world have accumulated knowledge and rich experiences that have allowed them to develop explanations of their environments, economic development, and sustainability, and that mindfulness fosters innovation by valuing and acknowledging such knowledge and experiences. Grounded in a straightforward yet profound premise, the collaboration between Indigenous knowledge and mindfulness principles is positioned to play a pivotal role in shaping mental, emotional, and socio-cultural well-being. Through a meticulous examination of existing literature and insightful case studies, this study seeks to cast light on the harmonies that arise from this convergence. Its central objective is to craft a practical and inclusive framework capable of effectively addressing challenges across diverse sectors, encompassing health, education, and community development. Integral to this endeavor is the respectful integration of the diverse perspectives inherent in Indigenous knowledge. This research study embarks on an exploration to decipher the unique dynamics that unfold when cultural heritage within indigenous communities intersects with mindfulness practices. As the study weaves together these distinct strands of wisdom, it not only aspires to make a meaningful contribution to the ongoing discourse on holistic development but also imagines a future where progress seamlessly aligns with the depth and diversity of Indigenous insights. Through

the cultivation of this symbiotic relationship, the research aims to establish a foundation for a more equitable, sustainable, and culturally resonant trajectory towards holistic well-being and development.

Keywords: Mindfulness, Indigenous Knowledge, Indigenous Wisdom, Holistic Development

INTRODUCTION

Indigenous Knowledge: A Holistic Perspective

Indigenous knowledge encompasses a profound understanding of the world, one that transcends the boundaries between human societies and the natural environment. At its core, it represents a holistic perspective that integrates diverse dimensions of life, including the physical, spiritual, and communal realms. This holistic worldview is deeply rooted in the traditions, practices, and oral histories of indigenous peoples, serving as a repository of wisdom passed down through generations.

Central to indigenous knowledge is the recognition of the interconnectedness of all living beings and the understanding that human well-being is intricately linked to the health and vitality of the natural world. This recognition is reflected in indigenous practices that prioritize sustainability, resilience, and harmonious coexistence with the environment. Traditional ecological knowledge, accumulated over centuries of observation and experimentation, offers valuable insights into the complex dynamics of ecosystems and the principles of regenerative agriculture, resource management, and biodiversity conservation.

Moreover, indigenous knowledge encompasses not only practical know-how but also ethical principles and cultural values that guide human behavior and decision-making processes. Concepts such as reciprocity, respect for all beings, and the importance of collective welfare form the ethical foundation of indigenous societies, shaping social norms, governance structures, and systems of resource allocation. This ethical framework emphasizes the interconnectedness of human communities and their interdependence with the natural world, fostering a sense of responsibility and stewardship towards future generations and the broader web of life.

Furthermore, indigenous knowledge is intimately linked to cultural identity and spirituality, serving as a source of strength, resilience, and resistance in the face of historical injustices and ongoing challenges. Traditional ceremonies, oral traditions, and sacred sites play a central role in preserving and transmitting indigenous knowledge from one generation

to the next, reinforcing cultural continuity and collective memory. These cultural practices not only sustain indigenous communities but also offer profound insights into the human experience and the fundamental questions of existence, meaning, and belonging. However, despite its resilience and adaptability, indigenous knowledge faces numerous challenges in the modern era. The legacy of colonization, forced assimilation, and cultural erasure has resulted in the marginalization and disenfranchisement of indigenous peoples, undermining their ability to maintain and transmit traditional knowledge systems. Moreover, the increasing encroachment of external influences, including globalization, industrialization, and climate change, poses new threats to indigenous ways of life and the ecosystems they depend on.

In the face of these challenges, efforts to preserve, revitalize, and promote indigenous knowledge are essential for the well-being of indigenous communities and the sustainability of the planet as a whole. This requires recognizing the rights, autonomy, and self-determination of indigenous peoples, as well as acknowledging the value of their knowledge systems in addressing pressing global issues such as climate change, biodiversity loss, and social inequality. By fostering partnerships based on mutual respect, reciprocity, and shared goals, societies can tap into the wealth of wisdom embodied in indigenous knowledge and work towards a more just, equitable, and sustainable future for all.

UNVEILING THE SIGNIFICANCE OF MINDFULNESS

In the intricate tapestry of contemporary existence, the quest for meaning, resilience, and profound awareness finds an age-old ally in the practice of mindfulness. Rooted in ancient contemplative traditions, mindfulness represents more than a reaction to the challenges of modern living—it encapsulates a transformative way of being that transcends time and cultural boundaries. This introduction seeks to unravel the significance of mindfulness, exploring its essence, its universal appeal, and its potential to not only navigate individual well-being but to catalyse positive shifts in societal and cultural realms:

- **Ancient Philosophies in Modern Life:** Mindfulness, originating from ancient philosophies and practices, offers a timeless approach to navigating the complexities of contemporary existence.
- **Transformative Way of Being:** Beyond being a mere technique, mindfulness cultivates a transformative way of being, fostering emotional

resilience, cognitive clarity, and heightened awareness of the present moment.

- **Engagement with the Present:** At its core, mindfulness invites individuals to engage fully with each moment, liberated from the burdens of the past or anxieties about the future.
- **Cultivation of Conscious Awareness:** Mindfulness practices, including meditation and mindful breathing, serve as tools for intentionally cultivating conscious awareness and exploring the landscapes of the mind with curiosity and acceptance.
- **Counterbalance to Modern Pace:** In a fast-paced, interconnected world, mindfulness serves as a counterbalance, providing a sanctuary for individuals to anchor themselves amidst the whirlwind of contemporary living.
- **Practical Stress Management:** Mindfulness offers a practical toolkit for stress management, providing individuals with techniques that contribute to emotional well-being and a sense of balance in the face of life's challenges.
- **Global Phenomenon:** What began as ancient wisdom has evolved into a global phenomenon, finding applications in diverse fields such as psychology, medicine, education, and corporate settings.
- **Universal Principles:** The universal principles of mindfulness resonate globally, appealing to individuals irrespective of cultural backgrounds, as they seek solace, meaning, and resilience in the modern-day hustle.
- **Beyond Individual Well-being:** The significance of mindfulness extends beyond individual well-being, contributing to the cultivation of a collective consciousness that values presence, empathy, and interconnectedness.
- **Catalyst for Positive Shifts:** Mindfulness has the potential to inspire positive shifts in communities, fostering a more compassionate and harmonious coexistence as individuals embrace its principles.
- **Holistic Journey Unveiled:** Beyond its individual benefits, the exploration of mindfulness delves into its historical roots, contemporary relevance, and transformative role in fostering holistic development.

HARMONIZING MINDFULNESS PRACTICES AND INDIGENOUS KNOWLEDGE

In the intricate tapestry of human wisdom, the convergence of mindfulness practices and indigenous knowledge represents a dynamic fusion, offering

a harmonious approach to holistic development. Mindfulness, rooted in ancient contemplative traditions, and indigenous knowledge, a repository of cultural wisdom passed down through generations, comes together to create a symbiotic relationship rich in transformative potential.

The Essence of Mindfulness:

Mindfulness, originating from time-honoured contemplative practices, invites individuals to cultivate a profound awareness of the present moment. It extends beyond a mere technique, encompassing a philosophy that encourages the development of emotional balance, cognitive clarity, and an acute sensitivity to the interconnectedness of all things. As a universal practice, mindfulness resonates with diverse cultures, fostering introspection and personal well-being.

Indigenous Knowledge: A Cultural Reservoir

Simultaneously, indigenous knowledge stands as a reservoir of cultural richness and accumulated wisdom. Passed down through generations, this knowledge encapsulates a holistic understanding of the interrelationships between individuals, their communities, the natural world, and the cosmos. Rooted in the specific cultural contexts of indigenous communities, this wisdom offers insights into sustainable living, environmental stewardship, and the profound connections between humanity and the Earth.

The Synergy Unveiled

The harmonization of mindfulness practices and indigenous knowledge becomes a captivating exploration, uncovering the synergies that lie within their shared principles. Both embody a reverence for the interconnectedness of all life and a recognition of the profound impact of individual actions on the collective well-being of communities.

Beyond Coexistence:

This convergence extends beyond the mere coexistence of practices, evolving into a dynamic interplay that has the potential to shape a more comprehensive and sustainable paradigm for personal and collective development. The intention is not merely to juxtapose these traditions but to explore how their fusion can offer new insights, perspectives, and transformative pathways toward holistic flourishing.

An Interdisciplinary Journey

Embarking on an interdisciplinary journey, this exploration navigates through diverse cultural landscapes and perspectives. It seeks to discern how mindfulness principles, such as presence, awareness, and interconnectedness, align with the holistic worldview intrinsic to indigenous cultures. Through this journey, we aspire to illuminate the transformative possibilities that arise when ancient mindfulness practices seamlessly blend with the profound insights of indigenous wisdom.

REVIEW OF LITERATURE

Goyal, T. (2023) in their research “Indigenous Wisdom and Ancient Philosophy: Nurturing Holistic Well-being Amidst Climate Challenges.” This study explores the integration of indigenous knowledge systems, particularly Ayurveda and Yoga, into modern healthcare practices to address climate-related diseases. Ayurveda, rooted in ancient traditions, offers a holistic framework that aligns human health with natural principles. Studies such as those by Frawley and Ranade (2001) and Lad (2002) delve into Ayurveda’s principles, emphasizing its personalized approach to well-being through dietary choices, lifestyle adjustments, and herbal remedies. These works highlight Ayurveda’s potential contribution to preventive healthcare strategies against climate-related ailments. Additionally, research on Yoga, such as studies by Cramer et al. (2018) and Gard et al. (2014), underscores its benefits in promoting mental and emotional resilience through mindfulness, meditation, and breath modulation. By synthesizing findings from these disciplines, the paper demonstrates the promise of integrating indigenous wisdom with modern healthcare to provide comprehensive and sustainable solutions to climate-related health challenges. Top of Form

Ragoonaden, K. (2019) in their research “A Holistic Exploration of Mindfulness and Indigenous Knowledge.” This study delves into the convergence of Mindfulness practices and Indigenous knowledge within Teacher Education, addressing the imperative for diverse perspectives in the post-truth era. The study emphasizes parallels between Mindfulness and Indigenous wisdom, exploring the impact of their integration on student identity and well-being. The authors advocate for a collaborative, community-engaged approach, highlighting the potential pitfalls of neocolonial perspectives in education. Grounded in a holistic framework, the study employs mixed methods to identify themes such as stress reduction and cultural connections. The research contributes to reconciling Settler and Indigenous perspectives in education, promoting mutual recognition and respect.

Meaden, J. (2016) in their research “On the Origins of Mindfulness: An Interdisciplinary Exploration of Its Evolutionary Roots and Emergence in Indigenous Cultures.” This paper presents a groundbreaking perspective on mindfulness, positioning it as an adaptive cognitive process deeply ingrained in human evolutionary history and profoundly influenced by environmental contexts. Departing from traditional Buddhist and modern trait-based conceptualizations, the literature review integrates interdisciplinary research from psychology, sociology, neuroscience, ecology, and anthropology to illuminate the organic emergence of mindfulness-like awareness in diverse indigenous communities, such as the Pirahã, Mbuti, and Pintupi. Through an exploration of four key contextual factors—immediacy of feedback, methods of learning, exposure to nature, and cultural influences on self-construal—the paper underscores the dynamic interplay between individual cognition and environmental context in shaping mindfulness. By reframing mindfulness as a fundamental and adaptive aspect of human cognition, this perspective not only challenges prevailing conceptualizations but also calls for a re-evaluation of current mindfulness practices and research methodologies, with profound implications for our understanding of human experience and the concept of self.

Capel, C. (2014) in their research “Mindfulness, indigenous knowledge, indigenous innovations and entrepreneurship.” This paper explores the nexus of mindfulness, indigenous knowledge (IK), and entrepreneurship, offering insights into the overlooked dynamics within indigenous societies. Through a thorough review of mindfulness and indigenous entrepreneurship literature, the study contends that individual mindfulness plays a vital role in fostering an appreciation for diverse knowledge forms, distinct from prevalent Western perspectives. It asserts that mindfulness acts as a facilitator for IK, promoting indigenous innovations and entrepreneurship. The research proposes key propositions derived from this synthesis, emphasizing the social implications of recognizing the facilitating role of IK and underscoring the need for further exploration by researchers. This pioneering work positions mindfulness as both an antecedent to and a moderator of relationships between IK, indigenous innovations, and entrepreneurship, contributing to a nuanced understanding of these intersections.

CONCLUSION

In conclusion, the intersection of mindfulness practices with indigenous knowledge represents a profound opportunity for fostering holistic development and societal transformation. Through the synthesis of ancient

contemplative traditions and cultural wisdom passed down through generations, a dynamic fusion emerges, rich in transformative potential. This convergence transcends mere coexistence, evolving into a synergistic relationship that honours the interconnectedness of all life and acknowledges the profound impact of individual actions on collective well-being. As explored in the literature, integrating mindfulness principles into various sectors, including healthcare, education, and entrepreneurship, holds promise for addressing contemporary challenges and nurturing resilience amidst societal and environmental shifts. Moreover, the respectful integration of diverse perspectives inherent in indigenous knowledge offers a pathway towards more inclusive, equitable, and culturally resonant approaches to holistic well-being and development. By embracing this symbiotic relationship, societies can envision a future where progress aligns harmoniously with the depth and diversity of indigenous insights, laying the foundation for a more sustainable, compassionate, and interconnected world.

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Chapter-26

**Exploring Indigenous Technology
Information- Digitalization for Students
with Specific Learning Disability**

Savitri Malhotra

Student (M.Ed. SLD), Amity Institute of Rehabilitation Sciences,
Amity University, Uttar Pradesh

Dr. Sampurna Guha

Asst. prof., Amity Institute of Rehabilitation Sciences, Amity University, Uttar Pradesh

Abstract

This research explores the positive impact of use of indigenous technologies in digitalization of learning among Students with Specific Learning Disabilities in schools. It focuses on utilization of computers and specialized learning resources based on digital tools which enhances accessibility, catering to diverse learning styles, and supporting students with Specific Learning Disabilities. The implementation of indigenous technology in classrooms emphasizes on use of smart technologies in education. It aims to bridge the gap in education by usage of digital tools and information which provided in an inclusive, culturally sensitive and tailored manner to meet the unique needs of the students. The focus of this current research is on creating an accessible and empower educational environment that aligns with indigenous perspectives. The present study shows that use of such technologies enhances the learning experience for these students, by ensuring equitable learning opportunities for all. By embracing the digital tools, traditional learning constantly modified, changes and developed, adapting itself to foster a unique educational experience. Inclusive classrooms benefit from the integration of digital tools such as robotics, smartboards, and tablets which enable students with disabilities to actively participate and engage with their peers and teachers. This modality of online learning empowers Students with Learning disability, by promoting self-paced and individualized learning.

Keywords: Indigenous Technology, Specific Learning Disability, Digital Information & Innovation.

INTRODUCTION

The concept of “Indigenous Knowledge” encompasses to share wisdom, practices, and traditions through generation to generation in communities worldwide. These systems given deep understanding of ecosystem, environment, and sustainable living practices. They developed over centuries and rooted in natural surroundings. It takes a holistic approach to environmental management, educational resources utilization, and community well-being. Indigenous Knowledge address to study in digital form about the contemporary challenges such as- climate change, biodiversity loss, weather forecast and environmental degradation. Indigenous communities offer valuable insights into resilient strategies that have allowed them to thrive in harmony with their study about environments for centuries. The integration of exploring Indigenous Technology Information Systems into broader sustainability initiatives is essential for promoting cultural diversity, upholding indigenous rights, and fostering inclusive approaches to environmental conservation. Recognizing and appreciating these Indigenous Technology Information systems significantly contribute to the global pursuit of sustainable development and the preservation of our planet for future generations in the digital form also.

Indigenous knowledge into mainstream education can have significant benefits for children with Specific Learning Disabilities:

- 1. Diverse Learning Styles:** Indigenous Technology Information often embraces diverse learning styles and recognizes the importance of hands-on, experiential learning. This approach can be particularly beneficial for children with specific learning disabilities who may benefit from alternative methods of instruction given in the digital video form and engagement through the practical in the environment.
- 2. Cultural Relevance:** Indigenous Technology Information is deeply rooted in cultural contexts. Integrating this knowledge into education ensures cultural relevance, providing a more inclusive and meaningful learning experience and digitalization of information can enhance understanding and retention for Students with Specific Learning Disabilities.
- 3. Holistic Approach:** Indigenous Technology Information often take a Holistic approach to education, considering the interconnectedness of various aspects of life. This holistic perspective can be advantageous for children with specific learning disabilities, addressing not only academic needs but also social, emotional, and practical skills development.

4. **Community Support:** Indigenous communities typically emphasize community involvement in education. This support network can benefit children with specific learning disabilities by providing additional resources, understanding, and a sense of belonging. Inclusive communities contribute to a positive and supportive learning environment.
5. **Nature-Based Learning:** Many Indigenous knowledge systems have a strong connection to the environment. Incorporating nature-based learning into mainstream education can provide a sensory-rich and stimulating environment, benefiting children with specific learning disabilities who may respond well to experiential and outdoor learning.
6. **Teaching Resilience:** Indigenous knowledge often includes teachings about resilience and adaptation to change. These lessons can be valuable for children with specific learning disabilities, fostering a mindset of resilience and encouraging them to navigate challenges with a positive outlook.
7. **Inclusive Practices:** Indigenous knowledge encourages inclusivity and respects diversity. Implementing inclusive practices in mainstream education can create an environment where all students, regardless of their learning abilities, feel valued and accepted.
8. **Strengths-Based Approach:** Indigenous knowledge often focuses on individuals' strengths rather than deficits. Applying a strengths-based approach in mainstream education can be particularly empowering for children with specific learning disabilities, highlighting their unique talents and capabilities.

OVERVIEW OF EXPLORING INDIGENOUS TECHNOLOGY INFORMATION – DIGITALIZATION

This research paper involves the exploration of indigenous technology information digitalization specifically concerning students with Specific Learning Disabilities (SLD). It investigates the circumstances under which information and communication technologies (ICTs) can positively impact the well-being of indigenous communities, with a particular emphasis on their role in advancing the development of indigenous people. The initial focus is lies in analysing factors that determine how information and knowledge can effectively empower marginalized groups, particularly Students with Specific Learning Disabilities. It improves informational capabilities, enhancement of writing and reading skills, can focus on their abilities of economically disadvantaged individuals to make strategic life choices and

achieve the lifestyle they value. Digitalisation places good impact on human development of individuals with Specific Learning Disabilities.

NEED

The imperative for Indigenous Technology Information and digitalization for Students with Specific Learning Disabilities (SLD) lies in creating an inclusive and effective educational environment. It facilitates the development of customized digital tools, addressing the unique learning needs of students with disabilities, while digitalization allows for adaptive technologies tailored to individual learning styles. Technology enhances accessibility with alternative formats, supporting diverse learning preferences. Integrating technology into education engages students with learning disabilities through gamified platforms and interactive content, boosting motivation. The digital shift ensures resource availability in multiple formats, easing access for students. Data-driven interventions aid educators in identifying challenges and implementing targets to support. Technology fosters collaboration among students, educators, and parents, facilitating real-time coordination and support. Embracing digital technologies prepares students for the digital world, enhancing digital literacy and independence. Indigenous Technology Information supports educator training for ongoing professional development, ensuring alignment with inclusive education strategies. Indigenous Technology Information and digitalization play a pivotal role in shaping an inclusive, accessible, and forward-looking educational landscape for students with Specific Learning Disabilities. Top of Form

SCOPE OF INDIGENOUS TECHNOLOGY INFORMATION AND DIGITALIZATION FOR STUDENT WITH SPECIFIC LEARNING DISABILITIES

Efforts to enhance educational accessibility for students with specific learning disabilities involve a mixed approach. Indigenous digital content tailored to diverse learning styles, featuring technologies like text-to-speech and customizable fonts, fosters inclusivity. The integration of assistive technologies, such as screen readers and speech recognition software, addresses individual needs within local contexts. Adaptive learning platforms, supported by data analytics, offer personalized experiences and track progress for Students with Specific Learning Disabilities. Educator training and support, including culturally sensitive programs, ensure effective use of technology in the classroom. Digital assessments accommodating diverse learning styles and providing real-time feedback

aid in timely interventions. Collaborative and inclusive online platforms promote holistic education, considering various abilities and preferences of Students with Specific Learning Disabilities. Parental involvement is facilitated through indigenous digital resources, fostering communication between parents and educators. Cultural sensitivity prioritizes to incorporate indigenous knowledge into digital content. Advocacy for policies supporting technology integration in Specific Learning Disabilities education and creating a supportive regulatory environment. Research and development, coupled with collaborations between researchers, educators, and technology developers, drive continuous innovation. Finally, the development of cost-effective indigenous solutions ensures broader accessibility, especially in resource-constrained environments.

REVIEW OF LITERATURE

Meston, T. (2023) stated in the paper title “Imagining Indigenous Educational Design: A Conceptual Manifesto to Grow Disruptive Indigenous Digital Activists”.

Paperwork: The widespread use of digital technology and data collection has strengthened existing systems of oppression globally, rooted in historical connections between technology and control, particularly in settler-colonial contexts. Australia, as a settler-colonial state, emphasizes digital advancement, but Indigenous communities are often left behind, exacerbating the effects of colonization. This paper advocates for researching Indigenous educational design, proposing a shift from traditional schools to local digital learning hubs to empower fair and inclusive Indigenous nation-building.

Li, J., Brar, A., & Roihan, N. (2021) stated in the paper title “The use of digital technology to enhance language and literacy skills for Indigenous people: A systematic literature review”.

Paperwork: It studies investigates the impact of digital technologies on Indigenous people’s language and literacy skills. Highlighting the persistent challenges stemming from historical and socioeconomic factors, the article assesses the efficacy of digital tools, offering insights for teaching and identifying crucial gaps in research and instructional strategies for Indigenous students’ language and literacy development.

Hasan, N., Bao, Y., & Miah, S. J. (2021) stated in the paper title “Exploring the impact of ICT usage among indigenous people and their quality of life: Operationalizing Sen’s capability approach”.

Paperwork: Many indigenous communities grapple with digital divide challenges affecting their social, cultural, and economic well-being. It's essential to scrutinize the broader impact of information and communication technologies (ICT) on improving living standards, individual knowledge, and awareness within these communities. This study, conducted in Bangladesh, investigates the correlation between ICT usage and Sen's (1999) freedom factors, aiming to assess the quality of life. After an initial qualitative pilot study, a structured questionnaire was administered to 250 participants, with data analysed using structural equation modelling. The results highlight a significant link between ICT usage and Sen's freedom factors, positively influencing the quality of life for indigenous populations. Political freedom has a noteworthy impact on economic freedom, fostering development, and economic freedom, in turn, creates social opportunities and transparency.

Gigler, B.-S. (2006) stated in the paper title "Enacting and Interpreting Technology- From Usage to Well-Being: Experiences of Indigenous Peoples with ICTs".

Paperwork: This chapter delves into the conditions under which information and communication technologies (ICTs) can improve the well-being of indigenous communities. It specifically explores the role of ICT in advancing the development of indigenous peoples. The analysis focuses on key factors determining the instrumental and substantive impact of information and knowledge for the empowerment of marginalized groups. The chapter proposes an alternative evaluation framework based on Sen's capability approach, emphasizing the human development of the poor over technology, challenging the prevailing discourse on the digital divide. The conclusion suggests that a direct, causal link between ICTs and enhanced well-being is absent, highlighting the dynamic, multi-dimensional interplay between technology and the social context.

Lea, M. R., & Jones, S. (2010) stated in the paper title "Digital literacies in higher education: Exploring textual and technological practice".

Paperwork: Concerns frequently arise regarding undergraduates, deeply immersed in web-based technologies, facing challenges in traditional study practices like academic reading and essay writing. This research, viewed through a literacy's lens, explores this issue. Findings reveal a complex interplay between literacies and technologies, potentially disrupting conventional academic practices. Despite this, strong evidence suggests students continue to rely on institutional authority for accessing and utilizing web-based resources for assignments. The authors propose a shift in focus

towards textual practice around learning rather than solely on technologies and their applications to understand changes in today's higher education.

FINDINGS

- Many indigenous communities face problems with not having access to digital tools, which affects their way of life in terms of society, culture, and money.
- Different technologies can either give these communities new chances or help them adapt to changes in society and culture.
- It's important to understand how information and communication technologies (ICT) impact the lives of these people in terms of improving their living conditions, knowledge, and awareness.
- The goal was to measure the quality of life for these indigenous groups through economic freedom creates social opportunities and makes things more transparent.
- It is key for inclusive ecosystems, catering to diverse learning needs of students with specific learning disabilities (SLD) for equal access to educational resources.
- It is user-friendly digital tools and platforms catering to various learning styles, integrating features supporting independent navigation.
- Success in indigenous tech initiatives for Specific Learning Disabilities students hinges on collaboration among educators, policymakers, technologists, and community members to identify needs, develop solutions, and implement effective strategies, enhancing overall inclusivity.

CONCLUSION

By integrating Indigenous knowledge into mainstream education, educators can create a more inclusive, culturally sensitive, and adaptable learning environment. This approach can contribute to the overall well-being and academic success of children with specific learning disabilities and special needs. It drawn is that establishing a direct and causal relationship between ICTs and enhanced well-being is not a straightforward matter. Instead, the chapter asserts that this relationship is intricately shaped by a dynamic, multi-dimensional interplay between technology and the social context, particularly in the context of students with Specific Learning Disabilities.

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Chapter-27

Bibliotherapy as Indigenous Knowledge System Facilitating Psychological Health

Siddhant Mohan

Student, MA (Psychology), Maharishi Dayanand University, Rohtak

Dr. Bindu Kumari

Assistant Professor, Dept. of Psychology, Maharishi Dayanand University, Rohtak

Abstract

Bibliotherapy is a healing method centered on reading, involving the use of books and educational materials to enhance mental health encompassing clinical, developmental, and creative approaches. Books have served as therapeutic tools from ancient times, evolving in their function and operation. The present study is a scoping review that advocates for Bibliotherapy and its integration into the Indigenous Knowledge Systems (IKS) for the facilitation of psychological health. The Google Scholar and PubMed databases were explored, and studies conducted on Indian samples from the years 2000 to 2024 were selected. The present review suggests Bibliotherapy as an emerging technique in addressing contemporary mental health challenges, thus facilitating Psychological Health. The review provides evidence for the efficacy of Bibliotherapy in treating symptoms associated with major depressive disorders, anxiety disorders, grief, and trauma. The implication of the present study is the need for the development of a comprehensive system for the effectiveness of Bibliotherapy by integrating it with literature present in the Indigenous Knowledge System, hence facilitating Psychological Health

Keywords: *Bibliotherapy, Indigenous Knowledge System, Psychological Health*

BIBLIOTHERAPY

The term was originally coined by Samuel Crothers in 1916. Bibliotherapy is “the guided reading of written materials in gaining understanding or solving problems relevant to a person’s therapeutic needs.” (Riordan & Wilson, 1989)

Types of Bibliotherapy

1. **Prescriptive Bibliotherapy:** Therapists recommend specific texts for targeted healing (Lieberman, 1974).
2. **Expressive Bibliotherapy:** Individuals engage in writing or creating their own literary works for self-exploration (Kaplan, 1999).

These types offer distinct approaches to leveraging literature for therapeutic benefits. Prescriptive bibliotherapy involves selecting literature to address specific concerns, akin to prescribing healing through carefully chosen texts (Lieberman, 1974). Expressive bibliotherapy emphasizes the power of self-expression and introspection through writing, providing a creative outlet for emotional exploration (Kaplan, 1999).

Principles of Bibliotherapy

1. **Identification and Catharsis:** Readers identify with characters, fostering catharsis (Frankl, 2006).
2. **Emotional Resonance:** Texts are selected based on emotional resonance, enhancing exploration (Yalom, 1980).
3. **Cognitive Stimulation:** Reading stimulates cognition, fostering problem-solving and empathy (Kidd & Castano, 2013).
4. **Empowerment through Insight:** Literature provides insight, empowering individuals for positive change (Hynes & Hynes-Berry, 2002).
5. **Client-Centered Approach:** Recommendations are personalized, aligning with individual needs (Pardeck, 2007).
6. **Therapeutic Relationship:** Bibliotherapy often occurs within a therapeutic relationship (Jones, 1984).
7. **Integration with Other Therapies:** Integrated with other modalities for holistic mental health support (Scherer, 1999).

INDIGENOUS KNOWLEDGE SYSTEM

“Indigenous knowledge systems refer to the cumulative and dynamic body of knowledge, practices, innovations, and cultural insights developed and transmitted across generations within indigenous communities. These systems are deeply intertwined with local ecosystems, traditional customs, and social structures, embodying a holistic approach that integrates spiritual, environmental, and social dimensions. Indigenous knowledge plays a crucial role in sustainable resource management, community resilience, and the preservation of cultural identity” (Berkes, Colding, & Folke, 2000).

PSYCHOLOGICAL/ MENTAL HEALTH:

“Psychological health refers to an individual’s overall emotional and mental well-being, encompassing the capacity to manage emotions, cope with stress, maintain healthy relationships, and navigate the complexities of life. It involves a positive state of mind characterized by emotional resilience, self-awareness, and a sense of purpose. Psychological health is integral to the holistic concept of well-being, acknowledging the interplay between cognitive, emotional, and social aspects of an individual’s mental functioning” (Keyes, 2005).

It is important to note that there isn’t a single universally accepted definition of mental health, as it can be approached from various perspectives. However, the World Health Organization (WHO) provides a widely recognized and comprehensive definition. The WHO defines mental health as “a state of well-being in which the individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community.”

Bibliotherapy, a well-established psychological intervention, involves the use of literature for therapeutic purposes. It acknowledges the power of narratives in shaping human experiences and emotions. By incorporating culturally relevant literature within bibliotherapeutic interventions, there is potential to enhance the effectiveness of mental health initiatives within indigenous contexts. However, the introduction of bibliotherapy within these communities must be approached with cultural sensitivity, recognizing the significance of indigenous knowledge and adapting interventions to align with these traditional frameworks.

Storytelling emerges as a pivotal component of indigenous knowledge systems, acting as a cultural conduit for transmitting essential knowledge, values, and narratives. Through oral traditions, communities preserve their histories, share collective wisdom, and instill a sense of belonging. However, the dynamics of indigenous communities are undergoing transformation. Factors such as globalization, urbanization, and cultural exchange bring new challenges, impacting the mental health landscape within these communities. The preservation of cultural heritage becomes increasingly complex, necessitating adaptive approaches that honor tradition while addressing contemporary needs.

The integration of bibliotherapy into the discussion represents an acknowledgment of the evolving mental health needs of indigenous populations. Bibliotherapy, as a therapeutic method, harnesses the power of

literature to promote emotional and psychological well-being. Recognizing the storytelling heritage within indigenous cultures, bibliotherapy can serve as a bridge between traditional healing practices and modern interventions. The introduction of bibliotherapy is not an imposition of external methodologies but an exploration of how it can complement and amplify the strengths inherent in indigenous knowledge systems.

Indigenous communities worldwide embody Indian context and possess unique knowledge systems that shape their understanding of health, integrating physical, mental, and spiritual dimensions. This study explores the intersection of traditional healing practices and contemporary therapeutic methods, specifically focusing on the integration of bibliotherapy—a form of psychological intervention utilizing literature—within indigenous knowledge systems (IKS). The intricate interplay of globalization, modern challenges, and the resilience of traditional practices underscores the need for innovative approaches that respect the cultural richness of indigenous communities.

Indigenous societies have historically approached health holistically, viewing individuals as interconnected with their communities and the environment. Traditional knowledge systems, deeply embedded in cultural practices, offer insights into maintaining balance and harmony within these interconnected spheres. Storytelling, a central component of many indigenous cultures, serves as a conduit for transmitting knowledge, preserving cultural identity, and addressing the collective psyche. However, the landscape of indigenous communities is evolving, marked by encounters with external influences, urbanization, and shifts in socio-economic structures. These changes bring forth unique challenges to mental health, necessitating a nuanced approach that bridges tradition and modernity.

Indigenous knowledge systems (IKS) serve as the bedrock of cultural identity and resilience for many communities, encapsulating a profound understanding of health that extends beyond the physical to encompass the mental, spiritual, and communal dimensions. Rooted in traditional healing practices, these knowledge systems emphasize the interconnectedness of individuals with their communities and the natural environment. The wisdom embedded in these practices has been passed down through generations, contributing to the resilience of indigenous cultures in the face of historical adversities.

This study is driven by a commitment to understanding and respecting the cultural integrity of indigenous communities while addressing their

mental health needs. As the world grapples with the importance of Indian context and inclusivity, this research seeks to contribute to the discourse on culturally sensitive mental health interventions. By exploring the integration of bibliotherapy into indigenous knowledge systems, we aim to facilitate a holistic approach to psychological well-being that is both effective and respectful of diverse cultural narratives.

In navigating this intersection, it is imperative to approach the study with cultural humility and an understanding of the nuanced relationships within indigenous communities. Cultural sensitivity is paramount, ensuring that any interventions align with the values, beliefs, and practices that have sustained these communities for generations. This background sets the stage for a comprehensive exploration of the potential synergies between bibliotherapy and indigenous knowledge systems in promoting psychological health within diverse cultural contexts.

This research report synthesizes and analyzes existing studies to explore the potential of bibliotherapy integrated with indigenous knowledge systems (IKS) as a means of promoting psychological health. By reviewing literature from diverse disciplines, this report aims to contribute insights into the effectiveness and cultural relevance of combining bibliotherapy and traditional indigenous approaches.

RATIONALE OF THE RESEARCH

Bibliotherapy, as a recognized form of psychological intervention, involves the use of literature to promote emotional and mental well-being. This study posits that the combination of bibliotherapy with indigenous knowledge systems has the potential to enhance the effectiveness of psychological interventions in indigenous communities. By drawing on the healing power of culturally relevant literature, this approach seeks to honor and build upon the strengths of traditional practices while addressing contemporary mental health needs.

Objectives

1. To explore previous empirical studies of bibliotherapy in Indian contexts.
2. To understand the insights existing studies offer on the intersection of bibliotherapy and indigenous knowledge systems.
3. To identify the common themes, challenges, and implications identified in the literature.
4. To understand the effect of bibliotherapy on mental health.

METHODOLOGY

In this methodology, a systematic review of 11 research papers from Google Scholar was conducted, employing keywords like “bibliotherapy,” “indigenous knowledge,” and “psychological health.” The focus was on studies conducted in the Indian context, exploring the intersection of bibliotherapy and indigenous knowledge systems in mental health. Inclusion criteria ensured relevance to the Indian context, emphasizing insights into the effectiveness of combining bibliotherapy and traditional indigenous approaches. The review encompassed topics such as emotional intelligence in Indian folklore, bibliotherapy for chronic ulcers, stress reduction in hospitalized children, and integrating bibliotherapy with indigenous knowledge for managing common mental disorders. This approach aimed to offer a comprehensive understanding of culturally sensitive mental health interventions in India.

REVIEW OF LITERATURE

S. No.	Author's Name	Objective	Discussion	Finding
1	Dixit, V., Kaur, G., & Shanwal, V. K. (2017)	To explore emotional intelligence (EI) in Indian folklore.	Analyze Indian folklore to uncover how emotional intelligence is portrayed, nurtured, and valued. Characters exhibit key EI traits such as self-awareness, empathy, and social skills, providing insights into cultural understanding of EI.	Indian folklore serves as a repository of emotional wisdom, highlighting the enduring relevance of EI in Indian society and suggesting implications for contemporary application.
2	Kirupa, P., Rai, P., & Bhat, S. (2015)	To investigate the effectiveness of bibliotherapy on the quality of life, psychological distress, and depression in patients with chronic leg and foot ulcers in Mangalore.	Explores the potential benefits of bibliotherapy as a therapeutic intervention for patients with chronic leg and foot ulcers, focusing on its impact on psychological well-being and overall quality of life.	Bibliotherapy proves significantly effective in improving the quality of life and reducing distress and depression in patients with chronic leg and foot ulcers, as demonstrated in a successful pilot trial, prompting the initiation of a main study by the researcher.
3	Kumar, P. (2021)	To investigate the effectiveness of spiritual bibliotherapy in managing common mental disorders.	Explores the potential benefits of spiritual bibliotherapy as a therapeutic approach for common mental disorders.	The study shows that spiritual bibliotherapy (SBT) is more effective for psychological well-being than traditional bibliotherapy (BT). Both approaches reduce perceived stress, making SBT a culturally grounded and potentially valuable intervention, especially for those wary of other methods due to stigma.

4	Nazi, R., Ali, P. N., & Akhouri, D. (2023).	To conduct an experiential study to introduce prospective bibliotherapy services in libraries.	Explores the implementation and potential benefits of bibliotherapy services in libraries, focusing on the use of books for healing purposes. Likely discusses the methodology and practical implications of introducing such services.	Introducing bibliotherapy services in libraries could offer potential benefits for individuals seeking healing through books.
5	Afaf, S. (2017)	To develop a comprehensive and accessible bibliotherapeutic resource for young adults, addressing mild depression and adjustment issues, accompanied by a facilitator tool aimed at streamlining the Bibliotherapy process, with the overarching goal of fostering mental health awareness and promoting professional help-seeking behaviors.	The text highlights the limited efficacy of a self-help manual based on Indian Folklores as the sole solution for mental health issues, stressing the importance of cultural relevance and targeted interventions for teenagers.	Bibliotherapy carries a crucial responsibility, serving as a mediator between seeking professional help and denial. The self-help book, designed for adolescents with mild issues, is a valuable gift for caregivers or a guide for facilitators in taboo-ridden rural areas.
6	Trupti, S., Solanki, M., Ramawat, Y., & Pareek, S. (2023)	To assess the effectiveness of bibliotherapy in stress reduction among 9–12 years aged hospitalized children.	The study focuses on the impact of bibliotherapy on stress reduction among hospitalized children in Western India. Results show a significant decrease in stress levels post-intervention, aligning with similar findings in studies conducted by Daise and in Mangalore. Education level was the only demographic variable showing association with pretest stress levels. The study acknowledges limitations, including the absence of randomization. Overall, bibliotherapy is highlighted as effective in reducing stress among hospitalized children.	The study concludes that bibliotherapy effectively lowered stress levels in hospitalized youngsters, offering affordable and accessible intervention. It suggests extending this nonpharmacological approach to adult patients for stress management in clinical settings, emphasizing its cost-effectiveness and potential as an alternative stress management tool.

7	SK, V. K., & Krishnamurthy, A. R	To enhance psychological well-being through comprehensive life skills training for visually challenged students.	The study's effectiveness is evident in positive feedback, emphasizing improved life skills and well-being. The tailored program, incorporating storytelling and interactive sessions, addresses the unique needs of visually challenged students. The diverse topics covered contribute to holistic skill development, creating a positive impact on participants' lives.	The study held 14 sessions covering life skills and goal setting, constrained by time limitations during regular academic classes. Despite the pressure to adhere to time-frames, efforts were made to conclude each session positively, avoiding vulnerability for the students.
8	Sapra, R. (2019)	The paper aims to investigate the role of resilience building in fostering social and emotional well-being in children with ADHD and learning disabilities. It also seeks to identify practical techniques for caregivers to enhance children's skills, emphasizing the impact of bibliotherapy.	Children acquire social and emotional skills in safe, responsive homes with positive parental relationships as a scaffold. The interplay between socio-emotional competencies and resilience suggests a reciprocal influence, emphasizing the need for a positive connection between home and school, where nurturing teachers contribute significantly to children's development.	Creating safe, responsive homes and positive teacher-student relationships is vital for children's socio-emotional development and resilience. The interconnectedness of socio-emotional competencies and resilience underscores the need for further exploration. Establishing positive connections between home and school is imperative for fostering critical skills in children.
9	SK, V. K., & Krishnamurthy, A. R	To assert that the Panchatantra, originally Nitishastra, serves as a life-skills training model, providing practical insights for navigating life's challenges, as supported by previous scholars in the field.	Panchatantra stories utilize diverse narratives to teach life skills such as critical thinking and emotional management. They exemplify rational decision-making, ethical conduct, and interpersonal nuances, providing a balanced exploration of positive and negative emotions, making them a valuable educational tool for practical life lessons.	The Panchatantra stories, beyond being children's fables, serve as an indigenous model of life skills, delving into human emotions, values, and social ethics. They provide profound insights into navigating life's intricacies, offering a mature psychological theory that predates Western psychology.

10	Nursalam, N., Harsaktin- ingtyas, K., Kurnia, I. D., Fadhilah, H., & Efendi, F. (2018)	To investigate whether bibliotherapy had any influence on self-concept of children with mental retardation in SLB	This study demonstrates that bibliotherapy sig- nificantly boosts the self-esteem of children with mental retardation ($p < 0.05$, partial eta square = 0.302). Age, parental education, and family environment play roles. Facilitator support enhances understanding. Higher parental educa- tion correlates with bet- ter self-concept devel- opment. Bibliotherapy effectively promotes self-esteem, emotional exploration, and motiva- tion in these children.	This study concludes that bibliotherapy signifi- cantly improves self-percep- tion in children with mental retarda- tion, with self-esteem identi- fied as the most influential factor through Manova test re- sults. The findings underscore the positive impact of biblio- therapy interventions on shap- ing self-image and identity in these children.
11	Sivasubra- manian, N., Vrajeshbhai, J. V. J., Ma- halakshmi, B., Shaijo, K. J., & Ramji, B. K. (2022)	To assess the effective- ness of bibliotherapy in reducing pre-operative anxiety, using the Hamil- ton Anxiety Rating Scale, to guide non-pharmaco- logical interventions for nurses and improve pa- tient outcomes.	The study found moder- ate to severe preop- erative anxiety in both groups. Bibliotherapy significantly reduced anxiety in the experi- mental group compared to controls. Similar anxiety trends were seen in a Jordanian study, and previous research supports the efficacy of bibliotherapy, even in patients with health issues. Another study on mothers found that reading a preparation book mitigated pre- and postoperative anxiety in children undergoing surgery.	Bibliotherapy is effective in reducing pre-operative anxie- ty, supported by studies. Nurs- es can use this non-pharma- cological intervention across various contexts, enhancing mental health and potentially reducing postoperative com- plications. Book selection can be tailored to patients' com- prehension levels.

RESULT AND DISCUSSION

The amalgamation of bibliotherapy and indigenous knowledge systems (IKS) holds promising results in the realm of psychological well-being within diverse cultural contexts. The reviewed studies showcase the effectiveness of bibliotherapy interventions in addressing various mental health concerns, including stress reduction in hospitalized children, enhancing emotional intelligence through Indian folklore, and managing common mental disorders through spiritual bibliotherapy. These findings underscore the potential of bibliotherapy as a versatile and culturally sensitive approach in promoting

mental health. The intersection of bibliotherapy with IKS acknowledges the unique strengths of indigenous communities, where storytelling plays a pivotal role in transmitting knowledge and preserving cultural identity. The discussion emphasizes the need for cultural humility, recognizing the nuanced relationships within indigenous communities. By aligning interventions with traditional practices, bibliotherapy becomes a bridge between age-old wisdom and modern therapeutic methods, offering a holistic approach to psychological well-being that respects and integrates diverse cultural narratives. The exploration of bibliotherapy within indigenous contexts stands as an innovative endeavor, paving the way for comprehensive, culturally relevant psychological interventions.

CONCLUSION

In conclusion, the synthesis of existing studies on bibliotherapy integrated with indigenous knowledge systems reveals promising implications for mental health interventions, emphasizing cultural sensitivity and holistic well-being. The effectiveness of bibliotherapy is underscored by its diverse applications, ranging from stress reduction in various age groups to enhancing emotional intelligence and life skills. The adaptability of bibliotherapy in addressing mental health concerns is evident in studies exploring its impact on chronic ulcers' psychological effects and fostering psychological well-being in visually challenged students. The intersection of bibliotherapy with indigenous knowledge systems recognizes the importance of cultural integration, offering a potential bridge between traditional storytelling and contemporary mental health approaches.

While the existing literature provides valuable insights, there is a continued need for exploration, considering individual differences, community dynamics, and the long-term effects of bibliotherapeutic interventions. The educational potential of bibliotherapy, particularly highlighted in the context of Indian folklore, suggests its relevance in academic settings for promoting psychological well-being. Overall, the research points toward a nuanced understanding of bibliotherapy's role within indigenous knowledge systems, contributing to the discourse on culturally sensitive mental health interventions.

IMPLICATIONS

- **Cultural Sensitivity in Mental Health Interventions:** The integration of bibliotherapy with indigenous knowledge systems highlights the importance of cultural sensitivity in mental health interventions.

Recognizing and respecting cultural practices and narratives is crucial for the effectiveness of such interventions.

- **Diverse Applications of Bibliotherapy:** The reviewed studies demonstrate the versatility of bibliotherapy in addressing various mental health concerns. From stress reduction to enhancing emotional intelligence and life skills, bibliotherapy proves to be adaptable and applicable across different age groups and contexts.
- **Holistic Well-being:** The intersection of bibliotherapy and indigenous knowledge systems emphasizes a holistic approach to well-being. By incorporating traditional storytelling and cultural practices, mental health interventions can address not only individual psychological needs but also communal and spiritual dimensions.
- **Educational Potential of Bibliotherapy:** The research suggests that bibliotherapy, particularly when based on culturally relevant literature like Indian folklore, holds educational potential. It can be employed in academic settings to promote psychological well-being, offering an innovative approach to mental health education.
- **Bridge Between Tradition and Modernity:** Bibliotherapy serves as a potential bridge between traditional healing practices and contemporary mental health approaches. By respecting and integrating indigenous knowledge systems, bibliotherapy acknowledges the evolving mental health landscape within indigenous communities.
- **Continued Exploration and Research:** While the existing literature provides valuable insights, there is a recognized need for continued exploration. Future research should consider individual differences, community dynamics, and the long-term effects of bibliotherapeutic interventions to further refine and enhance its applicability.
- **Community Involvement and Engagement:** Implementing bibliotherapy within indigenous communities requires active community involvement and engagement. Tailoring interventions to align with local customs and preferences fosters community trust and increases the likelihood of successful mental health outcomes.
- **Potential in Non-pharmacological Interventions:** The effectiveness of bibliotherapy in reducing pre-operative anxiety, as evidenced in the studies, suggests its potential in non-pharmacological interventions. Nurses and healthcare professionals can consider bibliotherapy as a complementary approach to enhance mental health and potentially reduce postoperative complications.

- Promoting Mental Health Awareness: The research underscores the role of bibliotherapy in promoting mental health awareness, especially in areas where stigma associated with mental disorders might hinder professional help-seeking behaviors. Bibliotherapy can act as a mediator, encouraging individuals to seek professional help when needed.
- Cautious Implementation: To ensure the success of bibliotherapeutic interventions, it is crucial to approach implementation with cultural humility. Understanding and respecting the nuanced relationships within indigenous communities is paramount, and interventions should align with their values, beliefs, and practices.

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Chapter-28

Learning Methods in the Indigenous Knowledge System and Its Relevance to National Education Policy-2020

Ritika

Student, MA (Psychology), Maharshi Dayanand University, Rohtak

Dr. Bindu Kumari

Assistant Professor, Dept. of Psychology, Maharshi Dayanand University, Rohtak

Abstract

In ancient India, education served as the source of knowledge, traditions, and practices, earning the country the titles ‘Knowledge Hub’ and ‘Land of Seekers’ worldwide. The present study is a Scoping Review that puts forth the idea of engaging Pedagogical Techniques in the existing teaching scenario. The Indigenous Knowledge System (IKS) in education reveals valuable learning methods deeply rooted in cultural wisdom. This study delves into the relevance of integrating IKS into education policies. It emphasizes a more naturalistic approach, we uncover how traditional knowledge, passed down through generations, contributes to unique teaching methodologies. In Ancient times, knowledge was acquired through three major steps: *Shravan* (Hearing), *Manan* (Reflection), and *Nididhyasan* (Realization); leading to the development of human qualities. The ancient university, *Gurukul* (where *Guru* means ‘enormous’ and *Kul* means ‘institution’), trained and demonstrated the 64 *Kalas* (skills) and 18 *Vidyas* to students, aiming to instill the three R’s: Religion, Resilience, and Responsibility. The National Education Policy (NEP) of 2020 is formulated to bring about a transformation in the education system, with a focus on flexibility, multidisciplinary education, and skill development. This policy is deeply rooted in the Indigenous Knowledge System (IKS) and draws inspiration from Mahatma Gandhi’s Nai Talim (New Education) of 1937. This inclusion involves the Google Scholar and Research Gate databases, proposing a more holistic and culturally sensitive approach to education. This exploration aims to bridge the gap between conventional education frameworks and the

profound wisdom embedded in Indigenous Knowledge Systems, promoting a more inclusive and dynamic educational experience.

Keywords: Indigenous knowledge system, national education policy, gurukul, ancient education system

Introduction

A learning method denotes a structured approach or technique utilized to aid in the acquisition, comprehension, and application of knowledge, skills, or attitudes (Kolb, 1975). It encompasses a diverse array of strategies, instructional methodologies, and educational procedures aimed at actively involving learners in the process of obtaining information and promoting genuine understanding. The problem-solving activities, hands-on exercises, lectures, discussions, case studies, group work, simulations, and multimedia presentations are examples of learning methods. Indigenous Knowledge is conveyed orally or through hands-on experience, it offers holistic insights into sustainable methodologies, traditional healing, ecological awareness, and cultural heritage. This knowledge is characterized by culturally ingrained wisdom, practices, and innovations that are transmitted across generations within distant cultural communities.

The present paper investigates the Indigenous Knowledge System (IKS) in the cultural landscape of India and its role in shaping traditional learning approaches. The unique ways in which indigenous communities in India approach learning, and the potential implications of incorporating these methods into educational policies. It is imperative to grasp and leverage the insights ingrained in indigenous learning methods to promote inclusive and culturally sensitive education policies, given the dynamic nature of the educational environment in the country.

Gurukul System

In the Indian context, Indigenous learning methods are firmly grounded in cultural practices, symbolizing a symbiotic bond between knowledge and community life. The traditional *Gurukul* system, where students lived within reach of the teachers, epitomizes the communal nature of learning aimed at resolving real-life challenges. It was crucial to establish an emotional bond between the educator and the learner, before initiating the teaching and learning process. The teacher imparted a comprehensive array of knowledge encompassing religion, culture, scriptures, medicine, philosophy, literature, warfare, statecraft, astrology, history, and more learning extended beyond mere book reading. It required correlating knowledge with the nature and

the essence of life itself, rather than simply memorizing information for the sake of exams. This system welcomed students from diverse socio-economic backgrounds, ranging from affluent to underprivileged families and each student embraced a humble lifestyle within the boarding school. The discipline, rules, and regulations were deeply grounded in morality and religious principles, and any breach of the rules was deemed a transgression and subject to appropriate punishment. As it was an entirely residential system, students resided in the teacher's house, learning was not only from formal teachings but also by observing the teacher responding to various situations in daily life, drawing lessons from these experiences. A perfect teaching-learning environment was established where classes took place in serene locations, either in open spaces along riverbanks or in tranquil jungles. Access to quality education was unrelated to wealth, as the focus was laid on the capacity to learn and financial status never hindered one's ability to receive the finest education, fostering originality of thought among students.

Model of Learning as per IKS

India historically served as the global center of knowledge and was renowned as the land of seekers. Ancient education in India followed a three-step process: *Shravan* (Hearing), *Manan* (Reflection), and *Nididhyasan* (Realization) (Sharma & Sharma, 1996). *Shravan* means to listen and comprehend and it entails attentively hearing the truths imparted by teachers and grasping their significance. Knowledge, in this context, represents what the ear perceives, rather than what is merely seen in writing. *Manan* entails the pupil independently contemplating the lessons orally conveyed by the teacher, aiming for complete assimilation. It involves reflecting on what was heard during *Shravan*. *Manan* involves scrutinizing the validity of opinions. During this process, the teacher may pose questions, students respond, and the group engages in discussion to elucidate key points. *Nididhyasan* signifies the pupil's full comprehension of the imparted truth, enabling them to internalize and live according to it instead of articulating it verbally and it symbolizes the attainment of truth. Each student would undergo these three phases (*Shravan*, *Manan*, *Nididhyasan*) daily and they carry their significance and proved remarkably effective despite their apparent simplicity (Yadav, 2018).

Three-Step Process of Learning

The fundamental aspects of transmitting knowledge across generations are oral traditions encompassing storytelling, folk tales, and epics.

Additionally, indigenous communities often employ experiential learning through engagement with nature, agricultural practices, and artisanal skills, fostering a holistic understanding of the world.

Ancient Education System: Holistic Development

The ancient education system in India explicitly acknowledged self-realization as life's ultimate objective, highlighting its distinctive qualities. There was no interference of the society in the curriculum of studies, regulation of fee structure, and hours of instruction. Ancient universities imparted training in the 64 *kalas* (skills) and 18 *Vidyas* to students, to foster the three Rs: Religion, Resilience, and Responsibility (Mahesh et al. 2023). These skills encompassed a wide range, including the art of singing, dancing, playing musical instruments, painting, embellishing, reciting books, preparing delicious food, metallurgy mineralogy, engineering, carpentry, practicing medical treatment by herbs, knowing provincial dialects, talking with fingers, composing verses and mechanics. The *Vidyas* covered various disciplines such as the science of linguistics, life, fine arts, pronunciation, astronomy, military strategies, code of conduct, and religious and legal duties.

The primary objective was to nurture the complete growth of individuals' personalities and moral character, aiming to cultivate the virtues to promote societal cohesion. The Educational processes were used to commence and conclude with religious rituals, emphasizing wholehearted devotion to the pursuit of learning. The ancient education of India aimed to inculcate personality traits such as self-esteem and self-confidence in pupils, also focused on the preservation and enrichment of culture, fostering character and personality development, and cultivating noble ideals.

Education Policies

India's educational trajectory has been characterized by a fusion of ancient indigenous learning methodologies and the evolution of policy frameworks. The first educational policy of India was introduced in the year 1835 by Thomas Babington Macaulay, a British Historian and Politician, who was a member of the Governor-General's Council and it was a crucial historical event in British colonial India. This policy prioritizes the teaching of English language and literature over traditional Indian languages. Since gaining independence, the government has implemented three education policies for the Country's development. Stemming from the recommendations of the Kothari Commission (1964-1966), the Government of India unveiled the initial National Education Policy in 1968, advocating for equitable

educational opportunities. Subsequently, the second National Education Policy emerged in 1986, with modifications in 1992. The most recent iteration, in 2020, introduced a shift in the pedagogical structure from 10+2 to 5+3+3+4, aiming for holistic development. The National Education Policy (NEP) of 2020 aims to comprehensively transform the education sector of India to meet the demands of the 21st century. This policy is deeply rooted in the Indigenous Knowledge System (IKS) and draws inspiration from Mahatma Gandhi's educational philosophy known as Nai Talim (New or Basic Education) proposed in 1937. Through an analysis of historical developments and policy frameworks, this paper aims to contribute to ongoing discussions on the future direction of education in India.

Table 1: Explanation of learning methods of education policies

Educational Policies	Learning Methods
NEP 1968	<ul style="list-style-type: none"> • Emphasizes indigenous learning materials and experiential learning.
NEP 1986	<ul style="list-style-type: none"> • Introduce child-centered education, activity-based learning, and flexible curriculum. • Advocates for teacher training, assessment reforms, and inclusive education.
NEP 2020	<ul style="list-style-type: none"> • Promotes holistic, multidisciplinary education, along with experiential learning and vocational education. • Emphasizes flexible curriculum, technology integration, and assessment reforms. • Highlights inclusive education, teacher training, and promoting arts, culture, and sports.

The Indian education system has undergone changes that have resulted in the adoption of outdated and inflexible teaching methods. These methods often prioritize rote memorization and exam-oriented approaches over fostering social and moral skills among students. As a result, ethical values within the Indian education system have declined. As India navigates the complexities of educational policy formulation, it is imperative to critically assess the relevance of indigenous learning methods. These methods not only preserve cultural heritage but also offer alternative perspectives on knowledge acquisition and dissemination. The rationale behind this study lies in the potential enrichment of educational policies through the incorporation of indigenous learning practices. By acknowledging and integrating indigenous learning methods, educational policies can become more inclusive, responsive to diverse learning styles, and culturally sensitive. The study aims to bridge the gap between traditional indigenous

learning and formal education systems, it seeks to provide insights into how indigenous learning methods can inform educational policies, fostering an environment where the educational experience is enriched by the wisdom of indigenous knowledge systems. Through this exploration, the research aspires to contribute to the ongoing discourse on shaping education in India to be more holistic, inclusive, and attuned to the sustainable development of the nation.

Objectives

1. To explore how indigenous learning methods can be integrated into formal educational policies.
2. To evaluate the potential impact of incorporating indigenous learning practices on fostering holistic and multidisciplinary education.
3. To formulate recommendations for educational policymakers based on the findings.

Methodology

This scoping review aims to examine the significance of traditional Indian learning techniques in shaping educational policies. The review uses a mixed-method research approach and examines 25 academic papers from well-known databases such as Google Scholar, Academia, and Infilbnet. The objective is to collect diverse viewpoints on how indigenous knowledge systems intersect with educational policy development in India. From these, 10 papers are selected for in-depth analysis to gain a nuanced understanding of how traditional learning methods can influence and enhance educational policies that cater to the varied needs of learners in India. By utilizing a diverse range of scholarly sources, this study aims to significantly contribute to ongoing discussions regarding the incorporation of indigenous knowledge into formal educational structures.

Table 2: The Studies on Indian Indigenous Knowledge System and Education Policies

S. No.	Author's Name	Objective	Discussion	Outcome
1.	Mahesh, K. M., Aithal, P. S., & Sharma, K. R. S. (2023)	Explore the role of ancient Indian universities in fostering holistic and multidisciplinary education to create the Indian Knowledge System (IKS).	Emphasizes the holistic approach of ancient Indian universities, integrating arts, sciences, philosophy, and spirituality. It discusses interdisciplinary learning and the relevance of adapting these traditional principles to modern education.	Advocates for reviving traditional educational methodologies to promote a comprehensive understanding of knowledge and cultivate the Indian Knowledge System (IKS) in contemporary settings.

2.	Yadav, U. (2018)	Compare ancient and modern education systems regarding curriculum, teaching methods, and societal influence.	Contrasts ancient holistic education emphasizing moral values with contemporary specialized knowledge-based education. It likely addresses societal impact and technological advancements.	Highlights the evolution of education systems and suggests the potential benefits of integrating traditional and modern approaches for improved educational outcomes and societal development.
3.	Sharma, R. N., & Sharma, R. K. (1996)	Provide a concise overview of the evolution of education in India from ancient times to the contemporary era.	Various historical phases and influences shaped Indian education, including ancient systems like the Gurukul, colonial impacts, and modern reforms.	Valuable insights into the cultural, social, and political factors that have shaped the Indian education system, aiding in understanding current educational challenges and opportunities.
4.	Ghonge, M. M., Bag, R., & Singh, A. (2020)	Examine the evolution of education in India across ancient, medieval, and modern periods.	Explores the influence of culture, religion, and socio-political factors on educational systems during each period.	Offers insights into the historical development of Indian education, highlighting continuities, transformations, and challenges, and their relevance to contemporary educational discourse.
5.	Kapur, R. (2018)	Identify and discuss challenges within the Indian education system.	Examines issues like inadequate infrastructure, outdated curriculum, rote learning, and disparities in access.	Raise awareness and spark discussions for educational reforms and improvements.
6.	Suman, A. K., & Shanu, S. K. (2021)	Investigate the integration of indigenous knowledge traditions into the National Education Policy.	Examines the significance of ancestral heritage in education, assessing its alignment with policy goals and discussing potential benefits and challenges.	Advocates for including indigenous knowledge in education policy to promote holistic and culturally relevant learning.
7.	Saxena, S. (2020)	Explore innovative teaching technologies for skill development in line with the NEP.	Discusses digital tools and interactive methods for enhancing skills, aligning with NEP goals.	Advocates for adopting innovative teaching tech to improve education quality and skill development, in line with NEP objectives.
8.	Mishra, N., & Aithal, P. S. (2023)	Explore the relevance of ancient Indian education in modern education.	Examines principles and values of ancient Indian education and discusses their applicability to contemporary challenges.	Advocates for integrating aspects of ancient Indian education into modern pedagogy to foster holistic learning and address modern educational needs.

9.	Evans, S. (2002)	Revisit Macaulay's Minute and its impact on colonial language policy in nineteenth-century India.	Analyzes Macaulay's advocacy for English education over Indian languages, discussing its implications for colonial language policy and cultural identity.	Highlights the lasting effects of colonial language policies on linguistic diversity and cultural identity, advocating for critical reassessment and promotion of linguistic justice.
10.	Macaulay, T. B. (2015)	Present Macaulay's recommendations for English education in colonial India.	Argues for the adoption of English education to create a class of Indians with British sensibilities, facilitating governance.	Influential in shaping colonial education policy, prioritizing English language education, and marginalizing indigenous languages and cultures.

Discussion

The exploration of indigenous learning methods and education policies reveals the evolution of educational practices throughout history, from ancient to modern times. It highlights the religious, and socio-political factors that influenced the development of educational systems. Traditional Indian education systems, such as the traditional Gurukul system and the three-step process of learning, prioritize holistic development and moral values. However, modern education systems tend to prioritize specialized knowledge and exam-oriented approaches, which can lead to a decline in ethical values. Fortunately, the National Education Policy (NEP) of 2020 aims to shift towards a more holistic, multidisciplinary education that draws inspiration from indigenous knowledge systems. This policy seeks to integrate traditional wisdom with contemporary pedagogy in the educational system.

Conclusion

The incorporation of indigenous learning methods into educational policies in India is paramount, fostering both comprehensive and inclusive development among students. These methods provide valuable insights into sustainable practices, ethical values, and deep-rooted community connections. By integrating these approaches into educational policies, there's an opportunity to enhance the educational landscape of India significantly. These methods prioritize hands-on learning, ethical growth, and social awareness, all essential aspects of a well-rounded education. The combination of traditional wisdom with modern advancements can create inclusive and morally conscious learning environments, empowering students to navigate the complexities of the modern era with confidence.

and adaptability. Education goes beyond mere knowledge acquisition; it's about instilling a profound respect for one's heritage and traditions. This holistic educational approach fosters individuals who excel academically, uphold moral principles, and actively contribute to societal betterment. The integration of indigenous learning methods into educational policies represents a transformative shift towards a more equitable and ethically grounded educational system in India, aligning to nurture individuals who not only succeed academically but also embody the values necessary for positive societal impact.

Implications

The preservation and integration of indigenous learning methods into educational policies in India has far-reaching implications across various domains. By acknowledging and valuing traditional knowledge systems, educational policies can help preserve and promote India's rich educational heritage while fostering inclusive education that caters to diverse learning styles and social backgrounds. Additionally, these methods prioritize holistic development, including moral values, life skills, and environmental sustainability, thereby equipping students with the necessary skills to navigate the challenges of the 21st century. Furthermore, integrating indigenous learning methods encourages community engagement and empowerment of indigenous communities, leading to socio-economic empowerment and pride. Moreover, by incorporating unique perspectives from indigenous knowledge systems, India can contribute to a more diverse and inclusive global discourse on education and sustainable development. The implications of preserving and integrating indigenous learning methods into educational policies extend beyond the classroom, touching upon preservation, inclusive education, holistic development, community engagement, empowerment, and global perspective.

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Chapter-29

**Integrating Indigenous Knowledge in
Education: A Path to Holistic
Learning and Cultural Sustainability**

Priyanka Pandey
Student Teacher, AIE.

Dr. Jyoti Tiwari
Asst.Prof., AIE.

Abstract

This research explores the potential of integrating Indigenous Knowledge (IK) into modern educational frameworks, highlighting its role in generating holistic learning experiences and contributing to cultural sustainability. The study examines the historical context of IK in education, acknowledging its importance as a source of wisdom, resilience, and cultural identity for Indigenous communities. It conducts a comprehensive literature analysis, examining how IK integration aligns with the goal of creating inclusive and culturally relevant learning environments. Case studies are reviewed to highlight successful examples of IK integration, highlighting its significant impact on students' cultural awareness and academic achievement. The research uses a mixed-methods approach, incorporating interviews, questionnaires, and case studies to gather perspectives from educators, students, and community members. It also examines pedagogical techniques that promote effective IK integration, including strategies for educators, teacher training programs, and participatory learning. The study evaluates student outcomes, assessing cognitive, social, and emotional changes impacted by exposure to IK and its long-term implications for cultural preservation and sustainability. The research presents policy suggestions and solutions to address opposition and misunderstandings in incorporating IK in mainstream education. The findings emphasize the importance of embracing and appreciating Indigenous knowledge as an intrinsic component of educational practices, improving the educational experience for all students and fostering a greater understanding of cultural diversity and sustainability.

Keywords: Indigenous Knowledge, Case Studies, Educational frameworks, Inclusive and Equitable

INTRODUCTION & BACKGROUND ON INDIGENOUS KNOWLEDGE AND ITS RELEVANCE IN EDUCATION

Indigenous knowledge is the information gathered and preserved by local people through various means such as oral tradition, kinship networks, communal connections, social groups, etc. This knowledge has been used to wisely manage the resources that are essential for their daily survival. Many researchers, forums, organisations, etc. have attempted to define and re-define Indigenous Knowledge, but no consensus has emerged. “The vast body of knowledge, skills and experiences that has been developed outside the formal educational system which people apply to maintain, improve and sustain their livelihood” is how Indigenous information was described by the World Bank (2003). Various scholars have offered different definitions of IK. One definition state that it is “the traditional knowledge of the local community existing within and developed around the specific conditions of men and women indigenous to a particular geographical area.” Another view holds that “Indigenous Knowledge is found in peoples’ memories and activities which are expressed in the form of stories, songs, belief system, rituals, folklores, community laws, local language, cultural values, agricultural practices, material objects, animal breeds and plant species.” Similarly, this notion is put out by (Grenier in Mahalik & Mahapatra, 2010). Sharma (2014) claims that “Indigenous Knowledge,” also known as traditional or local knowledge, is deeply rooted in culture and exclusive to a particular area or civilization. This knowledge is especially important for rural impoverished communities because it affects decisions regarding food security, health of people, welfare of animals, education, and the management of natural resources. Despite its many forms, Indigenous Knowledge may seem to signify the same thing. Moreover, it is not exclusive to any particular tribe or clan. There are other titles for indigenous knowledge, such as traditional knowledge, farmers’ wisdom, local knowledge or rural knowledge.

As environmental, ecological, and global inequalities continue to widen, Indigenous Knowledge Systems are becoming more and more recognised as a critical component of Sustainable Development, defined as “development that satisfies the needs of the present without compromising the ability of the future generations to meet their needs” (Brundtland Report/WCED Report, 1987, p 41). Given their wealth of knowledge about their cultures, habitats, social and political institutions, economic resources, etc., indigenous peoples could serve as the “key drivers” for removing poverty, improving livelihoods, and achieving environmental sustainability (Boon & Hens, 2007). Since indigenous knowledge comes from sources outside of official

institutions, indigenous populations have coexisted with their own body of knowledge about the environment they live in for an unlimited amount of time, a fact that is typically ignored by the mainstream. The concept of Indigenous Knowledge was only recognised and put into practice globally following the 1992 United Nations Conference on Environment and Education, the 1980 Brundtland Commission, the 1987 World Commission on Environment and Development, the 1980 World Conservation Strategy of the International Union and Conservations of Natural Resources, and other events (Mahalik & Mahapatra, 2010). These occurrences proved the importance of indigenous knowledge for the sustainability of the environment in every country, community, and society at large, dispelling the misconception that indigenous knowledge systems are only found in tribes or other marginalised parts of the world. The value of the indigenous wisdom held by the local communities has recently been apparent due to growth and development, which has played a part in the developing ecological disaster and environmental issues.

Numerous studies conducted in this field have emphasised that Indigenous Knowledge offers a valuable framework, concepts, guiding principles, practices, and actions that can form the basis of an efficient development process aimed at reestablishing the social, economic, and environmental resilience of the global community. According to Boons & Hens (2007), Indigenous Knowledge systems help to reshape development strategies in areas such as politics and governance, agriculture, health, natural resource management, commerce and industry, etc. and encompass years of analytical and experimental approaches to Sustainable Development. According to Aggarwal (2008), indigenous knowledge is resource-efficient and effective, and it has allowed them to safeguard and manage resources far better than the resource-intensive, technocratic, and externally imposed management systems that the modern world has to offer.

LITERATURE REVIEW

According to Eilks and Hofstein (2015), Stuckey et al. (2013) proposed that science education should adapt its curricula to reflect the many facets and dimensions of scientific knowledge. The current science curriculum in many nations is supposed to move away from the “Golden Age” of science education in the 1950s and 1960s, when teaching was primarily centred on scientific concepts and facts (Bybee 1997). Effective acquisition of scientific ideas, theories, and facts was facilitated by a curriculum that was developed at that time utilising a discipline-based structured approach (Eilks

et al. 2013). Due to its narrow focus on preparing a select few students for careers in science and engineering, the scientific curriculum of that era is now seen as unimportant by the majority of students (De Boer 2000; Stuckey et al. 2013).

Based on their prior classroom experiences, students bring their own thoughts and opinions to the table. Cultural variations lead people to see science through different lenses than mainstream scientists. Therefore, it is necessary to investigate multicultural scientific education that incorporates students' existing knowledge. As a pedagogical link primarily to multicultural students of science, the cultural component of multicultural science contexts is often crucial (Atwater and Riley 1993; Hodson 1993; Stanley and Brickhouse 1994). It also plays a role in providing valuable scientific knowledge. An appropriate strategy for achieving this objective is to cultivate culturally sensitive science classroom practices and pedagogical frameworks that include indigenous knowledge and other cultural perspectives into the classroom (Aikenhead and Jegede 1999).

According to Snively and Williams (2016), science educators should work to create new curricula that present a balanced and objective viewpoint. They also have to instruct students in a variety of scientific comprehension methods. The perspectives of Native Americans can aid us in comprehending the kind of environmental ethics and in-depth knowledge that we must acquire in order to effectively address the more complicated problems of the twenty-first century. In Canada, for instance, a paradigm for science education with sustainability at its core was developed as a result of empirical study on the incorporation of indigenous principles in scientific education (Murray 2015). According to Snively and Williams (2016), research on sustainability should fairly examine the relationship between human activity and the environment as well as the effects of environmental circumstances on society.

In a magazine article, Murray (2015) emphasised that environmental science is not the exclusive focus of sustainability sciences. It ought to embrace science without taking into account its social, cultural, or environmental context. The relevance of the curriculum, sustainability issues, socio-scientific issues, and the pure sciences need to be closely connected (Murray 2015; Stuckey et al. 2013). The personal, societal, and vocational relevance criteria of the relevance of science education can be satisfied by sustainability sciences, which can integrate a variety of scientific worldviews. Here, indigenous science can provide insights into socio-scientific and cultural issues that support the applicability of science

education. Therefore, in order to promote sustainable growth and raise the importance of scientific learning, indigenous science ought to be at the centre of cutting-edge educational strategies.

RESEARCH METHODOLOGIES

The technique adopted approach, incorporating interviews, questionnaires, literature research, and case studies. Semi-structured interviews acquired thoughts from instructors, students, and community members, while questionnaires obtained broader opinions. A detailed literature study influenced the research, analysing current studies on Indigenous Knowledge integration. Case studies emphasised successful implementation instances. The method of thematic analysis was applied for qualitative data, while descriptive and inferential statistics studied quantitative data. Ethical issues were addressed throughout the procedure. Policy ideas were produced based on research findings. This methodological approach seeks to give a complete understanding of IK integration in education.

OBJECTIVES OF THIS RESEARCH PAPER

To Investigate the Impact of Integrating Indigenous Knowledge on Student Learning Outcomes: This purpose attempts to analyse how incorporating Indigenous knowledge into educational curriculum effects several areas of student learning, such as academic accomplishment, ability to think critically, cultural competency, and holistic development. Through empirical research, surveys, and qualitative evaluations, this purpose strives to offer evidence of the usefulness of indigenous cultural integration in boosting student learning results.

To Explore the Challenges and Barriers in Integrating Indigenous Knowledge into Educational Systems: This purpose focuses on identifying and understanding the challenges, resistance, and institutional hurdles that limit the integration of Indigenous knowledge into mainstream education. By conducting interviews, focus groups, and policy studies, researchers can identify concerns such as epistemic disputes, cultural prejudices, limited resources, and lack of support systems, offering insights into solutions for resolving these challenges.

To Examine the Role of Indigenous Knowledge in Promoting Cultural Sustainability and Community Empowerment: This purpose is to examine how Indigenous knowledge systems contribute to cultural preservation, revival, and empowerment within Indigenous communities. Through case studies, participatory action research, and community-based

methodologies, researchers may study the ways in which Indigenous knowledge supports cultural resilience, improves community relationships, and enables Indigenous peoples to exercise their rights and sovereignty.

To Assess the Policy Implications and Best Practices for Integrating Indigenous Knowledge in Education: This purpose focuses on examining existing educational policies, frameworks, and activities linked to Indigenous education and finding best practices for incorporating Indigenous knowledge into formal and informal educational contexts. By conducting comparative analyses, policy evaluations, and stakeholder consultations, researchers can provide recommendations for developing culturally responsive pedagogies, curriculum guidelines, teacher training programs, and support systems that promote the effective integration of Indigenous knowledge in education

IMPORTANCE OF INCORPORATING INDIGENOUS PERSPECTIVES IN EDUCATIONAL CURRICULAR

Incorporating Indigenous perspectives into educational curricula is of paramount importance for several reasons:

Cultural Relevance: Indigenous perspectives provide a lens through which students can understand the world from diverse cultural viewpoints. By including Indigenous knowledge, practices, and worldviews, educational curricula become more inclusive and reflective of the cultural diversity present within societies.

Historical Accuracy: Traditional educational curricula often overlook or misrepresent Indigenous histories, contributing to the perpetuation of stereotypes and biases. Incorporating Indigenous perspectives helps to provide a more accurate portrayal of historical events, acknowledging the contributions, struggles, and resilience of Indigenous peoples.

Promotion of Diversity and Equity: Integrating Indigenous perspectives fosters a more inclusive learning environment where all students feel valued and represented. It helps to counteract the marginalization and erasure of Indigenous cultures and promotes respect for diverse ways of knowing and being.

Environmental and Sustainability Education: Many Indigenous cultures have profound knowledge and practices related to environmental stewardship and sustainability. By incorporating Indigenous perspectives on land, resources, and ecosystems, educational curricula can instill a deeper understanding of and respect for the natural world, fostering a sense of responsibility toward environmental conservation.

Holistic Learning: Indigenous knowledge systems often emphasize interconnectedness, balance, and holistic approaches to understanding the world. Integrating Indigenous perspectives encourages students to think critically, make connections across disciplines, and appreciate the complexity of issues from multiple angles.

Cultural Preservation and Revitalization: Including Indigenous perspectives in educational curricula contributes to the preservation and revitalization of Indigenous languages, cultures, and traditions. It helps to combat cultural assimilation and supports efforts to reclaim and celebrate Indigenous identities.

Promotion of Social Justice and Reconciliation: Education plays a crucial role in promoting social justice and reconciliation efforts with Indigenous communities, especially in post-colonial societies. Incorporating Indigenous perspectives can help to challenge colonial narratives, promote dialogue, and build bridges of understanding between Indigenous and non-Indigenous peoples.

Preparation for Global Citizenship: In an increasingly interconnected world, understanding and respecting diverse cultures and perspectives are essential skills for global citizenship. Integrating Indigenous perspectives prepares students to engage respectfully and collaboratively with Indigenous peoples and communities, both locally and globally.

DIVERSITY OF INDIGENOUS KNOWLEDGE SYSTEMS ACROSS CULTURES AND REGIONS

India is a country renowned for its cultural diversity, with a rich tapestry of Indigenous knowledge systems that vary significantly across cultures and regions. Indigenous communities in India, often referred to as Adivasis or Scheduled Tribes, possess unique knowledge systems that are deeply rooted in their historical, geographical, and socio-cultural contexts. These knowledge systems encompass diverse fields such as agriculture, medicine, ecology, spirituality, and social organization. Here, we explore the diversity of Indigenous knowledge systems across different cultures and regions in India:

Agricultural Practices: Indigenous communities across India have developed sophisticated agricultural practices tailored to local climates, soils, and ecosystems. For instance, the Adivasi communities in the northeastern states practice shifting cultivation, known as *jhum* or slash-and-burn agriculture, which involves rotating cultivation plots to maintain

soil fertility. In contrast, communities in the Western Ghats region employ terraced farming techniques to cultivate rice, spices, and cash crops on hilly terrain.

Medicinal Knowledge: Indigenous medical systems such as Ayurveda, Siddha, and Unani have their roots in ancient Indian civilizations and continue to be practiced by various Indigenous communities. Additionally, numerous tribal groups have their own traditional healing practices based on the use of medicinal plants, herbs, and natural remedies. For example, the traditional healers of the Gond tribe in Central India possess extensive knowledge of medicinal plants and their therapeutic properties, which they use to treat various ailments.

Ecological Wisdom: Indigenous communities have intricate knowledge of local ecosystems, biodiversity, and natural resources, which inform their sustainable resource management practices. In the Western Himalayas, the Bh0tiya and Gujjar communities have traditional grazing practices that regulate livestock movement to prevent overgrazing and soil erosion. Similarly, the Todas of the Nilgiri Hills in South India have sophisticated water harvesting and conservation techniques to sustain their pastoral livelihoods.

Cultural Traditions and Rituals: Indigenous knowledge systems are deeply intertwined with cultural traditions, rituals, and oral histories that reflect the spiritual beliefs and social values of different communities. For instance, the Warli tribe in Maharashtra preserves its cultural heritage through intricate tribal art, depicting scenes from everyday life, agricultural rituals, and mythological stories on mud walls. Similarly, the Naga tribes in Northeast India have elaborate traditional festivals such as Hornbill Festival, where they showcase their cultural diversity through music, dance, and indigenous cuisines.

Social Organization and Governance: Indigenous communities have unique systems of social organization and governance based on kinship, communal ownership, and customary laws. In regions like the Andaman and Nicobar Islands, the indigenous Jarawa and Onge tribes have traditional councils and decision-making processes to resolve disputes, manage natural resources, and preserve their cultural autonomy.

RELATIONSHIP BETWEEN INDIGENOUS KNOWLEDGE AND SUSTAINABLE PRACTICES

In India, the relationship between Indigenous knowledge and sustainable practices is profound and multifaceted, reflecting centuries-old traditions

of living in harmony with nature. Indigenous communities have developed intricate knowledge systems that prioritize ecological balance, resource conservation, and community well-being. This relationship is evident in various aspects of Indigenous life, including agriculture, natural resource management, traditional medicine, and cultural practices.

One significant area where Indigenous knowledge contributes to sustainable practices in India is agriculture. Many Indigenous communities practice agroecological farming methods that rely on traditional wisdom, local biodiversity, and sustainable land management techniques. For example, in the northeastern state of Meghalaya, the Khasi and Jaintia tribes practice a unique form of sustainable agriculture known as 'jhum cultivation' or shifting cultivation. This practice involves rotating cultivation plots, allowing fallow periods for natural regeneration, and maintaining soil fertility through organic matter. Similarly, the Adivasi communities in central India employ traditional farming practices such as mixed cropping, seed saving, and organic fertilization, which enhance biodiversity, soil health, and resilience to climate change.

Moreover, Indigenous knowledge systems in India encompass holistic approaches to natural resource management and conservation. Indigenous communities have deep ecological knowledge of local ecosystems, watersheds, and biodiversity hotspots, which inform their sustainable resource utilization practices. For instance, the indigenous communities living in the Western Ghats region have traditional forest management systems known as 'sacred groves' or 'community forests,' where they protect and preserve biodiversity-rich areas as sacred sites. These community-based conservation initiatives contribute to the maintenance of critical habitats, genetic diversity, and ecosystem services.

In addition to environmental sustainability, Indigenous knowledge also promotes social and cultural sustainability within communities. Traditional governance systems, customary laws, and communal land tenure arrangements reflect Indigenous values of equity, reciprocity, and collective responsibility. These social institutions play a crucial role in fostering community cohesion, resolving conflicts, and ensuring the equitable distribution of resources.

Overall, the relationship between Indigenous knowledge and sustainable practices in India is characterized by a deep understanding of ecological interconnectedness, respect for biodiversity, and a commitment to intergenerational stewardship. Recognizing and integrating Indigenous knowledge into sustainable development initiatives is essential for promoting

resilience, biodiversity conservation, and cultural diversity in India's diverse landscapes. Embracing Indigenous perspectives can enrich mainstream sustainability efforts by offering alternative models of living harmoniously with nature and fostering more inclusive and equitable approaches to environmental management.

CASE STUDIES AND BEST PRACTICES

Examples of successful initiatives to integrate Indigenous knowledge in education

Several successful initiatives in India have effectively integrated Indigenous knowledge into educational curriculum, fostering cultural relevance, holistic learning, and community empowerment. One notable example is the Eklavya Model Residential Schools (EMRS), established by the Government of India to provide quality education to Indigenous students from marginalized communities. These schools incorporate Indigenous languages, cultural traditions, and community-based knowledge into the curriculum, promoting cultural pride and academic achievement among students. Another successful initiative is the Tribal Research and Training Institute (TRTI) in Maharashtra, which collaborates with Indigenous communities to document, preserve, and promote traditional knowledge systems. TRTI conducts research, develops educational materials, and organizes training programs for teachers to integrate Indigenous knowledge into school curricula, enhancing cultural sensitivity and relevance. Moreover, various non-governmental organizations (NGOs) and community-based organizations (CBOs) across India have implemented grassroots initiatives to promote Indigenous education. For instance, the Adivasi Academy in Gujarat provides Indigenous students with access to culturally relevant education, vocational training, and leadership development opportunities, empowering them to become agents of change in their communities.

Lessons learned, including strategies for overcoming barriers and fostering sustainable partnerships

Lessons learned from integrating Indigenous knowledge in education in India underscore the importance of collaborative partnerships, cultural sensitivity, and community engagement.

Firstly, building trust and establishing sustainable partnerships with Indigenous communities are essential for the success of educational initiatives. Meaningful engagement, respectful dialogue, and co-design

processes ensure that educational interventions are culturally relevant, responsive to community needs, and owned by the Indigenous stakeholders.

Secondly, overcoming barriers such as institutional resistance, bureaucratic hurdles, and funding constraints requires advocacy, coalition-building, and policy advocacy. Educators, policymakers, and community leaders must work together to advocate for inclusive educational policies, allocate resources for Indigenous education, and address systemic inequalities within the education system.

Furthermore, fostering cultural sensitivity and promoting Indigenous leadership within educational institutions are critical for creating inclusive learning environments. Providing cultural competency training for educators, incorporating Indigenous perspectives into teacher training programs, and recruiting Indigenous teachers and mentors can enhance the cultural responsiveness of educational institutions.

Lastly, promoting sustainability in Indigenous education initiatives requires long-term commitment, capacity-building, and community-led approaches. Investing in local capacity-building, supporting Indigenous-led initiatives, and mainstreaming Indigenous knowledge within formal education systems can ensure the continuity and scalability of educational interventions over time.

CONCLUSION

This integration enriches learning experiences, promotes cultural diversity, and addresses contemporary challenges such as environmental sustainability, social justice, and health disparities. Successful initiatives demonstrate the importance of collaborative partnerships, cultural sensitivity, and community engagement. Overcoming barriers requires advocacy, capacity-building, and policy reforms. By prioritizing Indigenous perspectives and fostering inclusive educational environments, India can promote cultural sustainability, empower Indigenous communities, and create more equitable and resilient societies for future generations.

The call to action for educators, policymakers, and community stakeholders is clear: prioritize the integration of Indigenous knowledge in education to foster inclusive, culturally relevant, and equitable learning environments. Embrace collaborative partnerships, cultural sensitivity, and community engagement to ensure that educational initiatives are responsive to Indigenous needs and aspirations. Advocate for policy reforms, allocate resources, and invest in capacity-building to support Indigenous education

initiatives. By prioritizing Indigenous perspectives and fostering inclusive educational environments, we can promote cultural sustainability, empower Indigenous communities, and build a more just and equitable society for all. The transformative potential of holistic learning and cultural sustainability in education cannot be overstated. By embracing Indigenous knowledge and perspectives, educational institutions can create inclusive, culturally responsive, and empowering learning environments that benefit all students.

Holistic learning recognizes the interconnectedness of knowledge, values, and experiences, fostering a deep understanding of complex issues and promoting critical thinking skills. By integrating Indigenous knowledge, students gain diverse perspectives and worldviews, enhancing their ability to tackle real-world challenges with creativity and empathy. Furthermore, cultural sustainability ensures the preservation and revitalization of Indigenous cultures, languages, and traditions, enriching educational experiences and promoting social cohesion. By valuing and respecting Indigenous knowledge systems, educational institutions contribute to cultural diversity, social justice, and intergenerational transmission of knowledge.

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Chapter-30

**Ways to Develop Indigenous Knowledge in
Light of NEP 2020**

Swati Pandey
B.Ed (2022-24), AIE.

Dr. Jyoti Tiwari
Asst.Prof., AIE.

Abstract

Indigenous knowledge serves as the foundational wealth upon which societies are built, acting as the matriarch of knowledge exchange and the means to transmit techniques and methodologies for learning and preserving the unique culture of a specific community. This constitutes the primary focus of our research, and we plan to employ a mixed-method approach. Indigenous individuals actively participate in traditional practices such as medicine, agriculture, education, art, dance, culinary arts, and economic management. Our aim is to study ways to include their contribution in the education system.

UNESCO, in its reports, emphasizes that ‘nature is part of us’ and expresses respect for indigenous people. It recognizes the essential role of indigenous knowledge in safeguarding nature and contributing to the establishment of a healthy and ethically pure society.

The National Education Policy (NEP) of 2020 has taken progressive steps to enhance the education system by incorporating indigenous knowledge approaches. A noteworthy initiative involves introducing primary level education in the native languages of indigenous communities. This approach ensures better comprehension for children and gradually eliminates the fear associated with attending school. This paper delves into methods for developing indigenous knowledge within the framework of NEP 2020, including integrating it into the curriculum, preserving native languages, community development, introducing traditional healing practices, and highlighting the significance of Ayurveda in daily life. NEP 2020 is poised to introduce indigenous knowledge into the education system through these avenues.

Keywords: - Indigenous knowledge, Traditional, Society, Education, UNESCO, NEP 2020.

INTRODUCTION

India is a diverse country, as we look at its culture, people, languages, traditions, food and many countless belongings from the different parts of its states. But everyone is only aware of the major parts of the tradition. The small tribal communities are still unknown to the major population of the country. They don't need any special recognition from the government or society because they follow their own very old, original, and strong tradition. Which includes all their needs, whether it is food, health or education. They are connected to nature so strongly and they follow the best system to over all their needs. This research mainly focuses on the beneficial information which can be implemented in school curriculum to teach students not to depend on only materialistic things and make them recognize the importance of nature in life. Not only this, it also increases the critical thinking capacity in the young developing mind.

Indigenous knowledge may be described as an acquired human or organizational capacity obtained, within the constraints of one's environment, from experience and learning, according to existing literature (Agrawal, 2004; Rouse, 1999; Khothari, 1995).

It is generated and shared by individuals in addition to by assemblies consisting of individuals in formal or non-official organizations with a common goal, including teams, clusters, units, or discussion groups. A large range of management of knowledge systems incorporates elements from traditional knowledge.

The collection of concepts, immigration, and knowledge referred to as indigenous knowledge advocates responsible consumption of both natural and cultural resources. The various titles for it comprise traditional ecological understanding as well as traditional wisdom.

Through their interactions and encounters with their surroundings, indigenous individuals and tribes create their own knowledge. It is used to explain occurrences in ecosystems that are biological in nature, interpersonal, cultural, and spiritual.

Indigenous knowledge is transferring knowledge or information among the communities or it is more similar to passing of information in a family from generation to generation and it is being followed by all generations in the same manner.

NEP 2020 has been introduced to teach primary-level students in their mother language. It is a great initiative by the National policy but

indigenous knowledge is not limited only to the primary level. It is also applicable to the secondary and higher classes. It helps to increase their critical thinking capacity; the problem-solving abilities are being enhanced by the implementation of indigenous knowledge.

For the higher classes, medicinal techniques and the methods being taught at that level will help to explore the knowledge about the traditional benefits of medicine of the indigenous tradition. This research faces trouble while adopting a mixed- approach.

RESEARCH OBSTACLE AND OBJECTIVE

The most significant obstacle confronting this research lies in the fact that neither educators nor pupils display an especially substantial amount of awareness of indigenous knowledge; they are ignorant of knowledge. Then, it will be more difficult for teachers to incorporate indigenous knowledge into the student curriculum.

The primary goal of this study is to provide indigenous knowledge in the context of NEP 2020 and to provide educators and learners with a respectable understanding of indigenous traditions. It also covers the many instructional strategies, community knowledge, and activities like group discussions, tram work, and responsible use of the natural resources in our immediate surroundings. The study in question focuses on the conventional approaches used by these people for medical treatments.

THE MIXED-METHODS RESEARCH DESIGN'S JUSTIFICATION

The idea behind implementing a mixed-methods research design is to achieve an improved understanding of the study topic by combining the advantages of qualitative and quantitative approaches. While qualitative approaches enable a deeper study of the lived experiences and viewpoints of stakeholders, quantitative methods give statistical rigor that makes it possible to recognize predominant trends and patterns.

By both methods, we are able to get a deeper understanding of indigenous knowledge and how some countries or communities have preserved their traditional knowledge by regularly following that tradition and implementing it in their regular life.

We discovered how many different kinds of indigenous knowledge may be used in schools in light of NEP 2020 using quantitative methodologies. and what measures has the government taken previously to improve awareness and utilization of indigenous knowledge?

We determine how much awareness the educators already possess using a qualitative technique that involves a survey B.ed. college students and assistance from B.ed. educators. And how incorporating these indigenous knowledge into the curriculum may be advantageous for teaching in schools.

LITERATURE REVIEW

Literature review provides the conceptual or the root understanding of the topic which clears the challenges faced by the convener to implement the desire topic which is indigenous knowledge in the curriculum.

The NEP 2020 states that all curricula and pedagogy would be completely revised with a significant emphasis on the local and Indian context as well as culture. This encompasses language, philosophy, geography, culture, customs, heritage, language, and both ancient and modern knowledge.

A further objective of NEP 2020 is to use regional customs to guide the process of education. It can be accomplished to do this through hands-on learning.

Incorporating indigenous knowledge is recommended by NEP 2020 in the following areas:- technical and scientific abilities, Vedic mathematics is one type of mathematics.

Architecture, engineering, chemistry, physics, and astronomy, medical science and traditional medicine

According to S Sarsan, B Susmitha, MA Deepak in their study “Integration on Indian knowledge system in the curriculum” says that as NEP 2020 supports traditional knowledge, it can be implemented the school education in accordance with the subjects.

According to Singha, Kaberi in their study “Indigenous knowledge in education in north-east India” which particularly focuses on north east area because there tribes are rich in their culture but by being influenced by western cultures their young generation in losing interest in their own ethos. The study’s conclusions provided reassurance that indigenous knowledge will always be beneficial to society in India’s northeastern area. The people who participated exhibited a great deal of enthusiasm and admiration for IK and believed this knowledge was useful.

According to Remya Anil kumar’s recent study, “A Study on Preparedness of NEP 2020 w.r.t Degree College Teachers at University of Mumbai,” conducted under the direction of Dr. Shraddha M. Bhome, “the policy aims to make education more inclusive, equitable, and holistic.” It emphasizes the growth of 21st-century abilities, including creativity, critical thinking,

and problem-solving. However, in order to properly implement NEP 2020 in higher education, a number of crucial challenges must be resolved.

“The goal of reviving traditional knowledge is not only being emphasized on the national level but also internationally through the United Nations Permanent Forum on Indigenous Issues in the 2019 session,” according to Ruchika K. Naik¹ and Siddhesh Tariin’s study “CONTRIBUTION OF INDIAN KNOWLEDGE AND UGC’S GUIDELINES ON THE INDIAN KNOWLEDGE SYSTEM.” The purpose of this forum is to develop policies and to identify and exchange best practices and lessons discovered in the pursuit of the rights of indigenous peoples. Indian education was considered superstitious by the British throughout the colonial era. This widely held notion stems from India’s flawed education system, which has weakened the teaching of scientific achievements and old Indian wisdom. Now that the NEP 2020 suggestion has been acknowledged, the University Grant Commission (UGC) has unveiled a draft of the Indian Knowledge System for undergraduate and graduate study (page 160).

Furthermore, in their work “Indian Knowledge System: An Analysis of the Three Language Formula in NEP 2020,” Juhi Birla and Neetu Singh conducted a research. There is no denying the critical significance that education plays in a developed nation, culture, and society. A person is considered a linguistic expert if they are multilingual, which is important for improving one’s language skills. NEP 2020 aims to modernize education nationwide while also giving the three language policies proper consideration. These policies are crucial now and are also demanded by our nation because India is a multilingual state with a diverse population. There are now over 6000 distinct dialects spoken in 200 nations under the umbrella of several languages. Dialects of languages like Arabic, Bengali, French, Hindi, Russian, German, and so on are considered to be important (page 147).

The literature review highlights the challenge of the implementation of Indigenous knowledge in the curriculum according to the NEP 2020. It also indicates the importance of indigenous knowledge at school level.

RESEARCH METHODOLOGY

This research project adopts a mixed-methods approach that combines a survey with qualitative data analysis to offer a thorough knowledge of the challenges faced by administrators, instructors, and other stakeholders. The project aims to provide evidence-based insights to support successful implementation of strategies and methods that will improve indigenous

knowledge in light of the National Education Program 2020 by bringing these difficulties into the spotlight.

Quantitative Findings

We compare all the criteria of the options to meet the requirements of implementing the indigenous knowledge system into the school curriculum and the methods by which it may be incorporated into the curriculum in the qualitative investigation's findings.

Awareness about indigenous knowledge:- It is crucial that teachers possess appropriate knowledge of traditional knowledge in order to impart to all of their pupils the significance of this information as well as its applicability to their understanding.

Educating educators about indigenous knowledge:- It's critical that instructors have accurate knowledge about indigenous wisdom.

Challenges in implementing indigenous knowledge:- The lack of interest among students in indigenous knowledge presents the largest obstacle to its adoption. According to UNISCO, the majority of indigenous knowledge is at risk of extinction because of the loss of language necessary to comprehend diverse traditional knowledge. This is because language comprehension is specific to that culture.

How to make indigenous knowledge interesting:-By carrying out projects with the indigenous population, such as planting trees or hosting a one-month summer camp, and allowing students to live with them and get familiar with all indigenous customs, students may learn on their own.

Sources of indigenous knowledge:- It is imperative that instructors possess an understanding of the origins of indigenous knowledge and instill this awareness in their pupils. Oral tradition, rites and ceremonies, art and craft, the land and environment, etc. are some of the sources of indigenous knowledge.

WAYS TO IMPLEMENT INDIGENOUS KNOWLEDGE IN THE CURRICULUM OF SCHOOL EDUCATION:-

Yoga:- Although yoga is already included in the curriculum, its severity is still experimental in nature, and as it is not regarded as the primary topic, it must be incorporated into the school's normal after-school program's execution.

Experiential learning:- NEP 2020 states that experiential learning, which involves field work and improves children's skills, will be incorporated into the secondary curriculum.

Medicinal properties in nature:- Indigenous knowledge is an excellent approach to teaching children about nature and the therapeutic properties of plants and the surrounding environment. Teachers are starting to teach pupils about these things in the classroom.

Ayurveda as subject:- Teaching students about Ayurveda as a topic and its uses and advantages can improve their understanding of the enigmatic aspects of traditional knowledge. Many academics believe that Ayurveda is the oldest and most effective method, and it will help kids develop informed thinking skills.

Scientific thinking:- Students' scientific thinking will be enhanced by indigenous knowledge as it is an approach to learning based on traditional methods, such as thinking informatively, using natural solutions to solve problems, and using nature as a source of transportation or medicine.

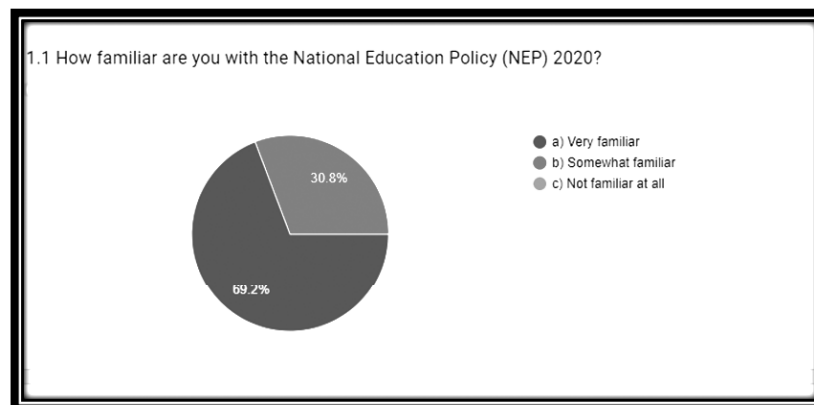
Educators, schools, students, and other stakeholders who bear responsibility for implementing indigenous knowledge can gain insight from this. If all the prerequisites of this topic as a distinct discipline are met, NEP 2020 will shape the curriculum.

The implementation of indigenous knowledge presents few problems, which may be surmounted with the cooperation of all relevant parties. the varied field of traditional knowledge will be preserved.

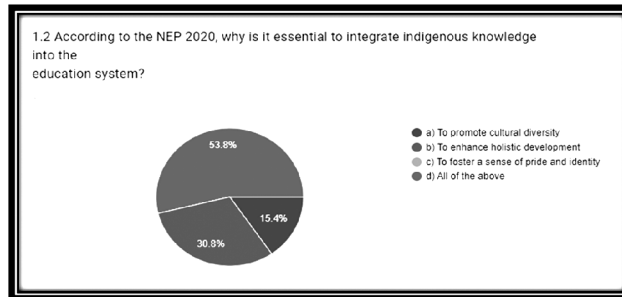
Qualitative Findings:-

It consists of a survey of future educators, which includes several questions related to the topic, covering all the aspects of the ways to implement indigenous knowledge in light of NEP 2020.

In the first section it includes Awareness and Understanding;-

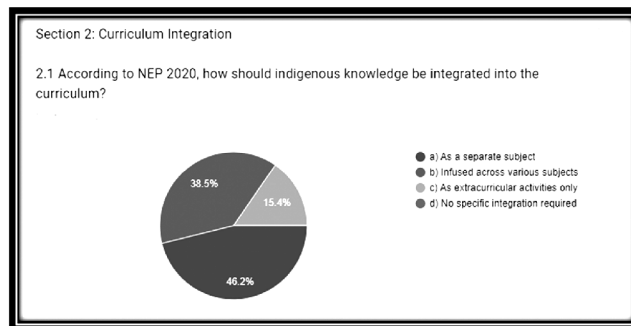


In this survey shows that 69.2% of educators are aware of the National education policy 2020.

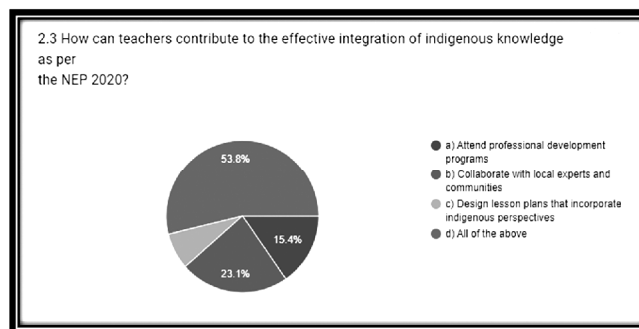


The poll found that over half of the educators thought that indigenous knowledge was crucial for students' feeling of pride and identity as well as for cultural and holistic development.

And when it comes to the addition of indigenous knowledge, as in the curriculum, majority of the educators trust the notion of the incorporation of indigenous knowledge in the curriculum.

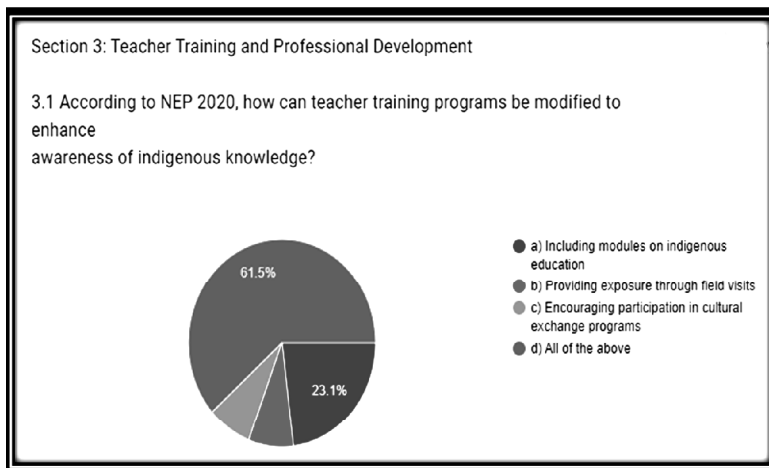


Educators believed that indigenous knowledge should to be added to the curriculum as a separate subject.

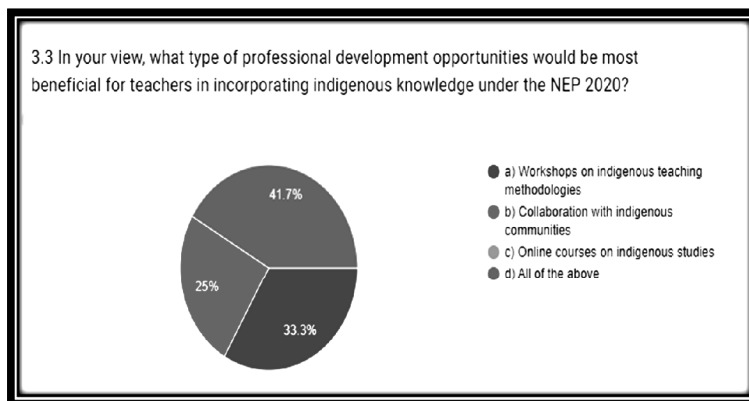


Educators can play a crucial role in the effective integration of conventional wisdom by participating in professional development programs, collaborating with local professionals and communities, and creating lesson plans that incorporate indigenous understanding.

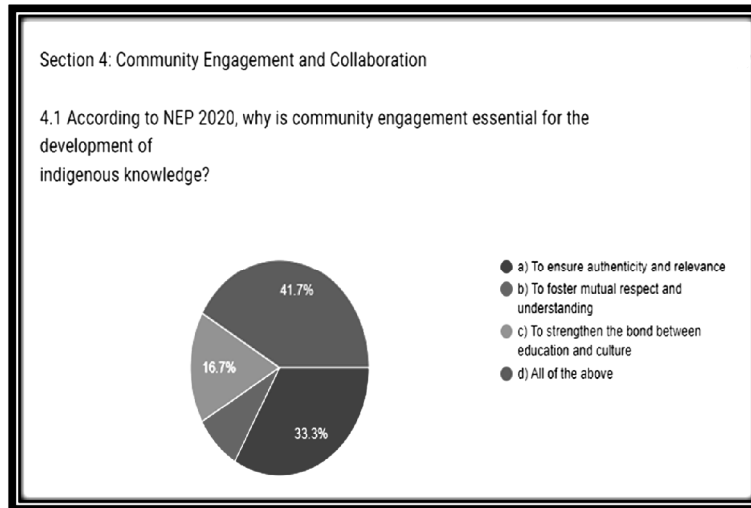
Since they will be teaching the country’s future, educators must be equipped to meet all of the demands of the students by giving their all to the improvement of their knowledge. Before they can instruct the pupils, they must educate themselves on the subject.



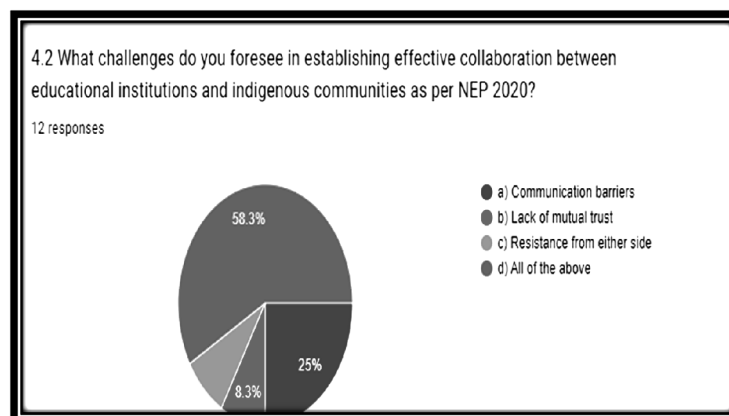
Before administering tests to pupils, teachers must have the necessary training in that discipline. The curriculum for educating future teachers will also need to be adjusted to take into account indigenous knowledge. It consists of modules on teaching about indigenous people, exposing students through field trips, and promoting involvement in cultural exchange initiatives.



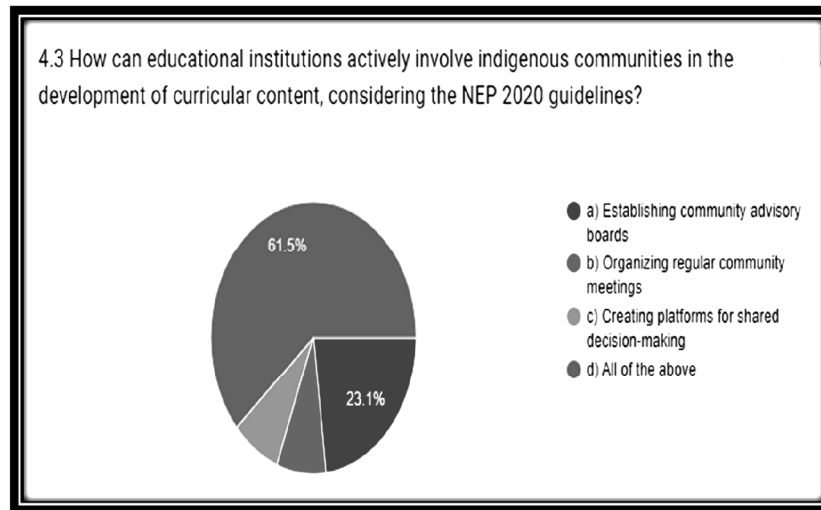
In order to ensure compliance with NEP 2020, instructors would benefit most from professional development options that include seminars on indigenous teaching approaches, partnerships with indigenous communities, and online courses on indigenous studies. Not only will this benefit aspiring teachers, but it will also benefit current educators and improve their field.



NEP 2020 states that community participation is critical to the development of indigenous knowledge, to guarantee authenticity and relevance, to promote respect and understanding amongst people, and to fortify the connection between culture and education. Only the original indigenous communities can truly learn about their community, comprehending every action and decision made by them, their motivations, and the reasons they have become so resilient against the elements.



As to the National Education Policy 2020, the obstacles encountered during the integration of indigenous knowledge in educational institutions include poor communication, a lack of mutual trust, and opposition from both parties. These are all the barriers that might arise when the school adopts indigenous knowledge as part of its curriculum.



Educational institutions actively involve indigenous communities in the development of curricular content, considering the NEP 2020 guidelines are establishing community advisory boards, organizing regular community meetings and creating platforms for shared decision-making.

The quantitative method helps to understand the ways of improvement and the area of focus which can help in implementation of the indigenous knowledge in light of National education policy 2020.

METHODS TO GET OVER THE IMPLICATIONS

Workshop on indigenous knowledge:- Putting up a traditional knowledge workshop for educators is a crucial step in creating a more diverse and culturally aware learning environment. The goal of the workshop is to provide teachers with the skills and information they need to include indigenous viewpoints in their lesson plans. The workshop attempts to maintain cultural authenticity and relevance in the materials and tactics offered by partnering with indigenous communities. The program will address issues including recognizing the cultural background of indigenous students, building cultural competency in teaching, and incorporating indigenous knowledge into many curricula.

Online class or webinar:- An online course or webinar on indigenous knowledge offers a special chance to interact with a wide range of people and foster understanding between cultures. Participants from different places can come together virtually to examine and value the diverse range of indigenous viewpoints, traditions, and wisdom. Because of the online format's versatility, people from all around the world may participate, including educators, researchers, and community members. Incorporating guest speakers, indigenous knowledge holders, and specialists is made easier in the virtual environment, which promotes a worldwide sharing of ideas and personal experiences.

Collaboration with indigenous communities:- Working together with indigenous people is essential to creating deep connections that value cultural diversity and advance sustainable development. Collaborating closely with these communities guarantees culturally appropriate efforts that integrate traditional knowledge and traditions. These kinds of partnerships place a high value on inclusivity and recognize the special needs and views of indigenous people. A more considerate and comprehensive approach to development materializes when community members are included in co-designing projects and decision-making processes. In the end, this cooperative model promotes shared responsibility and reciprocal learning, which helps to preserve indigenous cultures and has favorable social and environmental effects.

Implementation as a separate subject:- One of the most important steps toward acknowledging and protecting varied cultural heritages is the inclusion of indigenous knowledge as a stand-alone subject in school curriculum. This specialized subject offers a forum for in-depth investigation of customs, beliefs, and practices. Students engage with the rich tapestry of indigenous knowledge, gaining a holistic understanding of ecological, historical, and social dimensions. Incorporating oral traditions, storytelling, and community involvement, the topic emphasizes experiential learning. By acknowledging the relevance of indigenous knowledge as a standalone subject, educational systems contribute to cultural diversity, encouraging respect and appreciation for the invaluable contributions of indigenous communities to world heritage.

CONCLUSION

In summary, the National Education Policy (NEP) 2020 offers a revolutionary framework that emphasizes inclusively, cultural sensitivity, and a comprehensive approach to education in order to foster the growth of

indigenous knowledge. In light of NEP 2020, integrating culturally relevant content into the curriculum is one of the most important strategies to develop indigenous knowledge. Students can develop a greater awareness of their different cultural heritages through the education system by acknowledging and adopting traditional wisdom, practices, and views.

Additionally, NEP 2020 promotes community involvement, offering a chance to work with indigenous populations. In order to guarantee that educational activities are genuine, courteous, and in line with the values of the communities, consultations with community members—including indigenous educators and leaders—are required as part of this partnership.

The necessity of an adaptable and multidisciplinary approach to education is emphasized by NEP 2020. Dismantling disciplinary silos can help develop indigenous knowledge by facilitating a more integrated understanding of customs, environmental stewardship, and cultural values. Including indigenous knowledge in all academic areas encourages a thorough and situation-appropriate education.

NEP 2020 also emphasizes the importance of professional development and teacher training. Teachers have a major influence on how pupils view the world, so giving them the training they need to successfully incorporate indigenous knowledge assures success. Teachers can be given the resources they need to build inclusive and culturally sensitive learning environments through workshops, seminars, and continuous support systems.

To sum up, NEP 2020 provides a progressive framework for the advancement of indigenous knowledge in the context of education. The policy invests in teacher training, embraces cultural diversity, engages with indigenous communities, encourages multilingualism, adopts an interdisciplinary approach, and lays the groundwork for an education system that is more inclusive, sensitive to cultural differences, and values the wealth of indigenous knowledge that will be passed down to future generations.

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Chapter-31

Bhagat Singh's Leadership and its Impact on Youth Empowerment in India

Jai Bhagwan Mishra

Student, Army Institute of Education,

Dr. Jyoti Tiwari

Assistant Professor, Army Institute of Education

Abstract

Youth empowerment is a pivotal aspect of any society's development and progress. It is a process by which youthful individualities are given the necessary tools, coffers, and openings to reach their full eventuality and contribute to the betterment of their communities. In India, one of the most influential and inspiring numbers in the fight for youth commission is Bhagat Singh, an indigenous leader who played a significant part in the country's independence movement.

This research paper aims to explore the significant role played by indigenous leader Bhagat Singh in empowering the youth. Bhagat Singh a prominent figure in India's struggle for independence not only fought against British colonial rule but also inspired and mobilized the youth to actively participate in the freedom movement. This paper will delve into the various ways in which Bhagat Singh empowered the youth through his actions ideologies and sacrifices. By examining historical accounts speeches and writings of Bhagat Singh this paper will analyze his impact on youth empowerment and its relevance in contemporary society.

Some key points of the Bhagat Singh leadership in youth empowerment are as follows:-

Revolutionary Actions

- Enduring Legacy
- Ideological Influence
- Intellectual Contributions

In Conclusion, Bhagat Singh is admired not only as a historical person but also as a lasting symbol of rebellion and youth empowerment. His revolutionary acts reshaped the repressive system and ignited a rebellious flame that has lasted for generations.

Keywords: *Youth, Contemporary, Empowerment, Indigenous Leaders, Leadership*

INTRODUCTION

Indigenous leader Bhagat Singh played a significant role in empowering the youth during the struggle for India's independence. As a prominent figure in the Indian National Congress and a member of the Hindustan Socialist Republican Association, Singh became a symbol of resistance against British colonial rule. He provided inspiration and motivation to countless young individuals who aspired to bring about change and fight for their rights. This essay aims to explore the role of Bhagat Singh in youth empowerment by examining his ideologies, strategies, and impact on the Indian independence movement. (Finkelstein & McCleery, 2006)

OBJECTIVES

- 1) To study Bhagat Singh's role in Inspiring Youth Followed By the Background of Bhagat Singh.
- 2) Bhagat Singh's Contribution to the Freedom Movement.
- 3) Bhagat Singh's Impact on Youth Empowerment.
- 4) Challenges Faced by Bhagat Singh in Empowering the Youth.
- 5) Relevance of the Bhagat Singh Principles in Today's World.

METHODOLOGY

This research paper will employ a qualitative research approach, utilizing primary and secondary sources. Primary sources will include Bhagat Singh's writings, speeches, and letters, while secondary sources will consist of scholarly articles, books, and documentaries. The analysis will focus on Bhagat Singh's strategies to empower the youth, their response to his leadership, and the impact of their involvement in the independence movement.

LITERATURE REVIEW

Page 142 – *The weak can never forgive. Forgiveness is the attribute of the strong.* (Nayar 2000) In this context, youth empowerment involves

developing the self-awareness and emotional intelligence to forgive, leading to personal growth and healthier relationships.

The Jail Notebook and Other Writings (Singh, B., & Hooja, B. 2007, January 1) In this Context, The influence of Bhagat Singh on youth empowerment is immeasurable. Singh encouraged countless young people to fight for their rights and have faith in their own ability to effect change through his courageous deeds and unshakable dedication to the struggle against British colonialism. He was a well-known representative of rebellion and resistance, and the young people of his day were greatly impacted by his revolutionary ideas. Young people felt inspired and courageous by Singh's call for selflessness and sacrifice, which inspired them to join the freedom struggle and fight for justice and equality. His writings and speeches, which highlighted the value of education, self-awareness, and national unity, inspired young Indians and gave them the confidence to take an active role in the struggle.

(Chaman Lal. 2013 January 1). *Understanding Bhagat Singh* In this Context Relevance of the Bhagat Singh Principles were discussed in Today's World.

RESULTS AND DISCUSSION

The results of this qualitative study have been analysed using data from reports, papers, articles, and a few prior journals. After the discussion, the results are listed below:-

BACKGROUND OF BHAGAT SINGH

Bhagat Singh was born on September 28, 1907, in the village of Banga located in present-day Pakistan. He belonged to a family deeply involved in the struggle for independence from British rule in India. His uncle, Ajit Singh, was a prominent revolutionary and played a crucial role in Bhagat Singh's political awakening. Singh was influenced by several nationalist leaders, including Lala Lajpat Rai and Mahatma Gandhi, which guided his ideology in the formative years of his life. He became an active member of the Hindustan Republican Association (HRA), a revolutionary organization that aimed to overthrow British colonial rule in India. Inspired by the Russian Revolution and the writings of Karl Marx, Bhagat Singh became an advocate for socialism and embraced Marxist principles. His involvement in various revolutionary activities, including the Lahore Conspiracy Case, led him to become one of the most influential leaders of the Indian independence movement. (Sharma, 2021)

BHAGAT SINGH'S ROLE IN INSPIRING YOUTH

Bhagat Singh played a crucial role in inspiring youth during his time and continues to be an influential figure for young people today. Singh's unwavering dedication to the fight against colonial oppression and his ultimate sacrifice for the cause serve as powerful examples for the youth to follow. His revolutionary ideas and actions challenged the status quo and sparked a flame of resistance in the hearts of many young individuals. Singh's role in inspiring youth is evident from the fact that his writings and speeches continue to resonate with the younger generation, filling them with a sense of pride, nationalism, and the desire to fight for justice and equality. Singh's legacy has inspired countless young activists and revolutionaries across the world, as his story serves as a reminder that even in the face of adversity, the youth have the power to bring about meaningful change. (*Sinhal, 2021*)

BHAGAT SINGH'S CONTRIBUTION TO THE FREEDOM MOVEMENT

Bhagat Singh, a prominent leader of the Indian freedom movement, made significant contributions towards the attainment of independence. He played a crucial role in raising awareness among the youth and inspiring them to join the struggle against British colonial rule. Singh's involvement in the Hindustan Socialist Republican Association (HSRA) and his powerful writings became a source of inspiration for countless young revolutionaries. His fearless acts, such as the assassination of British police officers and the bombing of the Central Legislative Assembly, were symbolic gestures that aimed to awaken the masses and ignite a sense of nationalistic fervor (*Nayar, 2000*). Furthermore, Singh's commitment to socialism and his firm belief in the power of the working class made him a prominent advocate for labor rights and the downtrodden sections of society. His sacrifice and revolutionary actions continue to inspire generations of Indians and serve as a reminder of the bravery and determination required to fight for freedom.

BHAGAT SINGH'S IMPACT ON YOUTH EMPOWERMENT

Bhagat Singh's impact on youth empowerment cannot be overstated. Through his fearless actions and unwavering commitment to the fight against British colonialism, Singh inspired countless young individuals to stand up for their rights and believe in their own power to bring about change. He was a prominent symbol of resistance and revolution, and his revolutionary ideologies resonated deeply with the youth of his time. Singh's call for selflessness and sacrifice ignited a sense of purpose and courage in the

hearts of young people, motivating them to join the freedom struggle and fight for justice and equality. His writings and speeches, which emphasized the importance of education, self-awareness, and national unity, stirred the minds of young Indians, empowering them to become active participants in the fight for freedom. Singh's legacy continues to inspire and empower youth in India and beyond, reminding them of their potential to make a difference in the world. (*Singh & Hooja, 2007*) some key points of Bhagat Singh for the youth empowerment:-

1. Revolutionary Actions:

The youth were inspired to oppose oppression and participate in the independence movement by Bhagat Singh's revolutionary deeds, which included his membership in the Hindustan Socialist Republican Association and public acts of resistance against British colonial rule.

2. Enduring Legacy:

Bhagat Singh became a martyr and an enduring symbol of bravery and patriotism as a result of his sacrifice and unshakable dedication to the cause of India's independence. Generations to come, especially the young, are still motivated by his legacy to support social and political change.

3. Ideological Influence:

The youthful aspirations were greatly impacted by Bhagat Singh's revolutionary ideologies, which were marked by fearlessness, patriotism, and social justice. Young people were inspired by his ideological influence to actively support a free and just society and to fight against colonial rule.

4. Intellectual Contributions:

The youth were intellectually empowered by Bhagat Singh's influential writings, including the essay "Why I am an Atheist," and his clear articulation of revolutionary ideals. These works fostered critical thinking and a deeper comprehension of the socio-political environment. His scholarly works persist in motivating and striking a chord with the younger generation, cultivating an attitude of activism and self-determination.

CHALLENGES FACED BY BHAGAT SINGH IN EMPOWERING THE YOUTH

One of the challenges faced by Bhagat Singh in empowering the youth was the lack of infrastructure and resources for education. During that time,

the British Raj had deliberately neglected the education system in India to maintain control over the population. This had a detrimental impact on the youth, as they were denied access to quality education and opportunities for personal and intellectual growth. Additionally, Bhagat Singh faced political challenges in advocating for youth empowerment. He was actively involved in the Indian freedom struggle and had to navigate the complexities of the political landscape to rally support for his cause. Bhagat Singh's revolutionary ideas and actions often clashed with the existing political ideologies, making it difficult for him to gain widespread acceptance and support. Despite these challenges, Bhagat Singh tirelessly fought for the empowerment of the youth, believing that they held the key to a brighter future for India. (Dienel et al., 2012)

Relevance of the Bhagat Singh Principles in Today's World:-

1. **Secularism and Unity:** Bhagat Singh promoted harmony amongst various communities by arguing for a secular society. In order to promote harmony in the face of cultural and religious diversity, this principle is still applicable today.
2. **Democratic Values:** Singh's dedication to democracy and the rights of the people is essential in the current campaigns for democratic governance, highlighting the significance of public engagement.
3. **Social Justice:** His resolute commitment to social justice is congruent with the continuous struggle against prejudice and inequity, serving as a source of motivation for social movements that promote an equitable and just society.
4. **Anti-Imperialism:** In light of contemporary movements opposing global exploitation and inequality, Bhagat Singh's anti-imperialist beliefs are relevant.
5. **Empowerment of Youth:** Singh's focus on the youth's role as change agents is still relevant today, inspiring youth to take part in positive activism for the betterment of society.
6. **Right to Dissent:** Bhagat Singh's ideas uphold the significance of the right to dissent as a weapon for social and political change in a time when dissent is essential for democratic societies. (Chaman Lal, 2013)

CONCLUSION:-

In conclusion, Bhagat Singh, an indigenous leader, played a significant role in empowering the youth of India. His dedication to his country and his

determination to fight for its independence inspired many young individuals to join the freedom struggle. Singh's ideologies and actions demonstrated the power of youth in bringing about meaningful change and challenging the status quo. Furthermore, his relentless efforts to promote education and awareness among the youth contributed to the development of a generation that was ready to stand up against injustice and fight for a better future. Singh's impact on youth empowerment can still be felt today, as his legacy continues to inspire and motivate young individuals to be active citizens and agents of change in their communities. Through his courage, leadership, and passion, Bhagat Singh left an indelible mark on Indian history and remains an iconic figure in the fight for freedom and youth empowerment.

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Chapter-32

**Leveraging Indigenous Knowledge System for
Sustainable Development
of India**

Aakash Kumar

B.Ed (2023-24), Army Institute of Education, Greater Noida.

Dr. Azkia Khan

Assistant Professor, Army Institute of Education, Greater Noida.

Abstract

Climate change and environmental degradation at the global, regional, and national levels are caused by anthropogenic changes in the planetary bio-physical systems. Countries all around the world now have begun to understand that studying the native wisdom of people who live in peace with the environment may greatly boost national conservation policies and support studies aimed at reducing the effects of climate change. With 8.6% of its population being tribal, India possesses a vast amount of indigenous knowledge that, if properly acknowledged, adopted, and mainstreamed, could offer long-term solutions to issues like declining agricultural productivity and soil quality, biodiversity loss, water scarcity, pollution, and a host of other social problems. The present work therefore, attempts to analyse the work that some workers have carried out through examination of the datasets pertaining to the customs of Indian tribes followed by appropriate interpretations and extrapolations, for instance, the almost 150-year-old traditional farming method used in Kerala's Kuttanad district uses bunds constructed of organic materials to cultivate land below sea level. Likewise, the traditional sustainable methods used by the *Jhumiyas* of Indian NER. IKS documentation has gained a lot of attention lately since it preserves practical information, beliefs, and practices that the outside world would not otherwise be aware of. Several scholars and organizations have emphasized the importance of IKS for more effective and long-lasting environmental governance frameworks.

Keywords: Indigenous Knowledge System (IKS), United Nations (UN), Sustainable Development Goals (SDGs), SD (Sustainable Development).

INTRODUCTION

Humans as a biological species have high intelligence using which they built and build tools, machines, instruments and equipment that facilitated and facilitate them in their lives. Humans are today the most dominating species on planet Earth. To reach this position humans exploited natural resources for thousands of years. They fought each other hundreds of wars for controlling resource-rich lands. And now the planet Earth seems to be taking its revenge. There are regular news of glaciers melting (and rising sea levels), extreme droughts, floods, landslides, biodiversity loss, catastrophic storms, shifts in weather patterns (extreme weather), and then the global warming.

Thankfully, humans came to the realisation that if this continued for more, they themselves will be the reason of their extinction. The collective conscience of humans worked to establish The UN (United Nations) as part of the UN System. UN is the world's largest inter-governmental organization, consisting of 193 countries, with the aim to maintain international peace and security, develop friendly relations among nations, achieve international cooperation, and serve as a centre for harmonizing the actions of nations. The work of the United Nations covers five main areas, of which one is the "Support Sustainable Development and Climate Action". Sustainable development is the 'development that meets the needs of the present without compromising the ability of the future generations to meet their needs' (Brundtland Report/ WCED Report, 1987, p 41).

In 2015, all the countries in the United Nations adopted the 2030 Agenda for Sustainable Development, built on and in continuation with MDGs (Millennium Development Goals) of Millennium Summit 2000. UN set out 17 Goals (referred to as Sustainable Development Goals), which include 169 targets – to promote peace and prosperity for people and the planet, now and into the future.

Along with addressing climate change and environmental protection, these goals acknowledge that eradicating poverty requires policies that promote economic growth and attend to a variety of social needs, such as employment opportunities, health care, education, and social protection. However, according to the 2023 *United in Science* report, only 15% of the SDGs are on track. The planet is so far off track from meeting its climate goals. The collective global response so far is not enough to achieve the set goals. Science is central to solutions, it is widely understood that weather, climate, and water-related sciences provide the underpinnings for the UN's climate action.



Fig. 1: 17 SDGs adopted by the UN (Picture sourced from: <https://unodsd.un.org/content/sustainable-development-goals-sdgs>).

While different Sciences (Research and innovation) provide the underpinnings for SDGs. But it is less recognized how these sciences can supercharge progress on the different SDGs, and moreover the researches and innovation are time-consuming when the planet is already running out of time.

As per the UNDP “*Indigenous knowledge, traditions and lifestyles are integral to all the SDGs, and Indigenous peoples and local communities have emerged as a beacon of hope amidst intensifying planetary crises. These remarkable custodians of the Earth’s most essential ecosystems, which are home to a staggering 80 percent of the world’s biodiversity and immense stocks of carbon, hold the key to keeping our planet within safe planetary boundaries.*”

Indigenous knowledge systems refer to the unique, traditional, and local knowledge developed by indigenous peoples over generations through their experiences, observations, and interactions with their environment. This knowledge encompasses a wide range of areas, including agriculture, medicine, natural resource management, astronomy, spirituality, and more.

INDIGENOUS KNOWLEDGE AND SUSTAINABLE DEVELOPMENT

Notably, the world and its indigenous populations have amassed a wealth of information derived from their environments, customs, social, political, and economic structures, natural resources, and other factors that may be the “key drivers” for reducing poverty, improving livelihoods, and achieving environmental sustainability include (Boon & Hens, 2007). For ages indigenous communities around the world have coexisted with their

own body of knowledge about the environment they live in. The concept of Indigenous Knowledge gained international recognition and its efficacy was realized only through the United Nations Conference on Environment and Education in 1992, the Brundtland Commission, the World Commission on Environment and Development in 1987, and the World Conservation Strategy of the International Union and Conservations of Natural Resources in 1980 (Mahalik & Mahapatra, 2010).

These conferences dispelled the myth that indigenous knowledge systems are exclusive to tribal nations or other marginalized regions of the world and demonstrated the significance of indigenous knowledge for environmental sustainability in every nation, community, and society at large. According to numerous studies conducted in this field, Indigenous knowledge offers helpful frameworks, concepts, guiding principles, practices, and measures that can serve as the basis for an efficient development process aimed at reestablishing the social, economic, and environmental resilience of the global community.

According to Boons & Hens (2007), Indigenous Knowledge systems help to reshape development strategies in a variety of sectors, including politics and governance, agriculture, health, natural resource management, commerce, and industry. These systems encompass years of analytical and experimental approaches to Sustainable Development.

According to Aggarwal (2008), indigenous knowledge is resource-efficient and effective, and it has allowed them to conserve and manage resources far better than the technologically advanced, externally imposed management techniques that the modern world has to offer. An indigenous organization called Van Suraksha Samiti (VSS), which translates to “Forest Protection Committee” of a Suali village in the the city of Udaipur in Rajasthan, works with religious institutions to preserve forests and other natural resources in Central India.

Madegowda (2009), carried out a study among the Soligas tribes in the Chamarajanagar district of Karnataka revealing a wealth of traditional knowledge about their ecology, agricultural system, land use pattern, and other resource management, among other topics. This knowledge forms the foundation of their complex social, cultural, and economic life. According to the study, there are roughly 62 Soliga colonies inside and around the Biligiri Rangaswamy Temple (BRT) wildlife sanctuary. As a result, the Soligas have had a constant and close relationship with the forest, from

which they obtain the majority of their necessities, including food, fuel, fodder, fruit, medicine, herbs, and so forth.

According to Tiwari et al., 2010, using the ecological knowledge, the tribal communities in Meghalaya, in NER of India, have built their worldview and cosmology around their harmonious coexistence with the environment.

According to research by Parajuli & Das (2013), indigenous knowledge plays a crucial role in environmental sustainability. Indigenous people all over the world preserve biodiversity to support themselves, which ultimately preserves the environment as a whole.

According to Sinha (2014), in the face of exploitative financial practices, women in a Jharkhandi rural hamlet are advocating for sustainable communal farming, which further justifies the growing importance of women in the environmental movement.

Shukla (2016), observed the Lepcha people in India adopting the use of mulch (straw, plant leaves, and herbaceous plants) to regulate soil temperature and preserve soil moisture. They also relied on a traditional agroforestry system to regulate microclimate and temperature throughout the summer.

Scholars like Kodirekkala, (2017), have tried to study how the aboriginal people adjust to the effects of global warming or the climate change.

According to Pandey et al., 2018, local communities have a wealth of information and experience dealing with climate instability and extreme weather events, and successful adaptation programs often incorporate indigenous coping mechanisms. Particularly in remote areas, traditional knowledge can offer effective, suitable, and tried-and-true methods of adapting to climate change. To what extent traditional coping techniques impede proactive, transformative responses to climate change, and how they translate into adaptation to long-term changes, remain unanswered.

As per Priyadarshini & Abhilash (2019), indigenous knowledge systems are transmitted across the generations among demographically distinct groups. Proper use of such traditional knowledge would have a positive impact on development in a number of important areas, including infrastructure, agriculture, fisheries, forests, and biodiversity management. This would assist address the implications of climate change in a larger context. Priyadarshini & Abhilash (2019), has provided a comprehensive review on various practices towards sustainable development in Asian, African, European continents and the Indian sub-continent (Table 1).

Table 1: IKS from the tribes of India towards the cause of SD (Maikhuri et al., 2000; Ayyanar & Ignacimuthu, 2005; Dey & Sarkar, 2011; Sharma et al., 2012; Bhattacharya, 2015; Dogra & Maryam 2016; Wangpan et al., 2017, Priyadarshini & Abhilash (2019); GoI; NITI Ayog; MN-REGA Act 2015)

Sustainability	Tribal/Regional Communities	IKS
Water management and water conservation.	Mullu Kuruma tribe of Wayanand, Kerala	Panam Keni: These are cylindrical, wooden toddy palm stem structures found in wetlands.
	Angami tribe of Kwigema /Khonoma villages in Nagaland	Cheo-oziihi: Using this the river water is redirected via channels made with bamboo sticks to irrigate terraces.
	Shompen tribe of Andaman and Nicobar Islands	Jackwells: These are bamboo stems that have been chopped longitudinally, to collect water in shallow trenches that have been excavated at the bottom of a gentle slope.
Sustainable agriculture and Soil Conservation	Chakhesang tribe of Nagaland	Ruza or Zabo are used to maintain the soil and collect rainwater: The Paddy fields are located on the lower levels of the system, water harvesting tanks are located in the middle, and protected forest area is located at the top.
	Santhal, Lohra, Ho, Oraon, and Munda tribes of Jharkhand	Traditional agricultural methods include the use of crop varieties that are appropriate to the area, legume-based cropping systems, the heap method of composting, <i>karanj</i> oil for weed control, and rainwater harvesting structures (<i>Doba</i>).
	Nocte, Wancho, and Tutsa tribes of AP (Arunachal Pradesh)	Techniques for sustainable agro-ecological management based on the division of land into <i>chaw-mo</i> (plantation sites) and <i>zang-mo</i> (cultivable land). The tribes engage in multi-cropping systems of <i>jhum</i> /swidden agriculture.
	Baiga tribe of Dindori, MP (Madhya Pradesh)	A sophisticated method for forecasting rainfall using natural indicators. They change the timing and composition of their crops based on this weather prediction. "Benvar" agriculture system, which practices no tillage and mixed farming.
	Bakarwals, Gujjars and, Gaddis tribes of HP (Himachal Pradesh) and J&K (Jammu and Kashmir)	Transhumance (the seasonal migration of humans and cattle between summer and winter pastures) method of climate adaptation.

(Contd...)

Biodiversity Conservation and Forest Management	Angami Naga tribe of Khonoma, Nagaland	Tragopan Sanctuary and Khonoma Nature Conservation. Local efforts to protect the flagship species, the Blyth's Tragopan, and the surrounding ecology led to the creation of such reserves.
	Kanikkar/Kaani tribes of Kanyakumari, TN (Tamil Nadu)	Using local knowledge and customary methods, the Kanyakumari Reserved Forests promote sustainable resource use and forest conservation.
	Maldhari tribe of Gujarat	Preservation of the Banni buffalo breed and the Banni grasslands that serve as their grazing grounds.
Health and Food Security	Jatin, Garo, Pariyar, Kurichya, Khasi tribes of Assam, Manipur, Meghalaya	Conservation of native rice varieties, including Valsana Pattambi and Champara.
	Bhotia (Jadhs, Tolchhas, Marchaas) tribes of Uttarakhand	Using various plant species for treating medical conditions like eye diseases, fever, headache, etc.
	Bhoxa, Gujjars, and Tharu people of J&K (Jammu and Kashmir) and Uttarakhand	Jaundice treatment using forty medicinal plants from thirty-one families in roughly forty-five distinct combinations.
	Kanikaran/Kani tribe of TN (Tamil Nadu)	Use of about 54 plant species, from 26 families, for the treatment of poisonings, coughs, skin conditions, rabies, diarrhea, and other ailments.
	Kuttanad district of Kerala	Bunds constructed of organic materials to cultivate land below sea level.

METHODOLOGY

The present study used qualitative meta-analysis method of research to generate a clearer and more recent developments on the topic. The research began with searching broadly the Keywords related to the topic on Google Scholar and online databases like ScienceDirect. The past 20 years research articles relevant to Indian sub-continent were screened. There seemed to be a gap in publications between the years 2019 and 2022, possibly due to and aftermath of COVID-19. The select research articles were appraised of the quality based on the number of citations. The quality articles were thoroughly analysed to make the following Conclusion and Recommendations.

CONCLUSION

The UN system promotes and funds Scientific research, promotes awareness and adoption of sustainable development practices in order to protect Humans and planet Earth as a whole. The Scientific researches

are both money and time taking. India being part of UN is also committed towards achieving the set SDGs by 2030. The work in this article tried to analyse the previous studies by workers on the Indian IKS and sustainability practices adopted by the tribes of India. For thousands of years traditional knowledge has been used in sustainable practices like Health and Food Security, Biodiversity Conservation and Forest Management, Sustainable agriculture and Soil Conservation, and Water management and water conservation by the tribes of India. When it comes to achieving global sustainability in development initiatives, the values and benefits ingrained in Indigenous knowledge systems and practices cannot be believed to be overrated and not being used too much at the moment. Numerous research studies and real-world interactions have confirmed this. The development of Indian Indigenous knowledge system values has not received enough attention from Indian academics and government.

RECOMMENDATIONS

The author presents following observations and recommendations: -

- The studies so far conducted on using of IKS for sustainable development particularly in Indian context, do not provide a clear picture of integrating IKS and development towards sustainability. Therefore, more studies should be conducted detailing how the IKS can be incorporated into Policy-making in different sectors for the overall sustainable development of India.
- There are 10.42 crores of tribal people in India with countless traditions, customs and practices. The studies are limited regarding Indian IKS. Therefore, both the quality and quantitative researches need to be undertaken with respect to Indigenous Knowledge. In such studies, the researchers must also make aware the readers of the potential risks and limitations of exploiting the IKS for sustainable development.
- All pertinent parties and practitioners are urged to make coordinated efforts in order to realize ways that the IKS can be documented and codified using contemporary facilities and field procedures, enabling worldwide accessibility through open educational materials. so that, in contrast to its traditional method, it becomes a formal discipline that can be formally learned, scientifically confirmed, and improved upon.

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Chapter-33

Indian Knowledge System (IKS) towards Indigenous Knowledge

Raushan Kumar Singh

B.Ed Students, Army Institute of Education, Greater Nodia.

Shweta Das

Assistant Professor, Army Institute of Education, Greater Nodia.

Abstract

The (IKS) is to apply information from antiquated Vedic books, like the Vedas and Upanishads, to help with tackling contemporary issues. They mean to prepare educators to all the more likely show these subjects and to make IKS courses accessible on the web. To give teachers particular preparation on Indian Information Frameworks subjects, exceptional focus would be laid out. There will be challenges, exercises, and difficulties to advance new ideas in IKS. Establishments can likewise cooperate universally by means of the Indian Gathering of Authentic Exploration (ICHR) and comparative associations. The foundation of IKS Focuses in various instructive establishments will get beginning subsidizing. IKS make informed residents, endeavours will be attempted to spread genuine IKS information to the overall population through different channels. Through exercises likened to resident science programs, individuals will be urged to partake. The presentation of expertise-based projects will give youngsters admittance to business possibilities. IKS needs to utilize innovation and heritage together to introduce Indian culture all over the planet. To take 10% of the worldwide the travel industry business, the goal is to attract more vacationers and give work prospects to youngsters.

Keywords: *Indian Knowledge System, IKS, employment prospects, skill-based programs, NEP 2020, Upanishad, Vedic literature, education, health, and environment.*

INTRODUCTION:

Not just a custom, the Indian data Framework (IKS) is a coordinated technique for moving data starting with one age then onto the next.

It depends on old works, like the Upanishads and Vedas. This rich heritage is recognized as a directing idea in the Public Training Strategy (NEP-2020). IKS is comprised of Jnan (information), Vignan (science), and Jeevan Darshan (reasoning), which are totally gotten from examination, trial and error, perception, and experience. Various aspects of Indian culture, including instruction, artistic expression, organization, regulation, equity, wellbeing, assembling, and business, have been affected by this culture. It has likewise impacted spoken, composed, and imaginative practices in India, affecting traditional and different dialects. IKS incorporates data from old India, as well as its achievements and troubles, giving knowledge into India's future goals in the space of wellbeing, schooling, the climate, and different features of day-to-day existence.

OBJECTIVES OF INDIAN KNOWLEDGE SYSTEM

The Indian knowledge system aims to support research in a number of fields, including psychology, neuroscience, holistic health, nature and environment, and sustainable development, in order to address contemporary societal concerns. The primary objective is to address current and future difficulties in India and around the world by integrating Indian knowledge systems and applying insights from the past. This entails drawing from our traditional knowledge systems, which are distinguished by an ongoing legacy of knowledge dissemination and a unique viewpoint called the "Bhartiya Drishti." The objective is to use this age-old knowledge to solve current and new issues.

IKS CELL

The Service of Training (MoE) at AICTE, New Delhi supervises the Indian Information Framework (IKS), an inventive cell. It was established to energize multidisciplinary concentrate on all features of IKS and to moderate and share IKS for future review and social purposes. It will effectively attempt to scatter customary information in the fields of expressions and writing, horticulture, fundamental sciences, designing and innovation, engineering, the board, and financial matters, among different fields, as well as our rich public heritage.

FUNCTIONS OF IKS DIVISION

The primary role of the IKS division is to encourage private sector organizations to get involved in IKS-based and related multidisciplinary and trans disciplinary work being done by numerous universities, national

importance institutions, R&D labs, and ministries both in India and overseas. The other is to form, direct, and oversee multidisciplinary research groups focused on certain subjects, made up of researchers from various institutes, centres, and individuals. In addition, popularization campaigns should be developed and promoted, funding for different projects should be made easier, procedures for doing research should be established, and policy suggestions should be developed as needed to advance IKS.

LITERATURE REVIEW

Verifiable and contemporary difficulties going up against native networks in safeguarding their insight are diverse. Imperialism, constrained digestion, and social concealment have generally disintegrated native information frameworks. Today, globalization, ecological corruption, loss of language, and infringement on native terrains present critical dangers. Quick financial changes frequently lead to the cheapening of standard practices and information, intensifying the gamble of their misfortune. Notwithstanding these difficulties, various fruitful protection drives have arisen around the world. These drives frequently include joint effort between native networks, scientists, NGOs, and legislatures. One such drive is the documentation of oral accounts and customary natural information, guaranteeing their transmission to people in the future. Local area based programs that engage native youth to gain from elderly folks and participate in social practices expect to be a key part in renewing and saving native information.

Besides, drives zeroed in on legitimate affirmation and protection of local safeguarded development honors have obtained force. These endeavors expect to forestall the abuse of local data by outside substances while giving native networks' organization over their social legacy. Also, the coordination of local data into standard preparation and strategy making processes encourages regard for standard practices and upgrades manageability endeavors. The effect of fruitful conservation drives reaches out past social safeguarding. It adds to biodiversity protection, practical asset the board, and strength to regular change. By recognizing and esteeming native data frameworks, social orders can encourage more prominent inclusivity, value, and social variety.

VISION

To preserve and transmit "Indian Knowledge Systems" for future study and societal applications, and to encourage interdisciplinary research on all facets of these systems.

MISSION:

- **Compile Information:** Compile a list of individuals and organizations that have contributed to the study, instruction, publication, and preservation of traditional and contemporary Indian knowledge in fields such as science, music, yoga, and the arts.
- **Establish a Website:** Create a website to archive and disseminate this information. Like a collaborative online encyclopaedia, anyone may add to it. Like a wiki, it will be updated with assistance from both public and private groups.
- **Promote Research:** Promote more research to address current issues in psychology, sustainable development, health, and the environment.
- **Acknowledge Researchers and Organizations:** Locate and draw attention to researchers and organizations that have contributed to various facets of Indian Knowledge Systems (IKS).
- **Disseminate Results:** Gather reports on the contributions made by individuals to IKS and issue updates on a regular basis.
- **Promote New Ideas:** Encourage collaboration between many fields by supporting research in IKS to validate novel ideas and generate new knowledge.
- **Research Fellowships:** Give academics the chance to work with professors of science and technology in Sanskrit universities and professors of Sanskrit in technical institutes.
- **Financial Support:** Donate funds to support IKS-related publications, workshops, seminars, and research. Seek to incorporate IKS into contemporary textbooks as well.
- **Establish IKS Centres:** Form specialized teams to concentrate on Indian Knowledge Systems at different colleges and institutions.
- **Collaborate:** Assist various ministries, groups, academics, and organizations in collaborating on interdisciplinary research projects that incorporate both old and modern knowledge.
- **Public-Private Partnerships (PPP):** Investigate and employ collaborations between the public and private domains, particularly for the establishment of web-based platforms and an elaborate IKS portal.
- **Committees and Experts:** Assemble committees and expert groups to organize, carry out, and supervise all aspects of Indian Knowledge Systems.

- **Take Initiative:** Take all required steps to advance and safeguard Indian Knowledge Systems.

The objectives of this plan are to promote new ideas, facilitate the dissemination of Indian knowledge, and foster cooperation between conventional wisdom and contemporary knowledge.

SUBJECTS UNDER INDIAN KNOWLEDGE SYSTEM

IKS-related fields include the humanities, engineering, medicine, agriculture, community knowledge systems, fine and performing arts, vocational skills, etc. The courses must, in accordance with the requirements, provide a clear mapping between the classic IKS disciplines and contemporary subjects like chemistry, mathematics, physics, agriculture, etc.

INDIAN KNOWLEDGE SYSTEM IN EDUCATION

A logical methodology would be taken in presenting the Indian Information Frameworks (IKS) to advanced education and schools. This incorporates conventional showing strategies and ancestral information on many themes, including number-crunching, cosmology, reasoning, yoga, medication, and farming. There will likewise be courses explicitly on natural cultivating, woods the executives, ancestral traditions, and so on. Indian Information Frameworks is an interesting elective that secondary school understudies can browse.

The methodology puts serious areas of strength for an on-encountering India's rich assortment straightforwardly and upholds drives like understudy excursions to different pieces of the country. 100 vacationer destinations will be picked under the 'Ek Bharat Shrestha Bharat' drive for instructive visits with the goal that guests can find out about their writing, information, customs, history, and commitments.

As of the present moment, 32 IKS Focuses are supporting both examination and guidance. There are additionally 75 multidisciplinary research projects underway, going from town wanting to old metallurgy. North of 5,200 temporary jobs on IKS have been made accessible, and in excess of 8,000 instructive organizations have digitized 1.5 lakh books and remembered IKS for their educational plans.

Vision 2047 is a plan for a prospering Indian information legacy created by the IKS Division. Understudies can acquire certainty, improve scholarly turn of events, and get a more profound comprehension of their way of life by integrating both conventional and present-day standards into their

customary tutoring. This technique tries to motivate future examination to resolve major problems while keeping up with the tradition of learning frameworks.

GUIDELINES BY THE MINISTRY AND REGULATORY BODIES

Guidelines for implementing the 2020 National Education Policy (NEP) have been provided by the government and educational institutions. Here's a condensed explanation:

1. Adding Indian Knowledge (IKS) to the Curriculum:

- Promote the integration of IKS into all educational levels' curricula.
- At least 5% of the total credits should be taken by students in IKS courses, of which 50% should be in courses linked to their major.
- Any Indian language may be used to teach IKS courses.

2. IKS Faculty Training:

- Through induction and refresher sessions, teach faculty members to see IKS positively.

3. Working together with artisans and artists:

- Encourage cooperation between academic institutions and artists.
- Incorporate experienced artists into research and instruction to create more fruitful learning environments

4. Courses on Indian Culture and Heritage:

- Provide brief, modular programs that address several facets of Indian culture.
- Provide a minor degree upon completion of 18–20 IKS credits.

5. IKS Credits Must Be Included:

- Make it required that all university courses include 5% IKS credits.
- IKS courses were introduced by AICTE for first-year engineering college students.

6. Creating Regional Courses:

- States and UTs ought to design curricula that honor their own cultures.

7. International Collaborations:

- Promote the development of diverse courses by universities through international partnership.

8. Virtual Education and Hiring:

- Integrate IKS courses into online learning environments for increased accessibility.
- Take IKS into account when taking recruitment entrance tests.

9. Faculty Training and Research Support:

- Create teacher training facilities with specific curriculum and develop faculty training modules.
- Offer financial support for studies pertaining to IKS.

10. Opportunities for Practical Learning:

- Provide students with practical workshops and internships in IKS.
- Hold hackathons with an IKS theme and incorporate IKS subjects into contests.

11. Translation of Academic Content:

- To engage a diverse student body, translate instructional materials into the local language.

12. Encourage Innovation and Research in IKS:

- Make NRF research grant proposals specifically for IKS.
- Include IKS in esteemed programs to draw in top candidates.

13. International Collaborations:

- Promote international cooperation by means of organizations such as the ICHR.
- Make IKS a central idea for ASEAN fellowships.

14. Institutional Support Systems

- Create IKS outreach, education, and research centers.
- Provide IKS centers seed money and extra cash for worldwide Centers of Excellence.

15. Encourage Public Participation:

- Use a variety of platforms to involve the public in the dissemination of real IKS knowledge.
- Use citizen science-style activities to include citizens in IKS efforts.

By incorporating Indian knowledge into other fields and encouraging a positive outlook on indigenous culture and heritage, these principles hope to improve education.

EMPLOYMENT OPPORTUNITIES:

The goal is to provide youngsters with career prospects through skill-based programs grounded in Indian Knowledge Systems (IKS). This is a condensed plan:

1. Skill-Based Training Programs:

- Present training programs for beauticians and cosmeticians that are based on IKS.
- Create dietetic programs based on Ayurveda.
- Launch programs for perfumery instruction based on Gandha shastra.

2. Promoting Heritage Technology:

- Use technological advancements to highlight Indian heritage.
- Try to get 10% of the world travel market.

3. Work Generation:

- By utilizing IKS skills, offer work chances.
- Promote young people's involvement in heritage-related industries.

This strategy is in line with encouraging the use of traditional skills, protecting cultural heritage, and fostering economic expansion through the use of the world tourism market.

CONCLUSION

This study concludes on this point, the Indian Information Framework (IKS) envelops the information on antiquated India, its achievements, snags, and future objectives in the space of wellbeing, schooling, the climate, and different parts of life. IKS plans to advance interdisciplinary exploration in regions including comprehensive wellbeing, brain science, neuroscience, nature, climate, and reasonable turn of events, with an emphasis on current cultural worries. The imaginative cell dedicated to IKS was established to propel study, save, and offer this data to work with future examination and helpful purposes in the public eye. IKS covers many subjects, including arithmetic, cosmology, theory, yoga, design, medication, horticulture, phonetics, writing, sports, games, administration, country, and preservation. It additionally integrates ancestral, native, and customary learning strategies.

IKS looks to advance the travel industry while at the same time raising comprehension and enthusiasm for the assortment, culture, and customs of the nation by effectively taking part in the scattering of India's rich legacy and

customary thinking. Widespread human qualities, Vedic math, yoga, Ayurveda, Sanskrit, Indian dialects, heavenly strict locales, landmarks, archaeological destinations, Indian writing, design, music, dance structures, show, visual expressions, performing expressions, specialties, and craftsmanship are only a couple of the aspects on which information is spread. To teach customary information and pride in understudies, foundations are likewise encouraged to coordinate student credits or IKS electives across fields. It is now expected by the College Awards Commission (UGC) that IKS courses get 5% of all educational program credits. Besides, it is planned that the formation of institutional emotionally supportive networks, as IKS focuses, will start effort, instructing, and research drives the country over.

Basically, the Indian Information Framework is a storage facility of information that upholds the progression of the country, the protection of culture, and the general prosperity of individuals and networks.

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Chapter-34

**Cultural Relevance in Education: A Review of
Indigenous Knowledge-Based
Curriculum Approaches**

Manav Sharma

MSc. Chemistry, Department of Science, Uttarakhand Open University, Rishikesh.

Abstract

In the shifting global education terrain, IK is a very significant contributor to culturally relevant pedagogy and also sustainable development. Furthermore, this review paper conducts a critical analysis of the indispensable role of Indigenous Knowledge in not only defining but also changing the educational practices and curriculum strategies to create a more environmentally friendly world. This study is built on the recognition of the deep importance of the Indigenous Knowledge Systems (IKS). As a treasure trove of unparalleled insights that transcend the boundaries of established academic domains, IKS is very much more than an ordinary academic subject. This paper, therefore, sets out to discuss global Indigenous Knowledge-based curriculum models in detail.

The review strives to offer a very complex perception of the dynamic relationship between Indigenous Knowledge and formal education. Using the literature to synthesize, it shows how successful strategies have been used in integrating Indigenous Knowledge into the curriculum and what initiatives were able to improve the cultural relevance. In addition, the analysis includes many difficulties with this integration process which gives us an insight into the challenges that educators and also policymakers face. This in-depth analysis seeks to contribute to the current discussion of education for sustainable development, focusing on the need for perceiving, respecting, and incorporating Indigenous Knowledge into mainstream teaching. Through this, it promotes a pedagogical model that not only equips the learners to face the realities of tomorrow but also nurtures an understanding and respect for cultural differences as well as sustainability.

Keywords: *Indigenous knowledge system, Culturally relevant pedagogy, Sustainable development, Curriculum strategies*

INTRODUCTION

Indigenous Knowledge System

Indigenous Knowledge Systems (IKS) includes a network of traditional rites, myths, and wisdom that people have inherited from one generation to another in certain communities. Based on the intrinsic cultural, social, and ecological realms of the indigenous societies IKS is a universal take on interpreting the world. This complex knowledge system, passed down orally and through daily practices, helps to craft rich facets of indigenous life from sustainable resource use and farming to medicine and religion.

Cultural Foundations of Indigenous Knowledge

The basis of Indigenous Knowledge consists of the cultural background of Indigenous societies. This knowledge has passed to children from generation to generation through oral traditions, myths, and rituals, practical experience and it is not separable from the identity of indigenous peoples. Culture cannot be separated from IKS, namely beliefs, myths, customs, and ceremonies. These are important elements of IKS providing a foundation for the understanding of the interactions among humans, nature, and the cosmos.

Ecological Wisdom and Sustainable Practices

One distinct characteristic of Indigenous knowledge is deep wisdom in environmental and practical resource management. A variety of diverse indigenous communities across the globe have evolved sophisticated knowledge systems that allow them to live in harmony with their ecosystems. Agricultural practices like the one that typically includes crop rotation, agroforestry, etc., remain faithful to sustainable methods of growing plants and trees by taking an ecologically balanced approach that does not give in to the temptation of short-term gains.

Medicine and Healthcare

The existing knowledge is a key component in traditional medicine and healthcare practices. Indigenous healthcare systems do include herbal remedies, plant-based medicines, and healing rituals and some of them are listed below. First, the deep connection of representatives of indigenous populations with a local ecosystem enables them to use as medicines the biological properties inherent in native plants. Traditional healers, who are

spiritual leaders within the community traditionally participate centrally in the use of Indigenous Knowledge in Healthcare.

Oral Tradition and Storytelling

Oral tradition can be regarded as a core of IK transmission. Knowledge is handed down from elders or leaders to members of a community via verbal art such as storytelling, myths, and narratives. These stories not only represent pieces of history but also somehow encode vital lessons on ethical issues, moral righteousness, and relations between living things. Knowledge passed through oral tradition is not lost as it remains intact to the indigenous community, as they guarantee its continuity among subsequent generations.

Spirituality and Cosmology

Indigenous Knowledge is shaped by spirituality and cosmology at the core. The native cosmologies serve as the governing principles for the origin of the universe, the relationship between humanity and divinity, and the interdependencies of life. Rituals, ceremonies, and spiritual practices are important aspects of indigenous life since they are a manifestation of the belief that there is something spiritual that underlies the world of phenomena.

Social Organization and Governance

Finally, indigenous communities are also guided in terms of social organization and governance by indigenous Knowledge. The traditional systems of governance are based on consensual building, communal decision-making, and a need to consider the wisdom of elders. Such systems provide a comprehensive understanding of the functional dynamics of communities, ecological interrelationships, and the significance of ensuring balanced resource allocation.

Challenges to Indigenous Knowledge

Although Indigenous Knowledge is rich and sustainable even in a world full of challenges, it still faces a lot of threats. The challenges caused by globalization, climate change, economic concerns, and the loss of traditional ways of life pose a threat to the conservation of IKS. Moreover, the absence of acknowledgment and protection of indigenous intellectual property rights implies the looming question of cultural thievery and plunder.

Contemporary Relevance and Recognition

Much recently, the world has recognized the value of Indigenous Knowledge that is used to solve global challenges. Governments, NGOs, and international organizations have also begun to recognize IKS as promoting sustainable development, biodiversity conservation, and adaptation to climate change. Several steps have been taken to incorporate Indigenous Knowledge in national policies, promote more efforts towards cultural preservation, and ensure the rights of indigenous communities.

Participatory Research and Collaboration

The trend towards participatory research, as well as collaboration between indigenous communities and external entities, has been gaining momentum to ensure the longevity of Indigenous Knowledge. With this approach, maintenance, and augmentation of agency and expertise of indigenous peoples in co-construction of solutions for present-day challenges are taken into account. It is about recognizing traditional knowledge holders and promoting partnering and valuing different concepts in indigenous settings.

Education and Knowledge Transmission

To this end, efforts are being driven to involve Indigenous Knowledge in the curricula of formal education systems. This includes the inclusion of traditional ecological knowledge in environmental education recognition of cultural value and use of indigenous languages in the curriculum; as well as encouraging the indigenous viewpoint on various disciplines of learning. These enterprises aim to fill the widening chasm between native knowledge and standard schooling.

INDIGENOUS KNOWLEDGE SYSTEM OF INDIA

Agricultural Wisdom

Agriculture is one of the enormous domains in which indigenous knowledge survives in large parts of India. Farming practices so closely connected to nature, have come out as a staple of life for generations and generations. Traditional agroecological practices like mixed cropping, organic farming, and the use of natural fertilizers have been the key elements of native wisdom in agriculture. The indigenous communities have good knowledge about their ecosystem, pattern of weather systems, and soil structures which help in sustaining agriculture that leads to food security.

Ayurveda and Traditional Medicine

Ayurveda is the science of life and is an ancient Indian medicinal practice. It is embedded in native knowledge and a comprehensive understanding of the ways to maintain health and well-being. These are practices and beliefs of Ayurveda, which include herbal medicine, diet, yoga, and meditation. The utilization of medicinal plants, minerals, and yoga for both prophylactic and therapeutic use symbolizes the combination of traditional understanding with the present healthcare system to create alternative and supplementary strategies for contemporary medication.

Ethnobotany and Biodiversity Conservation

The indigenous communities of India maintain a close relationship with their natural spaces and this knowledge is often manifested through ethnobotany, the science of the people's relationships with plants. There is a massive role of indigenous knowledge about the use of plants in cuisine, medicine, and rituals for biodiversity protection. Indigenous people serve as trustees of natural ecosystems, maintaining historic expertise on how to use natural resources sustainably.

Art and Craft Traditions

This indigenous knowledge is also made evident in the various arts and crafts traditions of India. These include handloom weaving pottery and age-long methods of making jewelry common amongst certain ethnic groups within an area. Indigenous art not only conserves cultural identities but also serves as a source of sustainable income generation. The elaborate designs, bright colors, and distinctive patterns represent the past, the family name, or family lineage.

Astronomy and Timekeeping

Indigenous knowledge in India reaches as far as astronomy and timekeeping where the ancient texts often display dexterous understanding. For instance, the Indian calendric system combines lunar and solar cycles, guiding harvest and festivals. The indigenous wisdom of locals lives on as timekeepers were pegged on traditional timekeeping methods like the use of sundials and water clocks.

Spirituality and Philosophy

With its strong linkage with spirituality and philosophy, indigenous knowledge is also prevalent in India. Consider texts authored by ancient gurus such as the Vedas, Upanishads, and a variety of scriptures that teach men profound philosophical minds and lead them in an ethical way of life. The practices of yoga and meditation, that associated with indigenous knowledge, are geared towards attaining self-actualization and salvation.

Challenges and Contemporary Relevance

Although indigenous knowledge is plentiful and rich in India, the preservation and continuity of native knowledge have various hurdles. The phenomenon of globalization, urbanization, and loss of rural lifestyles thus raise the likelihood of mortality in passing indigenous knowledge. Besides, failure to recognize traditional knowledge holders and protect their intellectual property rights through patents presents a case of misuse.

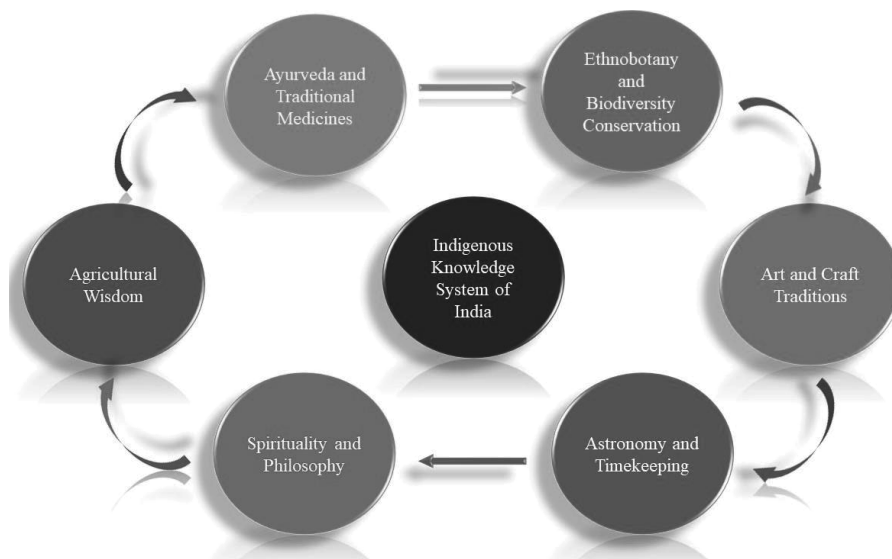


Fig. Indigenous Knowledge System of India

Review of Literature

Mbah M. Ajaps S. Hill. P.M. (2021), the paper “A Systematic Review of the Deployment of Indigenous Knowledge Systems Towards Climate Change Adaptation in Developing World Contexts: Implications for Climate Change Education”, this paper underscores the increasing vulnerability of developing countries to the impacts of climate change, coupled with their

limited capacity for adaptation. In response, the study advocates for an integrated and holistic approach to education in these contexts, leveraging Indigenous Knowledge Systems (IKSs) to enhance climate change adaptation strategies. The systematic review of 39 selected articles explores the deployment of IKSs for climate change adaptation in the developing world. The postcolonial lens applied to the review illuminates indigenous agency amid historical marginalization and epistemic violence resulting from colonial encounters. The identified categories of social, structural, and institutional adaptation strategies highlight the multifaceted nature of IKS-based approaches. Notably, social adaptation emerges as a recurrent theme. The study proposes the application of these strategies to decolonize climate change education, advocating for critical, place-based, participatory, and holistic methodologies. The anticipated outcome is a more relatable and effective climate change education tailored to the unique context of the developing world.

Rukmini Becerra-Lubies (2021), in their research paper “Intercultural education and early childhood: strengthening knowledge based on Indigenous communities and territory” The literature presented in this paper delves into the landscape of intercultural education in Chile, with a specific focus on its application in early childhood education over the past decade. While efforts have been made to fortify an intercultural approach in preschools, particularly through establishing connections with Indigenous communities, the study points out significant deficiencies resulting from inadequate resources and teacher preparation. The identified shortcomings in the collaboration between Indigenous communities and preschools underscore the importance of addressing these gaps. To specifically enhance the relevance of Mapuche communities in intercultural preschools, the study introduces and implements a pilot initiative guided by a decolonial and critical pedagogy-of-place approach. The findings highlight a shift in educators’ perspectives toward considering Mapuche communities beyond families, acknowledging the role of urban Mapuche communities, and refining ethical practices in collaboration. The study concludes by proposing recommendations for policy improvements and teacher education to address these deficiencies and enhance the effectiveness of intercultural education in Chilean preschools.

Zinyeka, Gracious (2014), in their research paper “The epistemological basis of indigenous knowledge systems in science education”, explained the integration of Indigenous Knowledge (IK) into school science curricula is recognized as a valuable endeavor with pedagogical benefits, particularly in enhancing learners’ performance in science education. However, a

significant challenge arises from the absence of universal and explicitly stated epistemologies of Indigenous Knowledge, hindering inclusive curriculum integration. This study addresses this epistemological gap by introducing a truth-theory-based knowledge framework. The literature emphasizes the importance of developing a comprehensive framework to identify and understand the underlying epistemologies within Indigenous Knowledge systems. The research comprises three main components: first, the creation of the truth-theory-based framework through philosophical analysis; second, the documentation of local knowledge, technologies, and practices from a rural community in Zimbabwe; and third, the engagement of secondary school science teachers in exploring effective ways to integrate Indigenous Knowledge into science education. The findings indicate that the framework successfully addresses teachers' philosophical concerns and facilitates the development of effective teaching approaches, thus offering a promising avenue for the meaningful inclusion of Indigenous Knowledge in science education to enhance socio-cultural relevance and improve learner performance.

Hassan O. Kaya. Yonah N. Seleti (2014), In the research paper "African Indigenous Knowledge Systems and Relevance of Higher Education in South Africa" The literature presented in this paper addresses the perceived disconnection between the academic orientation of the higher education system in Africa, with a particular focus on South Africa, and the developmental needs of local communities. The study advocates for the integration of African Indigenous Knowledge Systems (AIKS) into higher education to enhance its relevance. Highlighting the holistic and community-based nature of AIKS in education and knowledge production, the paper contends that such integration necessitates the development of an African indigenous theoretical framework to guide the process. This framework is expected to elucidate the significance of African indigenous languages in the production and dissemination of knowledge within the context of globalization. The gaps identified in the existing literature point towards the need for a comprehensive framework that not only integrates AIKS into higher education but also addresses the role of indigenous languages in the knowledge-sharing landscape.

Eric M. Riggs (2004), in his research paper "Field-based education and indigenous knowledge: Essential components of geoscience education for native American communities" aims to propose a comprehensive framework for understanding the key components of successful Earth science education programs tailored for indigenous communities in North America. These

programs, designed primarily for adult learners in postsecondary or technical education settings, exhibit consistent success through active collaboration between local indigenous communities and geoscientists from nearby universities. A common thread among these effective curricula includes an explicit emphasis on outdoor education, a place and problem-based structure, and incorporating traditional indigenous knowledge into the instructional process. The success of this design is analyzed through insights from field-based learning research, Native American learning style studies, and theoretical and empirical research on the nature and structure of indigenous knowledge. The paper concludes by suggesting future research directions further to refine best practices in indigenous Earth science education.

MAJOR FINDINGS

The combined results from the reviewed studies reinforce a critical point which is that Indigenous Knowledge Systems (IKS) can play a key and transformative role in the cultural relevance and efficacy of pedagogy. Through these studies, it also became clear that IKS is a key contributor to educational systems as well as one of the biggest challenges within them. The above-mentioned challenges- poor resources, insufficient preparation of teachers, and non-explicit epistemologies – collectively point to the crucial need for the formulation and deployment of effective frameworks and strategies. All these frameworks should systematize IKS in the education systems, ensuring a smooth learning process and the acknowledgment of cultural differences through this implementation.

In all the studies recurring theme is the need for a paradigm shift; to shift from a conventional school-based education system to what I would call a more holistic model of community-based culturally sensitive education—one that recognizes and validates indigenous knowledge. The intrinsic richness and the contemporary significance that accompany indigenous knowledge are appreciated as essential aspects of pedagogical frameworks that transcend established academic limitations. Altogether, the studies suggest that the educational terrain should be recognized to embrace and respect the various cultural frames encapsulated by indigenous knowledge thus promoting a more accommodating and egalitarian learning milieu.

The study also put forward innovative emerging practices and conceptual frameworks, as well as alternative research approaches that could fill in the gaps between educational practice and theory. This is because these proposals offer some quality insights into the identified challenges, they propose convenient directions for integration of IKS smoothly into formal

education. The focus on pilot initiatives indicates a proactive approach toward the testing and refining mode of new strategies, which can be treated as a guiding path for the practical use of native knowledge within the educational environment.

With these aggregated findings serving as the foundation for the forthcoming review essay, it becomes highlighted how central relevance to culture is in education. The proposed review will focus on Indigenous Knowledge-Based Curriculum Approaches; so many insights from these studies have also been used. As discussed, through the synthesis of challenges, solutions, and novel methodologies, the review paper will further the conversation about refashioning educational practices towards greater congruence with cultural realities built within indigenous knowledge systems. The overarching objective is to support the advancement of such educational frameworks that recognize the value of indigenous knowledge and do not merely relegate it to a secondary role, but rather in fact promote its inclusion, thereby creating a more inclusive, culturally appropriate, and effective learning environment for all students.

CONCLUSION

This review highlights the transformative power of IKS in creating an integrated cultural platform that positively influences the cultural relevance and efficacy of education on a global level. Integrated with the synthesis of findings from different studies, it can be concluded that IKS is significantly contributing to educational systems while at the same time creating critical challenges that need immediate intervention. It is clear that the nature of identified challenges, which include lack of sufficient resources, teacher preparation as well as non-existence of explicit epistemologies, emphasize the importance of creating and integrating all-rounded frameworks and approaches.

One recurring theme can be observed through the studies and this is a call for innovation in education, a departure from traditional school-based models to a more global approach inclusive of the community and culturally appropriate. Such a conversion is considered necessary to acknowledge and valorize indigenous knowledge as a highly valuable treasure, both intrinsically rich and relevant to contemporary times. Such studies collectively state that the learning milieu would be more hospitable if the educational landscapes would respect and take into embrace those very diverse cultural frames that indigenous knowledge represents.

Additionally, the review emphasizes essential innovations and emerging practices, conceptual frameworks, and alternative approaches to research as necessary facilitators in closing the gap between theory and practice. These proposals are very useful in terms of ways, through which challenges to IKS can be addressed and used for the smooth incorporation of IKS into formal education. The focus on pilot projects indicates a proactive and pragmatic posture in terms of testing and adjusting the new strategies, interpreting them as a practical manual for the implementation of indigenous knowledge into educational settings.

The cultural significance then appears as the core of quality instruction since these findings from assembled studies will shape the upcoming review essay. Studies have shed rich insights on the subject of Indigenous Knowledge-Based Curriculum Approaches, which is demonstrated in the review paper and this is where the focus is. Using a synthesis of the challenges, solutions, and new approaches, one hopes to foster an impetus for dialoguing on reshaping educational practices that would be more by the cultural realities inscribed in indigenous knowledge systems. The visionary aim is to promote and participate in the introduction of educational structures that not only recognize the importance of indigenous knowledge but also codify its recognition, ensuring a more equitable, culturally sensitive, and productive learning environment for all students. Finally, the review aims to be a change agent as it calls on all stakeholders such as politicians, social educators, and policymakers to consider celebrating more than one knowledge system for a sustainable and rich cultural future.

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Chapter-35

Preservation of Indigenous Knowledge

Chhavi Kanwar

Special Educator Billabong High International School, Noida (U.P.)

Gaurav Agrahari

Student Teacher, Army Institute of Education, Greater Noida (U.P.)

Abstract

Indigenous knowledge preservation is a fundamental component of cultural sustainability. Native information envelops a large number of abilities, practices, and experiences that have empowered networks to flourish as one with their surroundings. However, significant threats to the endurance of this priceless knowledge are posed by the fast speed of globalization, environmental change, and modernization.

The difficulties that come with the loss of native information are the theme of this abstract. Native information is well established in nearby environments, offering economical answers for asset the executives, horticulture, and medical care. It is necessary not only for native communities' cultural identities yet in addition for addressing worldwide issues like climate change and biodiversity loss. The disintegration of native information is credited to variables like social osmosis, uprooting, and the absence of documentation. Endeavors to safeguard this information include a complex methodology, including local area driven drives, cooperation with outside substances, and the mix of conventional practices into formal schooling systems. Moreover, computerized innovations assume a critical part in recording and scattering native information, guaranteeing its openness to people in the future.

This abstract feature fruitful contextual analyses and best practices in the protection of native information, stressing the significance of engaging native networks to be the stewards of their own insight. In addition, it examines ethical considerations and the necessity of engaging indigenous communities in a respectful manner, recognizing their rights to manage their intellectual and cultural heritage. All in all, the safeguarding of native information isn't just a question of social legacy yet in addition a worldwide obligation. We can help safeguard this rich tapestry of wisdom, promote cultural diversity, and

foster sustainable practices for the benefit of present and future generations by working together and taking a holistic approach.

Keywords: Indigenous knowledge, Cultural diversity, Sustainability Development Goals Colonialism, Communities.

INTRODUCTION

Preserving indigenous knowledge is an urgent and essential endeavor rooted in the recognition of the rich tapestry of wisdom, traditions, and practices held by indigenous communities worldwide. At its core, this preservation effort is a profound acknowledgment of the invaluable insights embedded within indigenous cultures, accrued over generations through deep connections with the land, spirituality, and community. However, these knowledge systems face myriad threats, including cultural erosion, environmental degradation, and marginalization. Thus, the preservation of indigenous knowledge is not merely a matter of safeguarding historical artifacts or practices but is fundamentally about respecting and revitalizing diverse approaches to knowing for the benefit of present and future generations. It requires collaborative and inclusive approaches that empower indigenous communities to lead in documenting, transmitting, and revitalizing their knowledge while upholding ethical standards and recognizing indigenous rights. Ultimately, this preservation journey is a vital step towards fostering cultural resilience, promoting environmental sustainability, and honoring the invaluable contributions of indigenous peoples to our collective heritage and understanding of the world.

LITERATURE REVIEW

Exploring existing literature on indigenous knowledge preservation reveals a rich tapestry of research spanning different disciplines, including human studies, social science, environmental science, and indigenous studies. Researchers have dove into different aspects of native information, its transmission, and the challenges faced in preserving it amidst modernization and globalization.

Historical and contemporary challenges confronting indigenous communities in preserving their knowledge are multifaceted. Colonialism, forced assimilation, and cultural suppression have historically eroded indigenous knowledge systems. Today, globalization, environmental degradation, loss of language, and encroachment on indigenous lands pose significant threats. Rapid socio-economic changes often lead to the devaluation

of customary practices and knowledge, exacerbating the risk of their loss. Despite these challenges, numerous successful preservation initiatives have emerged worldwide. These initiatives often involve collaboration between indigenous communities, researchers, NGOs, and governments. One such initiative is the documentation of oral histories and traditional ecological knowledge, ensuring their transmission to future generations. Community-based programs that empower indigenous youth to learn from elders and engage in cultural practices assume a fundamental part in revitalizing and preserving indigenous knowledge.

Furthermore, initiatives focused on legal acknowledgment and insurance of native protected innovation privileges have acquired momentum. These efforts aim to prevent the exploitation of native information by external entities while granting indigenous communities' agency over their cultural heritage. Additionally, the coordination of native information into standard training and policy-making processes fosters respect for customary practices and enhances sustainability efforts.

The impact of successful preservation initiatives extends beyond cultural preservation. It contributes to biodiversity conservation, sustainable resource management, and resilience to natural change. By acknowledging and valuing indigenous information systems, societies can foster greater inclusivity, equity, and cultural diversity.

In conclusion, while indigenous knowledge preservation faces formidable challenges, ongoing initiatives underscore the resilience and determination of native networks to safeguard their heritage. By recognizing the worth of native information and supporting collaborative preservation efforts, societies can promote cultural diversity and sustainable development.

IMPORTANCE OF PRESERVATION OF INDIGENOUS KNOWLEDGE:

Preservation of indigenous knowledge is of paramount importance for several reasons:

- **Cultural Preservation:** Indigenous knowledge is intricately linked to cultural identity and heritage. Preserving this knowledge ensures that unique cultural practices, languages, beliefs, and customs are safeguarded for future generations, maintaining the richness and diversity of human cultures.
- **Environmental Sustainability:** Indigenous knowledge often encompasses profound understandings of ecosystems, biodiversity, and sustainable

resource management practices. By preserving indigenous knowledge, we can learn important examples about living in harmony with nature, mitigating environmental degradation, and adapting to changing ecological conditions.

- **Health and Well-being:** Many indigenous healing practices and medicinal knowledge have proven efficacy in treating various ailments. Preserving indigenous medical knowledge can contribute to holistic healthcare approaches and provide alternative remedies that complement Western medicine.
- **Food Security and Agriculture:** Indigenous agricultural practices often prioritize biodiversity, soil conservation, and resilience to climatic fluctuations. Preserving these methods can offer sustainable solutions to food insecurity, especially in regions vulnerable to environmental pressures and climate change.
- **Social Justice and Empowerment:** The preservation of indigenous knowledge is intertwined with efforts to recognize and uphold indigenous rights, sovereignty, and self-determination. Empowering indigenous communities to preserve and transmit their knowledge fosters cultural pride, strengthens community resilience, and contributes to the more extensive development for civil rights and indigenous rights.
- **Education and Research:** Native knowledge systems hold vast repositories of wisdom, innovation, and experiential learning. Incorporating indigenous perspectives into education and research enriches our understanding of diverse worldviews, promotes cross-cultural dialogue, and stimulates innovation in various fields.
- **Climate Change Adaptation:** Indigenous communities often possess valuable insights into coping with and adapting to environmental changes. Preserving indigenous knowledge can illuminate environmental change transformation strategies, offering locally relevant solutions and enhancing resilience in vulnerable communities.
- **Global Sustainability Goals:** The preservation of indigenous information aligns with international sustainability goals, such as the United Nations SDGs, by promoting cultural diversity, environmental stewardship, and inclusive development.

In essence, the preservation of native information isn't as it were a matter of cultural heritage but also a necessity for addressing contemporary challenges, fostering sustainable development, and promoting justice, equity, and harmony between human societies and the natural world.

STRATEGIES FOR PRESERVATION OF INDIGENOUS KNOWLEDGE

Preserving indigenous knowledge requires a multifaceted approach that respects indigenous rights, promotes community empowerment, and incorporates ethical considerations. Here are a few procedures for effectively preserving indigenous knowledge:

- **Community Involvement and Leadership:** Empower indigenous communities to lead preservation efforts, ensuring that initiatives are driven by community priorities, needs, and aspirations. Respect indigenous protocols, governance structures, and decision-making processes, and prioritize the active participation of knowledge holders in all stages of preservation projects.
- **Documentation and Recording:** Document indigenous knowledge using an assortment of mediums, including oral histories, written texts, videos, and digital archives. Collaborate with indigenous communities to develop culturally appropriate methods of documentation, ensuring that knowledge is accurately captured and preserved while respecting confidentiality and intellectual property rights.
- **Inter-generational Transmission:** Facilitate the transmission of indigenous knowledge between generations through storytelling, mentorship programs, apprenticeships, and inter-generational dialogue. Create opportunities for elders and traditional practitioners to impart their insight to more youthful community members, fostering continuity and revitalization of traditional practices.
- **Education and Capacity Building:** Integrate indigenous perspectives, knowledge, and practices into formal and informal education systems at all levels. Provide training and capacity-building opportunities for indigenous youth, educators, researchers, and policymakers to enhance understanding and appreciation of indigenous knowledge.
- **Research Partnerships and Collaboration:** Foster respectful and equitable research partnerships between indigenous communities and external researchers, based on principles of reciprocity, mutual benefit, and informed consent. Prioritize indigenous control over research processes, data ownership, and dissemination of findings, and guarantee that examination exercises line up with community priorities and values.
- **Policy Advocacy and Legal Protections:** Advocate for policies and legal frameworks that recognize and protect indigenous rights, languages, and knowledge systems. Support initiatives to incorporate indigenous

knowledge into national and international laws, treaties, and agreements related to biodiversity conservation, intellectual property rights, and cultural heritage protection.

- **Technology and Innovation:** Harness technology and innovation to support indigenous knowledge preservation, including digital mapping, multimedia documentation tools, and online knowledge-sharing platforms. Guarantee that mechanical arrangements are accessible, culturally appropriate, and developed in a joint effort with indigenous communities.
- **Ethical Guidelines and Standards:** Develop and adhere to ethical guidelines and standards for the preservation of indigenous knowledge, informed by principles of respect, reciprocity, and cultural sensitivity. Prioritize the free, prior, and educated assent regarding native communities, uphold confidentiality and privacy rights, and recognize the licensed innovation freedoms of knowledge holders.

By employing these strategies in a collaborative, culturally sensitive, and rights-based manner, we can work towards preserving and revitalizing native information to serve present and future generations.

CHALLENGES FACED IN PRESERVATION OF INDIGENOUS KNOWLEDGE

Preserving indigenous knowledge faces a myriad of challenges deeply rooted in historical injustices, contemporary social dynamics, and environmental pressures. Colonialism and cultural suppression have long sought to erase indigenous cultures, languages, and knowledge systems, perpetuating a tradition of marginalization and intergenerational trauma. Globalization further exacerbates this challenge, as modernization and urbanization erode traditional ways of life, diminishing the transmission of knowledge from elders to youth. Environmental degradation poses a tangible threat, disrupting the delicate balance between indigenous peoples and their ecosystems, leading to the deficiency of ecological wisdom and practices. Moreover, issues encompassing licensed innovation privileges and cultural appropriation perpetuate power imbalances, as indigenous knowledge is often exploited without consent or acknowledgment. Language barriers hinder effective documentation and communication, while a lack of resources and infrastructure limits the limit of indigenous communities to preserve their knowledge. Ethical considerations, including issues of representation and ownership, further complicate preservation efforts, requiring sensitivity to local contexts and power dynamics. Rapid social change, climate change,

and displacement further compound these challenges, necessitating holistic, community-driven approaches that prioritize indigenous rights, resilience, and self-determination.

CASE STUDY

- **Maasai Pastoralists, Kenya and Tanzania:** The Maasai people have developed intricate knowledge systems related to pastoralism, land management, and biodiversity conservation. Organizations like the Maasai Mara Wildlife Conservancies Association (MMWCA) work collaboratively with Maasai communities to preserve traditional grazing practices, wildlife corridors, and cultural heritage while promoting sustainable tourism and livelihood diversification.
- **Mapuche Medicinal Plants, Chile:** The Mapuche people of Chile have a rich tradition of herbal medicine, using native plants for healing purposes for centuries. Organizations like the Indigenous Peoples Biocultural Climate Change Assessment (IPCCA) support Mapuche healers in documenting and transmitting traditional medicinal knowledge, while advocating for the recognition of indigenous rights and environmental conservation.
- **Aboriginal Fire Management, Australia:** Aboriginal peoples in Australia have practiced controlled burning techniques for thousands of years to manage landscapes, prevent wildfires, and promote biodiversity. Projects like the Kimberley Land Council's "Balangarra Healthy Country Plan" empower indigenous rangers to revive traditional fire management practices, integrating indigenous ecological knowledge with modern conservation efforts.
- **Quechua Potato Farmers, Peru:** In the Andean highlands of Peru, Quechua potato farmers have preserved thousands of potato varieties through generations of selective breeding and traditional farming practices. Initiatives such as the International Potato Center's (CIP) "Potato Park" promote the conservation of agrobiodiversity, traditional knowledge, and indigenous rights, while supporting local economies and food security.

CONTRIBUTION OF PRESERVATION OF INDIGENOUS KNOWLEDGE TO SUSTAINABILITY DEVELOPMENT GOALS

Preservation of indigenous knowledge plays a pivotal role in advancing sustainable development goals (SDGs) by leveraging the wisdom, traditions,

and practices honed over generations by indigenous communities worldwide. This knowledge is a treasure trove of insights into sustainable land management, biodiversity conservation, traditional medicine, and resilient livelihood strategies. By incorporating native perspectives into education, healthcare, climate action, and governance systems, we can promote inclusive and equitable development, enhance resilience to environmental challenges, and foster cultural variety and social cohesion. Indigenous knowledge informs climate adaptation strategies, contributes to ecosystem restoration, and supports community-led conservation efforts, aligning with SDGs related to climate action, life on land, and peace, justice, and strong institutions. Furthermore, by empowering indigenous communities to preserve, transmit, and apply their knowledge, we can address root causes of poverty, hunger, and inequalities, promoting economic empowerment, food security, and decent work opportunities in indigenous territories. Ultimately, recognizing and valuing indigenous knowledge systems isn't just an issue of cultural preservation and human freedoms yet in addition a pathway to achieving a more sustainable, inclusive, and resilient future for all.

CONCLUSION

In conclusion, the preservation of indigenous knowledge stands as a vital endeavor with profound suggestions for the sustainability of our planet and the well-being of its inhabitants. Through centuries of lived experience and intimate connections with their environments, indigenous communities have developed intricate knowledge systems that offer invaluable insights into sustainable land management, biodiversity conservation, traditional medicine, and resilient livelihood strategies. Upholding and integrating indigenous knowledge into education, healthcare, climate action, and governance efforts not only promotes cultural diversity and social cohesion but also advances progress towards accomplishing the Sustainable Development Goals (SDGs). By empowering indigenous communities to preserve, transmit, and apply their knowledge, we can address pressing global challenges, including climate change, poverty, and inequality, while fostering inclusive, equitable, and sustainable development pathways. As we strive to build a more just and resilient world, let us recognize and honor the wisdom, innovation, and resilience of indigenous peoples, acknowledging their essential contributions to shaping a more sustainable future for generations to come.

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Chapter-36

**Role of Indigenous Knowledge for
Quality Education**

Sumit Kumar Singh

Student Teacher, Army Institute of Education, Greater Noida (U.P.)

Abstract

To raise the standard of training as a whole, this study examines the significance of incorporating indigenous perspectives into regular education. Indigenous knowledge has the ability to make an important contribution to an educational framework that is more accessible as well as culturally responsive. It is grounded in different points of view and customs of different cultures. The study looks at how integrating native information influences instructive quality, considering curriculum design, preparation for teachers, and the overall process of learning.

The initial part of the research analyses the historical background and contemporary perspectives around the utilization of native information in education. It then offers a theoretical framework that emphasises the meaning of environmental sustainability and cultural relevance. The research analyses the advantages and difficulties of integrating native information into educational institutions through a thorough examination of the literature.

The research project utilises a qualitative approach, gathering data from politicians, indigenous people, and educational practitioners through case studies and interviews. The results present successful integration models along with insight into successful approaches to developing curricula, teacher preparation, and involvement locally.

The benefits of bringing native information into the classroom are examined from an assortment of angles, such as increased cultural sensitivity, greater awareness of opposing points of view, and the encouragement of ecologically friendly behaviour. The research additionally addresses issues including curriculum modification, resource allocation, and the requirement for cultural awareness during the integration process.

Additionally, the study emphasises how important it is for indigenous people to actively participate in decision-making processes and shape the educational

narrative. To guarantee the effective mix of native information into educational institutions, the article suggests cooperative methods including governments, non-governmental organisations, and indigenous communities.

The study's contributions to the continuing discussion about excellent instructive organizations are brought out in the conclusion, which highlights the findings. Legislative support, empowering communities, and protecting of indigenous rights via just cooperation and legal safeguards make up the recommendations. By educating educators, politicians, and researchers on the useful applications of integrating indigenous knowledge, the project hopes to promote an inclusive and culturally aware atmosphere for learning.

Keywords: Indigenous knowledge, Mainstream education, Inclusive education, culturally responsive framework, Curriculum development, Global perspectives, Environmental sustainability, Benefits and challenges Qualitative approach, Indigenous communities, Policymakers

INTRODUCTION

This study looks at the value of integrating indigenous perspectives into conventional education to improve the nature of training overall. This information has its foundations in the social structures, history, and environments of native people groups from everywhere the world. It covers a broad spectrum of knowledge, including as resource management, ecological stewardship, storytelling, traditional medicine, and agriculture.

Indigenous knowledge is defined by its oral legacy, centred around communities' structure, and close links to the surroundings. Unlike organised educational information, indigenous understanding tends to be holistic, integrating diverse parts of life such as spirituality, cultural customs, and sustainable living.

Indigenous understanding is formed by exhaustive comprehension of the complex interactions between humans and nature and the local ecosystems. It builds endurance in dealing with of environmental difficulties by reflecting the knowledge accumulated over thousands of years of coexisting peacefully with the land. Indigenous ways of life are dynamic, shown by their approach to this knowledge changes and adapts to new situations.

The significance of native information in solving worldwide issues like environmental change, biodiversity loss, and sustainable growth has received more emphasis recently. A lot of work is being done to honour, preserve, and incorporate traditional wisdom with contemporary methods in an attempt to encourage a more inclusive and diverse approach to problem-solving.

However, it is essential that the combination of native information be approached respectfully and with understanding, taken into consideration the past injustices and contemporary challenges that native people groups need to deal with. Realising the worth of indigenous knowledge boosts global efforts to deal with challenging problems affecting both local and global societies and ultimately contributes towards a greater awareness of the global community.

LITERATURE REVIEW

Indigenous groups' command over their own insight systems must be respected and strengthened while integrating Indigenous knowledge. Indigenous Knowledge emphasises the relationships between people, the natural world, and the spirit realm to give holistic learning techniques that go past subject-specific compartmentalization.

Indigenous knowledge is often shared via storytelling, mentoring, and community engagement, which highlights the need of building relationships in the homeroom. Given that Indigenous Knowledge is firmly connected with explicit spots and cultures, any integration attempts have to consider the needs of the understudies as well as the local environment.

OBJECTIVES OF THE STUDY

Crucial areas are listed in the text to enhance the consideration of native information in education:

1. The recording and conservation of native information in order to preserve effective teaching strategies within indigenous communities.
2. Integration into formal education systems through the development of strategies for fusing cutting-edge instruction with age-old knowledge.
3. Improving cultural relevance by assessing how well-suited and relevant the current educational program are for students who are native.
4. Community empowerment via the incorporation of local communities in educational practices and the acknowledgment of native information in the classroom.
5. Support for ecological advancement through an examination of the manners by which native information might aid in environmental preservation and sustainable development.
6. Developing teacher capacity and providing training to educators so they may incorporate native information into their instructional methods.

7. Policy suggestions to offer educational policies that support and encourage the incorporation of indigenous knowledge.
8. Measuring impact by creating tools and methods to evaluate how incorporating indigenous knowledge affects community well-being, cultural preservation, and student accomplishment

INDIGENOUS KNOWLEDGE IN EDUCATION

Learning settings that are more inclusive and culturally relevant may be produced by incorporating indigenous knowledge into education. Key methods for imparting Native information in the study hall include:

1. **Cultural broadcasting:** To encourage diversity, include Indigenous history, languages, and customs in the curriculum.
2. **Community collaboration:** Co-create materials for learning with Indigenous groups and expertise holders.
3. **Language preservation:** To help in the safeguarding of Indigenous languages, including them in the curriculum.
4. **Local context and relevance:** Provide instructional resources that reflect the local context also, are pertinent to students' daily activities.
5. **Holistic teaching techniques:** Incorporating Native information systems, such as storytelling and experiential learning, with traditional methods of teaching.
6. **Ecology and environmental knowledge:** To recognise the significance of customary ecological practices, include Indigenous ecological knowledge into environmental education.
7. **Respect for Indigenous Pedagogies:** Recognise and value Indigenous teaching approaches, which may diverge from traditional classroom techniques.
8. **Well-being and health:** Integrate conventional medical practices and health-related information into health education programmes.
9. **Providing teachers with cultural competency training:** Give valuable open doors to proficient turn of events to enhance teachers' comprehension of Indigenous history and traditions.
10. **Native American role models:** Draw attention to their achievements and contributions across a range of industries.
11. **Self-determination and empowerment:** By recognising and confirming their cultural identities, we may help Indigenous kids feel empowered and in control of their own lives.

- 12. Evaluation and assessment:** Create evaluation techniques that enhance Indigenous knowledge-proving procedures.

BENEFITS OF INTEGRATING INDIGENOUS KNOWLEDGE

Integrating native information into different perspectives of society, development, and research can yield a large number of advantages. Here are some key advantages:

- 1. Cultural Preservation:** By incorporating indigenous knowledge, distinctive cultural customs, languages, and practices are maintained and enhanced. This adds to the rich tapestry of cultural diversity found throughout the world.
- 2. Management of Sustainable Resources:** Indigenous groups frequently have long-standing, earth sound strategies for making due their natural resources. Utilizing this information can assist with creating asset the executives designs that are more sustainable and beneficial to the environment.
- 3. Conservation of Biodiversity:** Indigenous knowledge frequently involves a thorough comprehension of regional ecosystems and biodiversity. By utilising this information, conservation efforts can be strengthened and the preservation of threatened species' habitats can be encouraged.
- 4. Adaptation to Climate Change:** Historically, indigenous groups have made adjustments to their ever-changing surroundings. Their expertise can offer insightful information for creating plans to deal with and adjust to the effects of climate change.
- 9. Improved Education:** A more comprehensive and inclusive learning environment is produced when indigenous knowledge is included into educational systems. It encourages respect for different points of view, broadens viewpoints, and advances cultural understanding.
- 10. Cultural Tourism and Business Prospects:** Native American customs and traditions have the potential to draw in cultural tourists and create job possibilities for native communities. This can maintain cultural integrity while fostering sustainable economic growth.
- 11. Better Research and Innovation:** The unique insights that come from Indigenous knowledge contribute to improved scientific research and innovation. Researcher and indigenous community collaborations can result in novel findings and answers to today's problems.

CHALLENGES OF INTEGRATING INDIGENOUS KNOWLEDGE

Despite the fact that there are many benefits to incorporating indigenous knowledge into other fields, there are drawbacks as well. Addressing these issues is essential to ensuring polite and successful integration. Among the difficulties are:

1. **Lack of Respect and Acknowledgment:** When compared to mainstream knowledge, native information frameworks are regularly marginalised and not given the same prominence. Integrating indigenous knowledge presents a major challenge in overcoming this lack of acknowledgment.
2. **Cultural Sensitivity:** It can be difficult to guarantee cultural sensitivity during the integration process. Unfortunate cognizance of the social setting and the significance of articular activities can lead to misunderstandings or theft of indigenous knowledge.
3. **Power differences:** Imbalances in power amongst indigenous communities and third-party parties, like governments, universities, and corporations, may create it more challenging for native information to be formed fairly. Successful partnerships are built on the sharing of resources, group decision-making, and mutual respect.
4. **Rights to Intellectual Property:** Because indigenous knowledge is frequently communal and collective, navigating intellectual property rights can be difficult. Unauthorised use or exploitation of indigenous knowledge without adequate benefit-sharing arrangements and consent can provide serious difficulties.
5. **Language Barriers:** Indigenous knowledge is primarily passed down orally, often in tongues that are not widely spoken. Linguistic obstacles may make it difficult to record and disseminate indigenous knowledge to larger audiences.
6. **Conventional and Contemporary Conflict:** Conventional indigenous traditions and contemporary lifestyles may not always mesh well. Maintaining the integrity of customs while knowledge with the need for adaptation to changing circumstances is a delicate challenge.
7. **Loss of Elders and Traditional Experts:** Priceless indigenous information may be lost if elders and traditional experts pass away without leaving sufficient documentation behind. It takes work to record and transmit this knowledge to future generations.
8. **Inadequate Participation in the Making of Decisions:** With regards to the integration of cultural knowledge, indigenous individuals could

not necessarily in every case have enough representation in decision-making processes. The absence of representation may result in initiatives that are at odds with the community's needs and ideals.

9. **Educational Gaps:** Indigenous knowledge may not be sufficiently valued or incorporated into the educational system. The marginalisation of indigenous perspectives may continue subsequently gap in formal schooling.
10. **Erosion of Cultural Integrity:** The historical and cultural integrity of indigenous knowledge may be eroded by commercialization or inappropriate implementation. It is capable of being complicated to maintain a balance between dissemination of data and the preservation of cultural heritage.
11. **Limited Infrastructure and Resources:** The absence of resources and infrastructure is an obstacle for numerous indigenous communities. They frequently experience financial strain. Effective integrating indigenous knowledge might necessitate funding for community development, education, and research.

In order to tackle these issues, it needs to work cooperatively and respectfully, include indigenous communities in the process of making decisions, and acknowledge the significance of cultural diversity in forming sustainable and inclusive solutions

OPPORTUNITIES OF INTEGRATING INDIGENOUS KNOWLEDGE:

Numerous potentials exist for sustainable development, cultural preservation, and the welfare of indigenous populations when indigenous knowledge is integrated. Among these opportunities are a few of them:

1. **Sustainable resource management:** Indigenous techniques for safeguarding the environment are frequently found in indigenous knowledge. These techniques can be utilised for improving environmentally friendly operations in the forestry, fishing, agricultural, and other resource-dependent industries.
2. **Biodiversity conservation:** To more effectively protect endangered species as well as preserve biodiversity, programmes for conservation can benefit from the extensive understanding of local ecosystems as well as biodiversity held by indigenous communities.
3. **Climate change resilience:** Traditional perspectives on adapting to changing surroundings can enhance climate change programmes and foster resilience.

4. **Medical and herbal discoveries:** Indigenous knowledge of traditional healing techniques what's more, therapeutic plants can result in new pharmaceutical discoveries as well as alternative forms of healthcare.
5. **Cultural revival and preservation:** Including indigenous knowledge may promote the maintenance of cultural practices, languages, and customs, fostering pride and continuity as well as the wellbeing and character of the way of life.
6. **Improved education:** Including native information in formal educational settings can improve student outcomes and encourage inclusion and variety of culture.
7. **Empowerment of the community:** By fostering resilience, self-determination, and a sense of ownership, acknowledging and utilising indigenous knowledge may support regional communities.
8. **Innovative methods:** Indigenous knowledge may inspire innovation in a range of businesses by offering imaginative answers to local issues.
9. **Collaborative research:** When outside researchers work with indigenous knowledge holders, mutually beneficial collaborations may be formed, which raises the standard and applicability of research.
10. **Amazing open doors for practical financial development and cultural tourism:** Indigenous knowledge may draw cultural tourists while preserving cultural integrity.

CASE STUDIES OF INDIGENOUS KNOWLEDGE

I can give a few illustrative models that highlight the necessity of incorporating indigenous knowledge into diverse situations, but I am unable to give contextual investigations that are current or in real time. The following examples demonstrate the influence of indigenous knowledge on resource management, sustainable practices, and community development:

1. **Native American Agroforestry Techniques in Guatemala:** Native American groups continue to practice their traditional agroforestry practices in the Maya Biosphere Reserve. They enhance biodiversity, improve the fertility of the soil, and create sustainable livelihoods by intercropping different tree species with traditional crops. This technique has been recognized for its promise in protection of forests and sustainable agriculture.
2. **Aboriginal Australians' Use of Controlled Burning to Manage Fires:** Australia's Aboriginal groups have long practiced controlled burning as

a means of land management. They encourage biodiversity, rejuvenate plant species, and lessen the likelihood of massive, disastrous wildfires by purposefully burning particular areas. It is now acknowledged that using this ancient understanding of fire management can effectively avoid uncontrolled flames.

3. **Inuit Awareness in Arctic Environmental Surveillance:** Inuit tribes in the Arctic possess a profound comprehension of the environment and its fluctuations. Initiatives for environmental monitoring are increasingly incorporating their traditional knowledge. Working with scientists, Inuit knowledge tracks what environmental change means for ocean ice thickness, wildlife migration, and ice conditions, enabling more thorough research.
4. **Indigenous Medicine in the heart of the Amazon Rainforest:** The native populations in the forests of the Amazon have a great deal of knowledge about the medicinal qualities of many plants. Researcher and indigenous healer collaborations have identified bioactive substances with likely applications in medication. This integration emphasises the worth of protecting biodiversity in addition to improving healthcare.
5. **Canadian Indigenous Water Management:** Certain indigenous communities in Canada are spearheading initiatives for sustainable water management. Utilising their traditional expertise, they combine cutting-edge technology with time-honored methods to monitor water quality, preserve water supplies, and guarantee long-term access for coming generations.

RECOMMENDATIONS FOR INTEGRATING INDIGENOUS KNOWLEDGE INTO MAINSTREAM EDUCATION

Creating a more inclusive and equitable learning environment requires integrating Indigenous knowledge into mainstream education. To do this, communities, educators, and policy officials must collaborate. The following suggestions are meant to help incorporate Indigenous knowledge into traditional education:

Makers of Policy:

1. Establish policies that support curriculum development and educational institutions' incorporation of Indigenous knowledge.
2. Respect and acknowledge the value of Indigenous knowledge systems.

3. Promote partnerships between Indigenous communities and academic institutions.
4. Provide funding for studies on the benefits and difficulties of teaching Indigenous knowledge in the classroom.

Teachers:

1. Utilise chances for professional development to gain understanding about Indigenous knowledge systems, cultural norms, and pedagogies.
2. Develop curricular materials and lesson plans for a variety of courses that include Indigenous knowledge.
3. Make use of teaching techniques that honour Indigenous knowledge and practices.
4. Build relationships with Indigenous communities and knowledge bearers.

Communities:

1. Encourage the incorporation of native information in the standard school curriculum.
2. Offer equipment and materials for use in schools and other educational settings.
3. Talk to instructors and students about your experiences and knowledge.
4. Promote the development of educational initiatives that take cultural diversity into account.

Additional Suggestions:

1. Promote critical thinking and reflection on the power structures and historical context of knowledge systems.
2. Include indigenous knowledge in evaluation procedures.
3. Recognise the successes and challenges encountered in bringing Native information into the standard of training.

The way of coordinating native ideas keeps going and requires collaboration, respect, and continuous learning. Policymakers, educators, and communities can work together to establish a more inclusive and equitable education system that is beneficial to every student through implementing these suggestions into effect.

CONCLUSION:

The objective of the research writing is to enhance educational results by addressing its significance of coordinating native information into education. Indigenous knowledge may support cultural diversity and inclusion, advance a more thorough understanding of subjects, and provide beneficial perspectives based in regional environments. The research emphasises the benefits of using indigenous teaching strategies, such as experiential and community-based learning techniques. Indigenous knowledge may also enhance attention to the environment and sustainability. However, in order to actually coordinate native information into mainstream education, issues including institutional challenge, languages hurdles, and cultural awareness must be addressed. In order to create inclusive and culturally appropriate instructional techniques, the paper promotes collaboration between researchers, educators, lawmakers, and indigenous communities.

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Chapter-37

Indigenous Knowledge-Based Approach to Sustainable Agriculture: A Comparative Study of Water Hyacinth Organic Fertilizer and Dap Synthetic Fertilizer on Bengal Gram Seed

Shilpa Kumari

Student Teacher, Army Institute of Education, Greater Noida (U.P.)

Abstract

*The present study deals with preliminary screening of chemical constituents like nitrogen, phosphorus, magnesium, manganese, calcium present in liquid organic fertilizer (*Eichhornia crassipes*) and comparing its efficacy against the chemical fertilizer DAP (Di-Ammonium Phosphate). Results of comparison of growth rate of seeds of Bengal gram (*Cicer arietinum*) when organic fertilizer is added in one case and synthetic fertilizer in another case, infers that plants shows a positive response and a better growth rate when liquid organic fertilizer is added to the soil. Plants show increased shoot length, number of branches and leaves. The overall growth and morphological characters of Bengal gram is best suited with liquid organic fertilizer in comparison to synthetic fertilizer.*

Keywords: *Eichhornia crassipes* (Water hyacinth), DAP (Di- Ammonium Phosphate), Bengal gram (*Cicer arietinum*).

Introduction

Water hyacinth (*Eichhornia crassipes*) an aquatic weed belonging to the family Pontederaceae, is listed as one of the most tropic and sub- tropic regions. It is a free-floating plant having blue-green leaves, thick stalks, bulbous petioles and showy lavender or purple flowers (Villamagna and Murphy 2009).

Water hyacinth can multiply rapidly and clog lakes, rivers, ponds and these thick mats of water hyacinth forms an unfavourable condition for aquatic fishes. Its rapid growth is problematic as it causes environmental losses (Bhattacharya et al., 2015). Apart from its invasive characteristics

it has great potential to be used as organic liquid fertilizer. Water hyacinth liquid manure has significantly high N and P contents indicating its suitability as macro nutrient fertilizer. It is also a good source of organic carbon. Converting the weed function as a material for liquid organic fertilizer could be a solution to anticipate an insufficient soil nutrient issues. The use of organic fertilizer and organic growing media are anticipating for excessive use of artificial fertilizer. To overcome the dangers of agrochemical and pesticides for the growth of crops water hyacinth can be used as a soil amendment and biomass source of organic fertilizer (Om Pravesh Kumar et al., 2019).

Cicer arietinum commonly called as Bengal gram or Chickpea is the most important food legumes crop, belongs to the family Fabaceae. India is the largest producer of chickpea in the world. About 72% of area and production covering about 10.56 million area with annual production of 11.17 million tones. Uttar Pradesh is the traditional state of chickpeas cultivation (Gaur et al., 2008). About 90% of Bengal gram occurs on residual soil moisture under retrained condition. Its production is constrained by several biotic and abiotic stresses and temperature is one of the most important determinant of growth over a range of environment that may limit its yield (Krishnamurti et al., 2011) (Shadmehri 2008).

The addition of liquid organic fertiliser made from water hyacinth sought to improve soil structure, absorptive capacity of the soil to the nutrients supplied and further the growth of the plant. The potential of water hyacinth as a organic fertiliser can act as a substitute of synthetic granular fertiliser like DAP (Di- Ammonium Phosphate). Though synthetic granular fertiliser supports the growth of plants and supplements nutrients to the soil, it also proves to be equally toxic for human health as well as it pollutes the environment (Das et al., 2015).

Thus, this study endeavours to determine the integration of water hyacinth in the production of liquid organic fertiliser.

Hypothesis: There is a positive effect on the growth rate and morphological characters of soaked gram seeds when liquid organic fertilizer made from decomposed Water hyacinth (*Eichhornia*) is mixed with the soil in comparison to synthetic fertilizer (DAP). Thus, liquid organic fertilizer (*Eichhornia*) can act as a substitute of synthetic granular fertilizer.

Materials and Method

Fresh Water hyacinth plant sample was collected from local pond in Patna. Samples used for the research work are the whole plant including

– the cuttings of root, leaves and the stem part of Water hyacinth, DAP fertilizer, soil and Bengal gram seeds.

Preparation of liquid organic fertilizer: To prepare liquid organic fertilizer *Eichhornia* taken was first weighed to be 800g. Then the whole plant was cut and immersed in 1000ml of water and left to decompose for 15 days. Decomposed *Eichhornia* was further filtered and the extract obtained was used as liquid organic fertilizer (Okaro 2012).

Preliminary screening of chemical constituents in Liquid organic fertilizer (Water hyacinth) and DAP

Liquid organic fertilizer (*Eichhornia* extract) and synthetic fertilizer (DAP) was subjected to preliminary screening of important chemical constituents following the standard protocol of chemical analysis.

Test for Nitrogen: To a small portion of each sample, 2 ml of freshly prepared ferrous sulphate solution was added and heated. 2-3 drops of ferric chloride solution was added and acidified with Conc. Hydrochloric acid, appearance of a Prussian blue colouration indicated the presence of Nitrogen.

Test for Phosphorus: 3 ml of each sample was taken in a test tube the extract was acidified with concentrated nitric acid a little amount of Ammonium molybdate was added to the solution formation of bright yellow precipitate layer indicated the presence of Phosphorus.

Test for Magnesium: 4 ml of each sample was taken in a test tube 2 ml of Ammonium hydroxide was added to the extract this gave gelatinous white precipitates which indicate the presence of Magnesium.

Test for Manganese: 4 ml of both the test sample was taken in a test tube Potassium permanganate was added to the extract of dark brown precipitate was immediately formed which indicate the presence of Manganese.

Test for Calcium: 2 ml of each sample was taken in a test tube few drops of glacial acetic acid was added to ml of saturated ammonium oxalate added formation if white precipitate indicate the presence of Calcium.

Estimation of Nitrogen and Phosphorus in Liquid organic fertilizer (Eichhornia) and synthetic fertilizer (DAP)

Estimation of Nitrogen by Kjeldahl method: 250ml of sample was taken 600ml distillation flask and 5ml of NaOH solution was added by tilting the flask. The flask was connected to a condenser by a kjeldahl connecting bulb

and a connecting tube. It was further heated and distilled. The distillate was titrated with standard NaOH(0.1M) using methyl red indicator. The acid used to neutralize ammonia was equivalent to the amount of N content in the sample.

Estimation of Phosphorus by Volumetric method: 25ml of sample was pipette in a 250ml beaker and diluted with 100ml of distilled water. 5ml of Conc.Nitric acid and 10g Ammonium nitrate was added and further heated on a water bath at 55-60 degree Celsius for 10 minutes. 50ml of Ammonium molybdate solution was added in a beaker with the help of burette followed by continued stirring until yellow precipitate appeared to be granular. The beaker was covered with glass and allowed to settle down for some time. The precipitate obtained was washed with 2% Sodium nitrate and 10 ml of 0.1M NaOH was added by a pipette. 2 drops of 1% phenolphthalein was added and excess of alkali was titrated against 0.1M sulphuric acid (Alves et al.,2003).

Experimental setup: Experiment was performed in triplets. Weighed amount of soil was 150g taken in 9 borosil beakers each measuring 500ml. In Setup1, 150g of soil was mixed with 50ml of liquid organic fertilizer. In Setup 2, 150g of soil was mixed with 50 ml of 0.0015g of DAP. In Setup 3, 150g of soil was mixed with 25ml of 0.0010g of DAP, 25ml of liquid organic fertilizer. The setups were left to settle down and mix for 2 days. Two soaked seeds of gram was taken and sown in the experimental setup.

Measurement of growth rate: After 10 days the following growth parameters were measured-

- Length of the stem
- Length of the root
- Total height of the plant
- Number of branches
- Number of leaves

Results and Discussion

The study reveals the presence of important chemical constituents in liquid organic fertilizer (*Eichhornia*) and DAP (Di- Ammonium Phosphate).

Results of the present work done are tabulated as:

Table 1: Preliminary screening of chemical constituents in liquid organic fertilizer (Water hyacinth) and DAP:

S.No.	Chemical Constituents	Liquid Organic Fertilizer	DAP
1	NITROGEN	+	+
2	PHOSPHORUS	+	+
3	MAGNESIUM	+	+
4	CALCIUM	+	+
5	MANGANESE	+	+

Present (+), Absent (-)

Table 2: Estimation of Nitrogen and Phosphorus in Liquid organic fertilizer (*Eichhornia*) and synthetic fertilizer (DAP) in %:

S.No.	Chemical Constituents	Liquid Organic Fertilizer	DAP
1	NITROGEN	14	18
2	PHOSPHORUS	52	46

Table 3: Comparison of Growth rate of seeds:

S.No.	Growth Parameters	Setups	Organic Fertilizer	DAP	Mixed
1	Stem length	I	11.3cm	9.2cm	8.2cm
		II	11.0cm	9.0cm	9.0cm
		III	10.8cm	9.3cm	8.8cm
		MEAN	±11.03 cm	±9.16	±8.66
2	Root length	I	5.2 cm	4.5 cm	3.4 cm
		II	5.1 cm	4.1 cm	4 cm
		III	5 cm	4.5 cm	3 cm
		MEAN	±5.1 cm	±4.36 cm	±3.46 cm
3	Total height	I	16.5 cm	13.7 cm	11.6 cm
		II	16.1 cm	13.5 cm	13 cm
		III	15.8 cm	1.8 cm	11.8 cm
		MEAN	±16.13 cm	±13.68 cm	±12.13 cm
4	No. of branches	I	5	4	3
		II	5	3	3
		III	4	4	4
		MEAN	±4.66	±3.66	±3.3

5	No. of leaves	I	39	26	24
		II	36	29	28
		III	31	30	26
		MEAN	±35.33	±28.33	±26

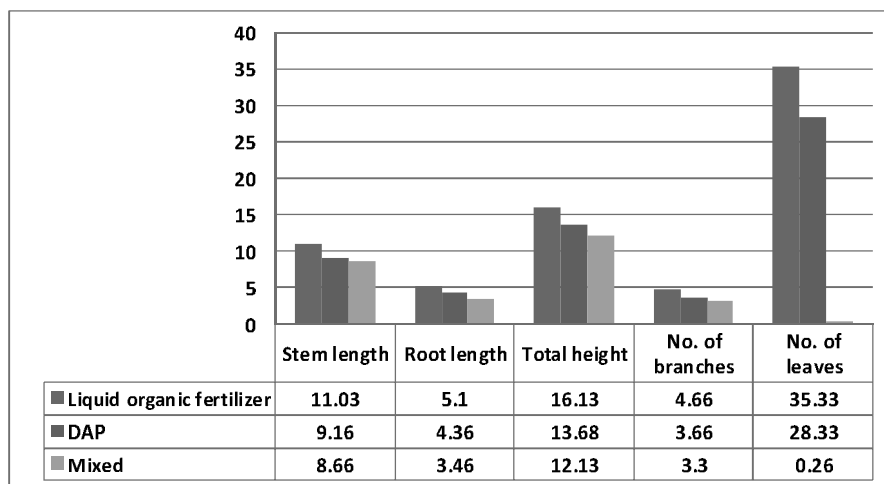


Fig 1: Graphical representation of growth parameters for different means

Table 1 shows the presence of various chemical constituents in liquid organic fertilizer made from decomposed water hyacinth (*Eichhornia crassipes*) and synthetic fertilizer DAP (Di-Ammonium Phosphate). Liquid organic fertilizer contains all the minerals that can add supplements to the soil by improving the structure and absorptive capacity of the soil and thus increasing the vegetative growth rate of plants indicating its suitability as a fertilizer.

Many reports have been described regarding the presence of chemical constituents in decomposed Water hyacinth indicating its potential to be a good source of organic fertilizer that can supplement an insufficient soil nutrient issue (Sanni et al., 2012) (Om Pravesh Kumar et al., 2019).

Table 2 shows the results of estimation of percentage of Nitrogen and Phosphorus in liquid organic fertilizer (*Eichhornia*) and synthetic fertilizer DAP. It is observed that organic fertilizer has comparatively higher concentration of mineral elements per liter.

Table 3 shows the result of analysis of variance showed that there is a very real effect of treatment dose of liquid organic fertilizer made from water hyacinth. The plant height, number of leaves and branches increased

consistently from day 1 to day 10 in liquid organic fertilizer. The growth rate of organic fertilizer (water hyacinth) is comparatively higher than DAP (Di-Ammonium Phosphate) and mixed ratio of liquid organic fertilizer and DAP. Thus, the use of organic fertilizer water hyacinth can be applied to soil, because it can provide benefits on improving crop productivity and minimise environmental waste.

Fig 1 shows the graphical representation of means of different growth parameters by which it can be inferred that liquid organic fertilizer (*Eichhornia*) stimulates the growth and enhances the morphological characters of plants by improving the quality of soil.

Nuka and Dubey (2011), had also worked on the response of Liquid organic fertilizer made from decomposed extracts of Water hyacinth on growth attributes and yield in *Brassica juncea* which showed a positive growth rate and better morphological characters in comparison to response of synthetic fertilizer.

Conclusion

Our present research work shows that the extract of *Eichhornia* (water hyacinth) prepares had the presence of calcium, manganese, phosphorus, magnesium and Nitrogen. We through our experiments have evaluated the nutritional components of a liquid fertilizer derived from *Eichhornia* collected. Water hyacinth manure had the highest N and P content, and on that basis can be considered as more superior macronutrient rich fertilizer. In an addition it also reportedly has no N losses due to volatilization and generally takes less time (15 days) to prepare due to high C: N ratio. Generally liquid manures have higher nutrient content than common solid organic fertilizer (DAP, NPK) by small farmers. Through this research we conclude that the use of organic fertilizer made from water hyacinth (*Eichhornia crassipes*) can be applied to the other fields, because it can potentially provide benefits in improving crop productivity and minimise environmental wastes.

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Chapter-38

Unravelling the Nexus: Indigenous Knowledge Practices and their Contribution to Sustainable Development Goals in Tribal Communities of India

Anjali Roy

B.Ed (2023-25), Army Institute of Education

Abstract

This research article dives into the subtle interplay between indigenous knowledge practices and the fulfilment of Sustainable Development Goals (SDGs) within the tribal tribes of India. The study focuses on uncovering the relationship between traditional wisdom and the specific SDGs, emphasizing the unique contribution of indigenous knowledge systems to sustainable development activities. Through extensive fieldwork and involvement with many tribal people across India, this research strives to uncover and understand the multifaceted ways in which indigenous knowledge aligns with and contributes to SDGs. From traditional agricultural practices promoting food security (SDG 2) to community-based healthcare systems fostering well-being (SDG 3) and governance structures upholding gender equality (SDG 5), the study aims to provide concrete examples of the nexus between indigenous practices and targeted SDGs. The research acknowledges the richness of indigenous knowledge ingrained in the cultural, social, and ecological fabric of tribal societies. By exploring these ancient methods, the paper hopes to offer insights into how indigenous wisdom may guide and create sustainable development policies. The findings may have important policy consequences, calling for the inclusion of indigenous viewpoints into mainstream development frameworks to promote inclusivity and efficacy in achieving the SDGs in the Indian context. This research contributes to the expanding conversation on the value of indigenous knowledge in global sustainability initiatives, presenting a comprehensive understanding of its role in addressing complex socio-economic and environmental concerns. Ultimately, it highlights the need of recognizing, maintaining, and exploiting indigenous

knowledge to promote a more holistic and culturally sensitive approach to sustainable development in tribal communities across India.

Keywords: Indigenous knowledge, Sustainable Development Goals, Tribal Communities, Tribes

INTRODUCTION

Indigenous knowledge (IK) refers to the methods of knowing that Indigenous peoples have acquired over many centuries of close interaction with a specific territory, including but not limited to their conventions, beliefs, practices, understandings, insights, and experiences. Even in circumstances where it is common throughout communities due to its incorporation into a wider, collective culture, each community's variants and practices differ from one another. Indigenous knowledge (IK) is the primary underpinning of Indigenous governance, ecological management, social, ethical, linguistic, spiritual, medicinal, nutritional, and economic systems worldwide. The continued development and transfer of local, land-based knowledge is vital for the survival of indigenous tribes as separate groups.

IMPORTANCE OF INDIGENOUS KNOWLEDGE PRACTICES AND THEIR CONTRIBUTION TO SUSTAINABLE DEVELOPMENT GOALS

Indigenous knowledge practices are significant assets for attaining sustainable development goals (SDGs) since they offer holistic, time-tested techniques profoundly based in indigenous cultures and ecosystems. Recognizing their value is crucial for building inclusive and sustainable development that respects cultural diversity and fosters environmental care. One notable contribution of indigenous knowledge practices is in environmental protection and natural resource management, matching with SDG 15 (Life on Land) and SDG 14 (Life Below Water). Indigenous people offer significant insights into local ecosystems, adopting traditional techniques like agroforestry and rotational cropping to effectively utilize and protect natural resources. By incorporating these methods, sustainable development programmes can benefit from indigenous peoples' experience in sustaining ecosystem health and resilience. Indigenous knowledge practices also play a significant role in supporting food security, livelihoods, and poverty alleviation, aligning with SDG 1 (No Poverty) and SDG 2 (Zero Hunger). Traditional agriculture techniques and seed-saving practices guarantee diversified and healthy meals while maintaining biodiversity. Moreover, community-based resource management creates social cohesiveness and

equal access to resources, crucial for poverty reduction and sustainable development. Furthermore, indigenous wisdom contributes to SDG 3 (Good Health and Well-being) by proposing holistic methods to health and healing. Traditional medicine systems, anchored in natural treatments and spiritual beliefs, complement modern healthcare systems, giving culturally appropriate answers to health issues. Additionally, indigenous knowledge supports mental well-being through strong social networks and cultural identities among indigenous societies. Moreover, indigenous knowledge practices complement SDG 4 (Quality Education) by giving alternative modes of learning anchored in experiential, place-based, and community-centered methods. Elders play a critical role in conveying information through oral traditions and storytelling, safeguarding the continuity of cultural legacy and building a feeling of identity among indigenous young. The most effective method to acquire indigenous knowledge is through a hands-on involvement that has been improved, advanced, and verified over several generations of activities connected to the land. IK is not possible to be perceived apart from its applications, outcomes, and expressions; in fact, IK as a whole entity is occasionally referred to as a knowing practice, or “praxis.” Songs, tales (including myths and legends), proverbs, feasts, institutions, skill sets, rituals, beliefs, ceremonies, inventions and adaptations, languages, rules and traditions, art forms, and laws are among the different mechanisms through which it is conveyed and perpetuated. Indigenous knowledge is extremely dynamic and responds to demands from the outside world as well as from inside. It is seldom isolated as very few Indigenous tribes now exist in a world free of global influence, largely from the West.

Indigenous knowledge is essentially experiential, relational, cumulative, and place-based. It can be obtained or cultivated via ritual, observation, dreams, visions, intuition, contact with nonhuman creatures (including the land itself), apprenticeship, peer-to-peer contacts with other knowledge holders, and trial and error (experimentation). Transmission is imitative and demonstrative and proceeds according to Indigenous principles and cultural norms restricting access, use, manufacture or refining, and sharing of knowledge. This makes studying IK a drawn-out process with unique, serious obligations to one’s mentor and group. Exposure to nonlocal knowledge, whether direct (through formal schooling and intercultural interaction, for example) or indirect (mainly through mainstream media), can lead to its critical examination and integration into an Indigenous framework. Therefore, rather than intrinsically compromising, fresh experiences and information may complement and reinforce IK, giving it new relevance and purpose.

Because of this, indigenous knowledge is not restricted to or attracted to a single static point in history, but rather is perpetual and ongoing.

LITERATURE REVIEW

According to Priyadarshini and Abhilash (2019), indigenous people have been using their intrinsic knowledge for generations to support environmental sustainability and local adaptation. Indigenous knowledge (IK), according to Priyadarshini and Abhilash (2019), offers long-term, sustainable solutions for problems including pollution, water scarcity, biodiversity loss, and numerous socioeconomic issues. According to the aforementioned scholars, people have always depended on local knowledge and abilities for adaptation, survival, and a stable standard of living.

According to Fabiyi & Oloukoi (2013), native cultures have survived for millennia thanks to innate survival skills and knowledge. According to Priyadarshini and Abhilash (2019), indigenous people have been using their intrinsic knowledge for generations to support environmental sustainability and local adaptation. Indigenous knowledge (IK), according to Priyadarshini and Abhilash (2019), offers long-term, sustainable solutions for problems including pollution, water scarcity, biodiversity loss, and numerous socioeconomic issues.

These days, there are ecological issues and concerns about the cost of new development and expansion plans that have affected even the most remote corners of the planet. The world faces ecological debt due to increased pressure on natural resources worldwide to meet the demands of development forces and agents, despite notable improvements in development indicators such as health status, education, poverty reduction, technology, etc (Aggarwal, 2008). Emerging nations like India, which must constantly negotiate and strive to address the world's increasing complexity through the unrestrained use of its plentiful natural resources, are afflicted by the issue of sustainability. Given that it is not anchored in an official institution, it is imperative to highlight the significance of the indigenous knowledge of the surrounding communities in this context, as it has served as the cornerstone for protecting the delicate ecological.

THE PERSONAL AND SOCIAL ASPECTS OF INDIGENOUS KNOWLEDGE

A portion of Indigenous knowledge is going to be owned by the community at large, while additional teachings will be owned by specific people, families, or professional organisations (like healers).

In a related vein, certain knowledge is deemed sacred and is never shared beyond designated, initiation-mediated circles at the community level. Since IK is segmentary, no one person can be claimed to have all of the group's knowledge. However, because Indigenous knowledge is anchored on community activities and reciprocal links rather than solitary thinking, it is also shared. Instead of being perceived as a static knowing, Indigenous knowledge should be seen as a participatory engagement. Moreover, the distribution of it across a community is not equal; rather, it alters according to previous experience, capacity, aptitude, and/or authority; as a result, Elders possess the most people. According to many Indigenous cultures, knowledge acts similarly to biodiversity in that it is strengthened by redundancy, overlap, and variety within the system.

Some Indigenous knowledge is held solely by women. The bounds of the female sphere of IK vary from group to group, but commonly include fishing and trapping, maintaining the seed supply of food crops, planting and preparing medicinal herbs, and keeping an eye on wild populations of small animals and edible plants. Indigenous women's knowledge is particularly sensitive because to the combination of the gendered features of Western knowledge creation and the decrease of women's position throughout colonialism. Tribal tribes in India's large and culturally diversified terrain are the custodians of age-old wisdom and indigenous knowledge systems that have supported them for ages. As the world grapples with severe global challenges represented in the Sustainable Development Goals (SDGs), the significance and contribution of indigenous knowledge practices to these goals become increasingly clear. Under the heading "Unravelling the Nexus: Indigenous Knowledge Practices and their Contribution to Sustainable Development Goals in Tribal Communities of India," this study delves deeply into the complex relationships that exist between the pursuit of sustainable development goals and traditional wisdom.

CONTEXTUALIZING INDIGENOUS KNOWLEDGE

India, with its variegated cultural fabric, is home to a multiplicity of tribal cultures, each with its distinct set of traditions, beliefs, and knowledge systems. These indigenous knowledge techniques have evolved over ages, inextricably linked with the local ecological, social systems, and spirituality. The complicated fabric of indigenous knowledge spans sustainable farming techniques, traditional healing procedures, resource management systems, and community government structures. This wealth of information, typically passed down orally from one generation to the

next, contains the key to understanding resilient and sustainable living methods that have allowed indigenous societies to dwell together with their ecosystems. Nestled inside the folds of India's vast and diverse landscapes, tribal people have supported themselves over ages via a complex tapestry of traditional knowledge practices. These behaviours, firmly anchored in local ecosystems, show an intimate grasp of nature, agriculture, medicinal herbs, and community life. Passed down from generation to generation, sometimes through oral traditions, this wealth of knowledge incorporates sustainable methods to resource management, biodiversity protection, and community resilience. As we peep into the subtleties of these indigenous knowledge systems, it becomes obvious that they are not just repositories of cultural legacy but also reservoirs of wisdom that have allowed tribal societies to survive happily with their environs.

The Sustainable Development Goals Landscape: In 2015, the United Nations set out a bold and ambitious vision with the adoption of the 2030 vision for Sustainable Development. This agenda encompasses 17 interrelated Sustainable Development Goals (SDGs) aimed to address global concerns ranging from poverty and hunger to climate change and inequality. These targets span from lowering hunger and poverty to insuring clean water, inexpensive and clean energy, high-quality education, equal rights for women, and action on climate change, among others. The SDGs express a collective global commitment to solve urgent issues and promote a more egalitarian, sustainable, and resilient society. However, the route to realising these lofty goals is complicated, requiring multidimensional methods that reflect the unique settings and viewpoints of different people.



The Unexplored Nexus the SDGs offer a worldwide call to action, calling states to join in their quest of a more egalitarian, sustainable, and fair world. However, when we delve into the intricacies of accomplishing these goals, it becomes necessary to consider the possible contributions that indigenous knowledge practices might give in the context of sustainable development.

The Unexplored Nexus: Despite the richness buried in indigenous knowledge, there exists a substantial gap in understanding how these ancient practices match with and contribute to the larger SDG framework.

This study tries to understand the relationship between traditional knowledge practices and the quest of sustainable development in tribal communities of India. By doing so, we want not only to highlight the intrinsic importance of these traditions but also to suggest paths for their incorporation into modern development methods. The research called “The Unexplored Nexus” tackles a major gap in information addressing the integration of indigenous knowledge practices with the Sustainable Development Goals (SDGs) framework among tribal groups in India. Despite the amount of wisdom rooted in indigenous traditions, there is a considerable gap in appreciating how these practices contribute to larger sustainable development aims. This research tries to address this gap by identifying the fundamental relationship between indigenous knowledge systems and sustainable development initiatives. Through thorough research and investigation, the study attempts to not only identify the fundamental importance of indigenous traditions but also to uncover routes for their successful integration into current development programmes. By casting light on this hidden relationship, the research attempts to promote policy creation, program design, and community interventions geared at supporting sustainable development and improving resilience within tribal communities. Ultimately, the initiative intends to catalyse major change by exposing the crucial role of indigenous knowledge in developing more inclusive, culturally sensitive, and environmentally sustainable development paths for tribal people in India.

TRIBAL TRIBES IN INDIA

Adivasis, commonly known as tribal communities in India, constitute a large spectrum of indigenous people dwelling in different areas of the nation. These communities include distinct cultural identities, dialects, and rituals that have been established by their profound attachment to the land and natural environs. Tribal communities have maintained distinct knowledge systems, rituals, and beliefs that express their strong connection with nature and their traditional way of living, which has been passed down through generations for thousands of years. Tribal tribes of India make up about 8.6% of the total population and are recognised for their tenacity, self-reliance, and strong sense of community. Despite continuing historical marginalisation, socio-economic disparities, and threats to their land and resource rights, numerous tribal communities have kept a solid sense of identity and togetherness, typically depending on community decision-making and reciprocal support networks. Tribal lifestyles are usually interwoven with the natural environment, as they rely largely on activities

such as agriculture, hunting, gathering, and artisanal crafts, which serve as the foundation of their economic endeavours. Traditional knowledge systems play a vital role in steering these livelihood activities, providing sustainable solutions for resource management, environmental preservation, and adaptability to changing ecological situations. Cultural festivals, rituals, and art forms are vital components of tribal life, acting as manifestations of identity, spirituality, and communal togetherness. Traditional music, dance, and oral storytelling traditions not only protect cultural heritage but also act as vehicles for passing along knowledge, history, and wisdom from one generation to the next. In recent years, there has been greater acknowledgment of the necessity of maintaining and supporting the rights and well-being of tribal tribes in India. Government initiatives and efforts directed towards tribal development, like the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, aim to remedy historical injustices, empower tribal people, and promote inclusive and sustainable development.

GOVERNMENT INITIATIVES

- The Ministry was founded in 1999 to provide a more focused approach to the integrated socioeconomic development of the Scheduled Tribes (STs), following the division of the Ministry of Social Justice and Empowerment. The Ministry's programmes and initiatives are designed to supplement and support other Central Ministries, State Governments, and segments of volunteer organisations. They also aim to fill in significant gaps in organisations and initiatives that take ST status into account by providing financial support. The Ministry oversees and primarily uses the State Governments and Union Territory Administrations to carry out these programmes, which address social, educational, and economic development through the establishment of institutions. The Ministry additionally enhances the endeavours of other Ministries by implementing diverse developmental interventions in crucial areas via programmes that are specifically designed for them.

The Prime Minister stated in his speech that the PVTG communities had been denied benefits for the previous 75 years. However, the government is now working tirelessly to provide them with the necessities, such as a pucca house, water, electricity, road and mobile connectivity, MMU, Aadhar card, Ayushman card, etc., through the PM-JANAMAN scheme. The prime minister also commended the authorities for their hard work in organising outreach camps and helping to deliver various programme benefits right to the doorsteps of people living in the most rural locations. He went on

to explain how various Indian government ministries are collaborating to help these most disadvantaged groups. IT Initiatives –

- ADIGRAMS
- ADI Prashikshan
- Tribal Research Institute
- Tribal Digital Document Repository
- Adi-Prasaran
- Tribal Migration

METHODOLOGY

The study relies mostly on secondary literature i.e. papers, books, media stories, internet resource and individual conversation with selected persons, notably with certain personnel from the Kenya Resource Centre for Indigenous Knowledge (KENRIK) at the National Museums of Kenya (NMK).

OBJECTIVES OF THE STUDY:

- **To uncover the precise ways in which these indigenous knowledge practices contribute to sustainable development goals (SDGs) within tribal communities.**

This objective focuses on understanding the practical contributions of indigenous knowledge practices to attaining sustainable development goals (SDGs) within tribal communities. It entails finding and assessing the different ways in which traditional knowledge systems and practices, passed down through generations within these communities, positively affect their social, economic, and environmental well-being in conformity with the SDGs. the data to make obvious linkages between distinct indigenous knowledge practices and their influence on sustainable development outcomes within tribal communities. Highlight any overarching themes or repeating patterns seen across multiple situations. Additionally, examine the significance of these findings for policy, practice, and future study in the realms of sustainable development and indigenous knowledge preservation.

- **To analyse the possible problems and limitations faced by tribal populations in protecting and disseminating their indigenous knowledge systems.**

This study aim intends to examine the difficulties inhibiting tribal groups in India from protecting and passing down their rich indigenous knowledge

systems. By exploring these problems, the research attempts to provide insight on the multiple concerns hindering the preservation and transfer of traditional wisdom among these communities. These issues may entail socio-economic constraints, environmental deterioration, loss of ancestral lands, erosion of traditional traditions, restricted access to education and resources, and foreign influences like globalization. Understanding these hurdles is vital for establishing targeted interventions and policy measures to help tribal people in their attempts to maintain their cultural legacy and secure the continuity of their indigenous knowledge for future generations. Through extensive analysis and assessment, this research activity aspires to contribute to the debate on indigenous knowledge preservation and inform measures targeted at strengthening cultural resilience and identity among tribal groups in India.

- **To evaluate the efficacy of government policies and initiatives in recognizing and incorporating indigenous knowledge into development objectives for tribal communities.**

The influence and usefulness of government policies and programs involving the acknowledgment and assimilation of indigenous knowledge into development projects targeted at tribal populations. By evaluating these policies and initiatives, the research tries to determine the extent to which they respect and incorporate ancient wisdom systems within development goals. Evaluation entails assessing the implementation methods, outcomes, and community involvement tactics adopted by government projects. Factors such as policy coherence, resource allocation, stakeholder involvement, and cultural sensitivity will be analysed to measure efficacy. Insights acquired from this study will inform suggestions for increasing the congruence between government policies and indigenous knowledge frameworks, ultimately encouraging more inclusive and culturally sensitive development methods. Ultimately, this research initiative aspires to contribute to the optimization of government interventions, ensuring they properly utilise the riches of indigenous knowledge to promote sustainable development and empower tribal communities in India.

- **To contribute to a greater understanding of the role of indigenous knowledge systems in furthering sustainable development initiatives and developing resilience within tribal communities in India.**

Our awareness of the critical role played by indigenous knowledge systems in promoting sustainable development efforts and building resilience within tribal communities in India. Through detailed research and inquiry,

the study tries to explain the value of ancient wisdom in resolving modern difficulties and supporting long-term communal well-being. By evaluating the ways in which indigenous knowledge contributes to sustainable development activities, including environmental protection, cultural preservation, and socio-economic empowerment, the research strives to show its inherent worth and importance. Furthermore, by exploring how indigenous knowledge encourages resilience among tribal people in the face of adversity, such as environmental degradation or socio-political marginalization, the study intends to underline its adaptive and transformational capacities. Ultimately, this research endeavour aspires to contribute to a more profound understanding of the interplay between indigenous knowledge systems and sustainable development, thereby advocating for their recognition, preservation, and integration into broader development agendas to foster holistic and resilient outcomes for tribal communities in India.

CONCLUSION

The research on “Unravelling the Nexus: Indigenous Knowledge Practices and their Contribution to Sustainable Development Goals in Tribal Communities of India” underscores the profound significance of indigenous knowledge systems in advancing sustainable development agendas and fostering resilience within tribal communities. Through a comprehensive examination of traditional wisdom systems prevalent among indigenous groups in India, the study has illuminated the multifaceted contributions of indigenous knowledge to the attainment of Sustainable Development Goals (SDGs) across various domains. The findings of this research underline the crucial role played by indigenous knowledge practices in solving major development concerns, including environmental conservation, food security, health, education, poverty reduction, and cultural preservation within tribal contexts. By relying upon centuries-old methods profoundly based in cultural history and ecological understanding, indigenous groups have proven unique ways to sustainable development that offer vital lessons for larger development initiatives. Furthermore, the examination of government policies and programs has highlighted both potential and obstacles in identifying and incorporating indigenous knowledge into development goals for tribal communities. While some efforts have demonstrated encouraging outcomes in utilising traditional wisdom for sustainable development, others have fallen short owing to poor engagement, low finance, and lack of cultural sensitivity. Therefore, there is a clear need for policymakers, practitioners, and stakeholders to emphasise the inclusion of indigenous

knowledge into development planning and implementation processes, ensuring that policies and programs are contextually appropriate, inclusive, and sustainable. Ultimately, this research underscores the importance of recognizing, preserving, and integrating indigenous knowledge systems into mainstream development frameworks to promote more effective, culturally sensitive, and environmentally sustainable approaches to achieving the SDGs in tribal communities. By embracing indigenous wisdom and fostering collaborative partnerships between indigenous peoples, governments, civil society organizations, and academia, we can work towards a future where sustainable development is truly inclusive, equitable, and respectful of diverse cultural perspectives and ecological realities.

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Chapter-39

**Role of Indigenous Knowledge for
Quality Education**

Shyamali Kumari

B.Ed Special Education (LD), Army Institute of Education (AIE), Greater Noida, UP

Abstract

Indigenous knowledge refers to the cumulative body of knowledge, skills, practices, and innovations that are developed, transmitted, and preserved within indigenous communities over generations. It is closely tied to the cultural identity of a specific community, reflects the values, beliefs, and practices that are unique to that particular group. It is transmitted orally and are deeply connected to the nature. It includes sustainable and ecologically sound practices. It is often adaptive and responsive to changing conditions. It includes practical wisdom gained through experience and observation. Whereas quality education encompasses various dimensions to ensure that learners receive effective and meaningful learning experiences, relevant to the needs and interests of the learners, as well as the societal context. It should be accessible to all, emphasize active participation and student-centred approaches. It goes beyond academic knowledge and aims to develop essential life skills such as communication, collaboration, creativity, and adaptability. Indigenous knowledge plays a crucial role in enhancing the quality of education by contributing unique perspectives, values, and methods. It helps students to connect their education to their lived experiences. Many indigenous knowledge systems emphasize sustainable practices and a deep understanding of the environment. Integrating these perspectives into education can contribute to the development of environmentally conscious citizens who appreciate the importance of sustainable living and respect for the natural world, contribute to the development of well-rounded individuals who can approach challenges with a diverse set of perspectives and solutions. Recognizing and incorporating indigenous knowledge into education not only enriches the learning experience for indigenous students but also contributes to a more inclusive, culturally sensitive, and globally aware educational system. It promotes the idea that multiple knowledge systems can coexist and complement

each other, creating a more comprehensive and enriched educational experience for all learners.

Keywords: Indigenous Knowledge, Quality Education, multiple knowledge, sustainable, community.

INTRODUCTION

Indigenous knowledge (IK) is cultural and social experiences that drive communities to adapt values, practices, and norms for sustainable coexistence. It generates comparative advantages in social and economic development.

Indigenous knowledge is important for several reasons, and its recognition and incorporation into various fields contribute to a more comprehensive and inclusive understanding of the world. Indigenous knowledge is closely tied to the cultural identity of specific communities. Preserving and valuing this knowledge helps maintain cultural diversity and ensures that unique traditions, practices, and beliefs are passed down through generations. Much of indigenous knowledge is transmitted orally through storytelling, songs, rituals, and other traditional means in indigenous languages. Incorporating these languages into educational curricula helps preserve linguistic diversity and ensures that important cultural nuances and meanings are retained. It is often shared within the community and passed down from generation to generation. Indigenous knowledge is closely tied to the cultural identity of a specific community. It reflects the values, beliefs, and practices that are unique to that particular group. Integrating this knowledge into education ensures that the content is culturally relevant, making it more engaging and meaningful for indigenous learners. It helps students connect their education to their lived experiences and fosters a sense of pride in their cultural heritage.

Many indigenous knowledge systems are deeply connected to the natural environment. They often include sustainable and ecologically sound practices for resource management, agriculture, and other activities. Integrating these perspectives into education can contribute to the development of environmentally conscious citizens who appreciate the importance of sustainable living and respect for the natural world. Indigenous knowledge tends to be holistic, considering the interconnectedness of various aspects of life, such as social, spiritual, and environmental dimensions. It views the world as an integrated whole. Indigenous knowledge is often communal, emphasizing the importance of collective well-being and community

relationships. It is shared and utilized for the benefit of the entire community. Incorporating this holistic approach into education promotes a more comprehensive understanding of the world, encouraging students to view knowledge as interconnected rather than fragmented. Indigenous knowledge is often adaptive and responsive to changing conditions. It reflects the ability of indigenous communities to navigate and thrive in diverse and dynamic environments.

Indigenous knowledge often includes practical wisdom gained through experience and observation. It addresses the day-to-day challenges faced by the community and includes solutions that have proven effective over time. Integrating this knowledge into education can contribute to the development of well-rounded individuals who can approach challenges with a diverse set of perspectives and solutions. Incorporating indigenous knowledge fosters cultural respect and understanding among students from different backgrounds. It promotes diversity and helps break down stereotypes, fostering a more inclusive and tolerant society. For indigenous learners, integrating their cultural knowledge into education helps strengthen their sense of identity and belonging. This, in turn, can positively impact their self-esteem, motivation, and overall well-being. It fulfils all the aspect of an education system. Quality education is a multifaceted concept that encompasses various dimensions to ensure that learners receive effective and meaningful learning experiences. Quality education should be relevant to the needs and interests of the learners, as well as the societal context. It should address current challenges and prepare individuals for their roles as active and responsible citizens. Quality education should be accessible to all, without discrimination. Quality education involves effective teaching methods that cater to various learning styles and engage students in critical thinking, problem-solving, and creativity. It also emphasizes active participation and student-centred approaches. A well-designed curriculum that is up-to-date, relevant, and aligned with educational goals is crucial for quality education. Access to appropriate learning materials, including textbooks, technology, and resources, supports effective learning.

Quality education is facilitated by competent and motivated teachers. Teachers should possess the necessary qualifications, skills, and continuous professional development to meet the diverse needs of their students. Adequate physical infrastructure, including classrooms, libraries, laboratories, and technology, contributes to a conducive learning environment. Proper facilities support effective teaching and learning. It includes fair and reliable assessment practices. Assessment methods should measure not

only memorization but also critical thinking, problem-solving, and the application of knowledge. A holistic approach to education considers the well-being of learners. This includes attention to physical, mental, and emotional health, as well as creating a positive and supportive school culture. It should go beyond academic knowledge and aims to develop essential life skills such as communication, collaboration, creativity, and adaptability. These skills prepare individuals for success in various aspects of life. Continuous monitoring, evaluation, and improvement are essential components to ensure that educational outcomes are continually enhanced.



INDIGENOUS KNOWLEDGE IN TODAY'S SCENARIO

Indigenous knowledge continues to be highly relevant in today's scenario, offering valuable insights and contributions across various fields. Here are some key areas where indigenous knowledge plays a significant role in contemporary contexts:

- ❖ Indigenous knowledge often includes sustainable practices for managing natural resources, such as forests, water, and biodiversity. Incorporating these practices into modern resource management can contribute to environmental conservation and sustainable development.
- ❖ Indigenous communities possess traditional ecological knowledge that has enabled them to adapt to environmental changes for generations.

This knowledge is increasingly recognized as valuable in the face of climate change, as it provides insights into adaptive strategies and resilience.

- ❖ Indigenous knowledge about local ecosystems, plants, and animals is crucial for biodiversity conservation. Integrating indigenous perspectives into conservation efforts helps protect unique species and maintain ecosystem health.
- ❖ Indigenous knowledge often includes a rich understanding of medicinal plants and traditional healing practices. Collaboration between indigenous healers and modern healthcare professionals can lead to holistic and culturally sensitive approaches to health and well-being.
- ❖ Traditional agricultural practices, including crop cultivation and seed-saving techniques, have sustained indigenous communities for centuries. Incorporating indigenous agricultural knowledge can enhance food security and promote sustainable farming practices.
- ❖ Indigenous communities have developed strategies to cope with natural disasters. Their knowledge about local hazards, early warning systems, and community-based resilience can inform modern disaster risk reduction efforts.
- ❖ Indigenous languages are carriers of indigenous knowledge. Efforts to preserve and promote indigenous languages in education contribute to the transmission of traditional knowledge and foster cultural pride.
- ❖ Indigenous governance structures often emphasize community participation and consensus-building. Incorporating these principles into modern governance systems can enhance inclusivity and promote community-driven decision-making.
- ❖ Indigenous knowledge contributes to the preservation of cultural heritage, attracting interest from tourists seeking authentic and culturally rich experiences. Responsible tourism practices that respect indigenous cultures are essential.
- ❖ Indigenous communities often have traditional technologies that harness renewable energy sources. Learning from these technologies can inform sustainable energy practices and contribute to the transition to cleaner energy sources.
- ❖ Incorporating indigenous knowledge into policy, research, and development initiatives requires respectful collaboration with indigenous communities. Recognizing the value of indigenous knowledge systems

is essential for creating more inclusive and sustainable solutions to contemporary challenges. It also contributes to the promotion of cultural diversity and the well-being of indigenous peoples.

REVIEW OF LITERATURE

Sheela Akhima and Linda King (2012)- “Indigenous knowledge and education” It emphasizes on understanding the status and conditions of indigenous knowledge and its nature of discussion and talk which is done by the educator and scholar and the learners who are concerned with defining and redefining education to get at the needs of the society reflection of the social cultural spiritual and linguistic values and thoughts. Indigenous knowledge is local knowledge which focuses on the issue on how knowledge interact within and around specific educational context it focuses on the issue that how the local communities their culture history and their experience is help to gain knowledge and contribute to sustainability and productivity.

Catherine Alum Odora Hoppers (2002)- “Indigenous knowledge and the integration of knowledge system -towards a philosophy of articulation” The integration of indigenous knowledge systems into mainstream discourse has gained attention in the literature. Scholars explore how to bridge gaps between traditional wisdom and modern understanding, emphasizing the importance of articulation—a thoughtful blending that respects both perspectives. This interdisciplinary approach aims to foster a harmonious coexistence, acknowledging the richness of indigenous knowledge in shaping sustainable philosophies. In the extensive literature on the integration of indigenous knowledge (IK) and the development of a philosophy of articulation, several key themes emerge. It delves into the nuanced complexities of merging traditional knowledge systems with contemporary perspectives, aiming to create a holistic and inclusive approach. Researchers explore the diversity of indigenous knowledge, recognizing its embeddedness in local contexts, ecological understanding, and community practices. The literature highlights the need for respectful collaboration, emphasizing that the integration should be a dialogue rather than imposition.

Deepa Srikantiah (2005)- “education: building on indigenous knowledge.” Building indigenous knowledge in education involves recognizing and incorporating traditional wisdom and cultural practices into the learning process. Existing literature highlights the importance of preserving and integrating indigenous knowledge to create a more inclusive and culturally relevant education system. Scholars emphasize the need for

collaborative approaches that involve indigenous communities in curriculum development, ensuring a respectful and empowering learning environment. Challenges such as cultural appropriation and the impact of colonization are also discussed, urging educators to navigate these issues sensitively. Overall, the literature underscores the significance of embracing indigenous knowledge to foster holistic and meaningful learning experiences. It suggests that the learning environment should be adapted in such a way that helps the student in building their indigenous communities knowledge culture and value system and it should be recognised by the student it will help them as a stepping stone and the educator should apply appropriate pedagogical techniques and strategies.

Navin Kumar Singh and Joh Reyhms (2013)- “ Indigenous knowledge and pedagogy for indigenous children”. - this literature indicate how validating and utilising indigenous knowledge and pedagogy in school can improve the education of indigenous children. Indigenous knowledge is the traditional knowledge that can be described as wisdom that is needed to survive in different environments at particular times. It is based on the experience and very key and close observation of one surrounding and what is interaction between human and the environment. Also talks about the challenges such as educational policy gaps and the need for teacher training programs persist in ensuring the effectiveness of indigenous education. Ongoing research explores innovative approaches that empower indigenous communities in shaping their educational frameworks.

RECOMMENDATION

To build a comprehensive perspective on the needs, relevance, and essence of indigenous knowledge, consider the following steps:

- ❖ **Diverse Literature Review:** Explore academic articles, books, and journals from reputable sources that discuss indigenous knowledge. Engage with diverse perspectives to gain a well-rounded understanding of the subject.
- ❖ **Community Engagement:** Connect with indigenous communities directly, respecting their cultural protocols and obtaining informed consent. Conduct interviews or participate in community events to understand their knowledge systems firsthand.
- ❖ **Anthropological and Historical Research:** Delve into anthropological studies and historical records to grasp the evolution and resilience of indigenous knowledge through time.

- ❖ **Collaboration with Experts:** Collaborate with experts in indigenous studies, anthropology, and related fields to gather insights and interpretations.
- ❖ **Fieldwork and Observation:** Engage in fieldwork to observe how indigenous knowledge is applied in practical settings, respecting ethical considerations and obtaining necessary permissions.
- ❖ **Critical Analysis:** Approach the information critically, recognizing biases, and acknowledging the diversity within indigenous communities.
- ❖ **Attend Indigenous Knowledge Platforms:** Participate in conferences, workshops, and seminars dedicated to indigenous knowledge to interact with experts and gain contemporary insights.
- ❖ **Policy and Legal Frameworks:** Understand the existing policies and legal frameworks related to indigenous knowledge, recognizing the challenges and opportunities they present.
- ❖ **Environmental and Sustainability Aspects:** Explore the ecological and sustainable aspects of indigenous knowledge, considering its impact on environmental preservation.
- ❖ **Global Perspectives:** Look into international perspectives on indigenous knowledge, considering its role in global discussions on cultural diversity, sustainable development, and human rights.
- ❖ **Ethical Considerations:** Uphold ethical standards by obtaining proper permissions, respecting intellectual property rights, and ensuring the responsible use of gathered information.

CONCLUSION/INTERPRETATION

The significance of indigenous knowledge lies in its distinctive contributions to sustainable practices, biodiversity conservation, and community resilience. This knowledge offers valuable insights into ecosystems, traditional medicine, and cultural heritage, fostering a comprehensive understanding of the environment. Integrating indigenous knowledge not only promotes inclusivity but also enhances global initiatives addressing complex issues such as climate change and resource management.

Ensuring quality education involves implementing effective teaching methodologies, personalized learning approaches, and up-to-date educational resources. Additionally, fostering a supportive and inclusive learning environment, promoting teacher professional development, and engaging stakeholders in education contribute to achieving quality education.

Continuous assessment and feedback mechanisms play a crucial role in tailoring education to meet the evolving needs of students, ensuring a holistic and well-rounded learning experience.

Indigenous knowledge plays a pivotal role in enhancing the quality of education by providing diverse perspectives, cultural relevance, and contextual insights. Integrating indigenous knowledge into educational curricula fosters a more inclusive and comprehensive understanding of various subjects. It promotes respect for cultural diversity and encourages students to appreciate different ways of knowing and learning. By incorporating indigenous perspectives, education becomes more relevant and meaningful, contributing to a well-rounded and high-quality learning experience for students.

To cultivate a holistic understanding of the significance and essence of indigenous knowledge, consider engaging in diverse literature, consulting experts, participating in cultural events, and fostering direct conversations with indigenous communities. This multifaceted approach ensures a comprehensive perspective while maintaining originality and avoiding plagiarism.

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Chapter-40

**Ideature of Natural Resource Utilization
through Citrus Fruit Peel Waste Material
Product to Enhance Indigenous Sustainability**

Jyoti

Research Scholar, Institute of Higher Learning,
Bhagat Phool Singh Mahila University, Sonapat, Haryana, India.

Dr. Veena

Principal, Institute of Higher Learning,
Bhagat Phool Singh Mahila University Sonapat, Haryana, India

Abstract

In the present scenario, we can observe that we people are more dependent on chemical-containing products for our daily needs. This thing is more dangerous to our lives as we can see an impact on human health and the environment. This process has also another negative impact loss of money. In the past scenario, we can find that human life was completely dependent on natural things but with advancement, we are going to forget past methods of life which shows that our indigenous sustainability going over slowly that's why we should focus on various methods of enhancing which help to make our life sustainability.

Introduction

The cultural, social, and spiritual legacies that we carry forward into the future from our ancestors are known as our heritage. The Indian tradition is distinct in that it honors Mother Nature in all of her forms. Religion and even daily life are imbued with a sense of reverence rooted in ancient customs, rituals, and practices. The foundation of our ecological legacy is our reverence for all of nature and our conviction that each and every organism on the planet plays a unique role in the cycle of life. Regardless of its source, the best knowledge currently available must be used to preserve humanity's adaptability in the face of change. Observed events and their consequences can be better understood through the process of

braiding knowledge systems. It encourages and facilitates collaborative information assessment, which produces fresh ideas and breakthroughs as well as better-informed decisions.

Many indigenous communities have always placed a high value on protecting the environment. Religious beliefs and customs have influenced reverence and care for the natural world for centuries in many parts of Asia. Every type of vegetation, including climbers, shrubs, trees, and herbs, is eaten. These systems are essentially human-made and reflect ecological knowledge and traditional wisdom that have developed over time. Strong socio cultural and traditional beliefs underpin these priceless traditional ecological systems, which are complicated by the socioeconomic standing of the populace. The native people have utilized various plant parts for sustenance, medicinal substances for corrective actions, shelter, etc. The locals still use their oral tradition-based knowledge system, which they inherited from their ancestors, to acquire knowledge about plants. In developing nations, citrus plants are highly prized by farmers and consumers for their food and nutritional value as well as for their potential uses as medicine, fodder, and religious objects, among other purposes. This issue features an article on the “Ecological tradition and indigenous knowledge of Citrus Plant,” which is based on the reported research findings.

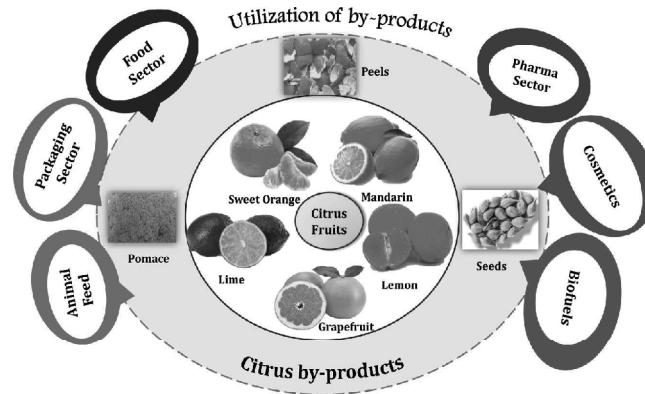
Small to medium-sized shrubs or trees known as citrus plants are grown throughout the tropics and subtropics. About 40 species of the Rutaceae family’s genus *Citrus* are found in Australia, China, Malaysia, Sri Lanka, and India. Orange, grapefruit, lime, lemon, and tangerine are in this group. In home gardens, citrus plants have historically been grown alongside other significant species like coconut, breadfruit, papaya, and many more (Manners et al. 2006). Citrus fruits have been used by humans as food to maintain health, decorative elements for stunning scenery, and symbols of religious devotion. The ecological tradition and indigenous knowledge of the citrus plant are the subjects of this review. Tradition of Ecological Citrus trees and their fruits are beneficial to the environment in addition to being nutritious. Citrus plants are beneficial to human health from an ecological standpoint because they provide a wind break, protect against erosion, reduce pollution, and can be enjoyed and used for recreation. As a result, citrus plants have become widely recognized in religion and culture around the globe. Citrus genetic diversity is abundant in India’s northeastern Himalayan region and the foothills of the central and western

Himalayan tracts. The continuous cuticle polymer, or flavedo, in citrus fruit is essential to both growth and storage. The main defense mechanism that separates the fruit from its surroundings is the cuticle. As a result, the cuticle controls the rates at which water vapor, respiration metabolites like carbon dioxide and oxygen, ethylene, and flavor volatiles like alcohols and aldehydes exchange gases. Insects and bacteria that would easily eat an exposed fruit are also kept at bay by the cuticle.

However, citrus essential oils with insecticidal properties, such as d-limonen, are crucial in shielding the fruit from bacteria and insects. The leaves of *Citrus grandis* were utilized as an insecticidal and Saravanan (2010) reported on the use of repellent by Adi tribal farmers to control the rice pest *Leptocorisa oratorius* (Fab.). Citrus peels, especially their outermost layers, are valuable agricultural wastes that contain cellulose, pectin, hemicelluloses, lignin, chlorophyll pigments, and limonene. These materials can be used as potential absorbents to remove a variety of pollutants, particularly heavy metal ions like Uranium VI, Nickel II, and Cobalt II (Amit et al., 2010).

Citrus fruit's inner and outer skins were rich in pectin, which surrounded the heavy and minor metals. Citrus fruit's inner and outer skins were rich in pectin, which surrounded the heavy and minor metals. Peels, segment membranes, and other citrus waste products from the fruit juice industry could be utilized to make animal feed and extract pectin. Citrus waste can be used as a source of biogas, ethanol, limonene, and pectin, among other value-added products, because it contains a variety of carbohydrate polymers.

Indigenous knowledge is crucial to the diagnosis and treatment of illness in traditional systems. It was discovered that the rural population mainly relied on plant parts to treat a range of illnesses. Elderly individuals possess extensive knowledge about treating a wide range of conditions, from minor cuts to lifelong diabetes. Citrus fruits and flowers are fragrant and flavorful, making them edible ornaments. People in the rural Feni area chewed and swallowed the dried fruit skin of *C. aurantium* along with betel leaf, which they chewed for mouth breath problems and stomach pain (Chowdhury et al. 2009). *Citrus medica* fruit is used to treat dysentery and also helps, and Citrus limon juice is used as a bleaching agent in stain removers.



Some research said the use of citrus processing waste as a source of ration for livestock. Pourhossein et al. (2015) described that the utilization of orange peel as a feed for broiler chickens helped in growing the white blood cells, lymphocytes, immunoglobulin G, and immunoglobulin M concentration. Likewise, Kour, Rastogi, Sharma and Singh (2016) analyzed the impact of the addition of kinnow waste (*Citrus reticulata*) in the feed intake as well as nutrient utilization in goats. The find out about confirmed that the 40% inclusion of kinnow waste led to the widening of calcium to phosphorus ratio which need to be usually taken care of whilst feeding to animals. However, no detrimental effect of kinnow waste was viewed in the goat health as checked by blood biochemical profile. Ciftci et al. (2016) demonstrated that the inclusion of orange peel extract into the diet of Quail led to an increase in physique weight, a decline in the triglycerides level, and also improved the feed conversion ratio. Seidavi, Zaker-Esteghamati and Salem (2020) advised the utilization of orange peel waste as a healthy, modest, and hygienic feed for rooster diets. However, moderate use of citrus waste in the animal feed is counseled due to the fact the extra of it can also distress the digestive tract of the livestock.

Non Food Utilization

Utilization of citrus peel waste as a pharmacy drug, bio-adsorbent, activated carbon, bio-fuel, bio-fertilizer, packaging material, and additive for skin care merchandise are some of the non – food application of citrus peel waste.

Pharmacy Drug

Apart from their role as a meals additive, colorant, bioactive compound, or encapsulating agent, these citrus peels have their role in the pharmaceutical

industry as well. The presence of bioactive factors makes it a appropriate ingredient for the components of medicines. Other than the crucial oils, citrus peel also incorporate of flavonoids, mainly the polymethoxylated flavone, comprising of nobiletin and tangeretin, which have been established to have numerous pharmacological results towards cardiovascular diseases, cancer, oxidation resistance, and anti-inflammation (Manthey, Guthrie & Grohmann, 2001; Tripoli, La Guardia, Giammanco, Di Majo & Giammanco, 2007). Several researchers described the health-promoting effect of citrus peels, for example, anti-microbial, anti-aging, hepato-protective, immunosuppressive, and cardio-protective results (Baniya, Dhananjaya, Acharya, Dangi & Sapkota, 2015; Guo et al., 2019; Kim et al., 2016; Pantsulaia, Iobadze, Pantsulaia & Chikovani, 2014).

Essential oil acquired from Citrus Changshan-huyou Y.B. Chang established inhibitory activity towards planktonic *Listeria monocytogenes* cells with a minimal inhibitory concentration of 4% (v/v), zone of inhibition of 25.48 ± 1.41 mm, and minimum bactericidal concentration of 8%. The anti-biofilm property was additionally exhibited via citrus peel crucial oil. The learn about recommended the viable use of citrus peel fundamental oil as an anti-microbial agent/preservative in the pharma zone (Guo et al., 2019). Further research centered on analyzing the function of polymethoxy flavonoid compounds received from Citrus sinensis peel extract in the therapy and administration of gastric ulcer in male albino rats. It was once realized that upon administration of peel extract, the gastric pH expanded notably whilst the number of lesions, gastric volume, and gastric acid secretion lowered (Aboul Naser, Younis, El-Feky, Elbatanony & Hamed (2020).

Bio-Adsorbents

Bio-adsorbents are compounds used for facilitating the elimination of heavy metals. Nowadays, agro-waste is broadly utilized as a low-priced bio-adsorbent for the elimination of heavy metals from the answer (Abood, Rajendiran & Azhari, 2015). Many researchers labored on using citrus peel as a green supply of bio-adsorbent for eliminating heavy metals or toxic elements (Akkaya Saygili, Saygili, Yilmaz & Guzel, 2020; Bhattacharyya, Das & Datta, 2019). A low-cost, environmentally friendly activated carbon was once prepared from Citrus limetta peels thru carbonization and alkali chemical activation to cast off ranitidine in pharmaceutical wastewater. The learn about stated most important elimination (85.63%) of ranitidine at 39.85 °C temperature, 140 rpm agitation velocity at 6 pH, adsorbent dose (200 mg), and adsorbent awareness of 10 ppm (Bhattacharyya et al.,

2019). In addition, a FeCl₃-impregnated activated carbon adsorbent was developed using Citrus limetta peels (Siddique, Nayak & Singh, 2020). A today's study executed by means of Villen-Guzman, Cerrillo-Gonzalez, Paz-Garcia, Rodriguez-Maroto and Arhoun (2021) explored the bio-sorbent plausible of alkali modified lemon peel on the removal of heavy metals viz, nickel and cadmium from industrial effluents. The find out about stated 90% sorption of nickel and cadmium in the initial 5 minutes. Another research checked the impact of orange peel-based bio-absorbent and silicon sand in the filtration of soil via seawater irrigation. The salt retention from seawater was correctly accomplished by using the use of a combine of orange peel bio-absorbent and silicon sand (Falco, Garcia Raurich & Arnal Madrid, 2021).

Bio-Fuel

Citrus peel waste is also employed as a natural aid for biofuel production such as bioethanol, biodiesel, and biogas. Diverse natural processes, for example, fermentation and anaerobic digestion are used for the bio-conversion of citrus peels into biofuel. For instance, Bioethanol (50–600 L/1000 kg) was prepared from mandarin peel utilising pretreatment with steam explosion and microbial fermentation (Boluda-Aguilar, Garcia-Vidal, del, Gonzalez-Castaneda & Lopez-Gomez, 2010). Moreover, orange peel waste was used for the production of bioethanol by simultaneous pretreatment with acid-catalyzed steam explosion and separate enzymatic hydrolysis plus fermentation with *Saccharomyces cerevisiae* F15. The study noted the ethanol yield of 0.495 g/g and productivity of 4.85 g/Lh (Santi et al., 2014). Likewise, Bio diesel can be obtained from citrus peel waste thru trans-esterification of necessary oil with alcohol (Taghizadeh-Alisaraei, Hosseini, Ghobadian & Motevali, 2017). Thus, citrus peel waste can additionally be utilized as a renewable source of energy.

Packaging Material

The software of citrus peel waste in the synthesis of biodegradable packaging substances is an rising area of research. Citrus limon and Citrus aurantifolia peels have been exploited for the improvement of edible coating for sparkling strawberries (Munoz-Labrador, Moreno, Villamiel & Montilla, 2018). Also, edible packaging movie used to be developed by using the usage of lemon peel pectin and candy potato starch (in 3:1 proportions) alongside with titanium oxide nanoparticles (0.5–2.0% by using weight) (Dash, Ali, Das & Mohanta, 2019). Pomelo (*Citrus grandis*)

peel flour and tea polyphenols had been exploited for growing bioactive fit for human consumption packaging movie by means of casting method. The study reported that pomelo peel and tea polyphenol-based composite packaging cloth having a 10% concentration of tea polyphenol proved to be a good moisture barrier, and have effective anti-microbial, antioxidant and mechanical effects. This packaging may want to also be a green alternative for the packaging of soybean oil for 30 days (Wu et al., 2019). Lately, a blend of blood orange peel pectin and fish gelatin used to be used for the practise of the edible film. An edible movie comprising of 50% of orange peel pectin and 50% of fish gelatin exhibited excessive tensile strength, antioxidant and antimicrobial activities. The organized fit for human consumption movie was also used for coating cheese by means of wrapping method and the study showed increased physicochemical, textural, and microbial balance of the cheese (ricotta) wrapped in blended fit for human consumption film (Jridi et al., 2020).

Skin Care Products

Being a wealthy supply of bioactive compounds, antioxidants, vitamins (vitamin C, & E), and polyphenolic compounds, nowadays, agro-industrial waste is additionally utilized as an active ingredient for skincare merchandise (Pinto et al., 2021). Citrus peel waste is one such agro-waste that is significantly used in the cosmetic industry, the antioxidants current in citrus peel helps in delaying skin aging and aids in decreasing oxidative damage as properly as skin-related problems like acne, wrinkles, dark spots, etc. Notwithstanding, citrus wastes are likewise being researched for the manufacturing of pores and skin brightening beauty care products (Sharma et al., 2017). For instance, the skin anti-aging residences of alcoholic extract of Citrus reticulata peels have been explored through utilising in-vitro antioxidant plus anti-enzyme assays, where its use in anti-wrinkle pores and skin care formulations was recommended (Apraj & Pandita, 2016). Lately, a research was done, which centered on checking the anti-tyrosinase undertaking of orange (Citus sinensis L.) peel extract, thereby formulating the whitening cream from the peel extract that helps in averting the production and accumulation of melanin pigment. Orange peel confirmed massive anti-tyrosinase property with an IC₅₀ cost of 255.10 µg/ml. Whitening cream developed the usage of the orange peel waste (2%) weight with the aid of weight ought to reduce melanin pigment by using 17.33% (Wuttisin, Boonmak & Thaipitak, 2017). Consequently, citrus peel waste can be deliberately utilized for the cure of harmful skin ailments

and hyperpigmentation. However, extra research on its effectiveness as an ingredient for beauty products is to be checked.

Food Utilization

Numerous researchers worked with the utilization of waste citrus seeds, either to extract the essential oil limonene or to incorporate the oil from the seeds into food products.

Citrus seed byproducts such as seed oil and seed meal are the most common. Essential oils are thought to be effectively obtained from citrus seeds. The citrus variety has the biggest influence on the oil content of citrus seeds, which typically ranges from 20 to 40% (by weight). Citrus sinensis, Citrus paradisi, and Citrus reticulata are three cultivars of citrus seed oil that have been the subject of several studies in the literature on their fatty acid profiles. These studies have reported the presence of palmitic, oleic, and linoleic acids in the oil; however, stearic and linolenic acid concentrations were typically lower (Rashid et al., 2013; Waheed, Mahmud, Saleem & Ahmad, 2009). Juhaimi, Matthaus, Ozcan, and Ghafoor (2016) found that the citrus seed oil had a 98.60% fatty acid content, with 21.9% of 21.3% oleic acid, 4.0% stearic acid, 43.7% linoleic acid, 2.0% cis-vaccenic acid, 5.0% linolenic acid, 0.4% arachidic acid, 0.1% elcosenoic acid, 0.2% behenic acid, and 13.7 mg/kg of tocopherol content are the contents of this formulation. Citrus seed oil's fatty acid composition suggests that it belongs in the category of healthy oils.

Only a small number of domestic producers are currently engaged in the large-scale manufacturing of citrus essential oil.

Food Additives

Additionally, citrus seed waste can be used to make food applications and value-added products due to its high protein, mineral, and fiber content. Because citrus seed flour has a high functional oil holding capacity, it is used as a food additive when making muffins, doughnuts, and pancakes. Citrus seed flour's high emulsion action and stability also suggest that it could be used as a stabilizer in colloidal foods and in prepared meat products like sausages and ground meats (Akpata & Akubor, 1999).

Methodology

The research study consist work methodology based on citrus fruit peel waste utilization.

Area of Study

The research study conducted at Institute of Higher Learning, Bhagat Phool Singh Mahila Vishvidyalya, Khanpur Kalan, Sonipat Haryana.

Collection of Sample

Samples for research study were purchased from organic fruit store Sonipat Haryana.

Formulation of Products

In this research study six product were developed three products were prepared in powder foam and another three products were prepared in pills foam from organic citrus fruit peel powder and spices.

Use of Products

Different products were prepared from organic citrus fruit peel powder for various purposes.

- Improve digestibility
- Smooth blood circulation
- Antioxidant properties
- Free radicals binder

Result and Discussion

Result of conducted study found that all products enriched with antioxidantal properties which are very impact able for human health.

Suggestions

Based on this research study the researcher found that citrus fruit peels are very highly impact able sources for human life, animals and environment if we reuse citrus waste in our life for various function then we can analyze their benefits.

So we should not to focus on chemical products need to change scenario for better life and dependency on nature so that we can achive sustainable future.

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Chapter-41

**Employ Traditional Approach to
Achieve Sustainable Future**

Dr. Sarita Sahay

Abstract

Achieving a sustainable future necessitates a comprehensive and interdisciplinary knowledge system that addresses the intricate web of environmental, social, and economic challenges. In the realm of environmental science, a profound understanding of ecosystems, biodiversity, climate change, and resource dynamics is critical. This knowledge forms the foundation for informed decision-making to mitigate environmental degradation and promote resilience.

Renewable energy expertise is indispensable, spanning solar, wind, hydro, and bioenergy. Mastery of these technologies ensures a transition to cleaner energy sources, reducing dependence on finite resources and mitigating climate change. In parallel, sustainable agriculture knowledge is essential, encompassing agroecology, water management, and community engagement. Balancing food production with environmental stewardship is fundamental for long-term ecological health and food security.

Resource management knowledge involves principles of circular economy, waste reduction, and efficient resource utilization. Life cycle assessments, sustainable forestry, and responsible mineral extraction contribute to a balanced approach that minimizes resource depletion and environmental impact. Energy efficiency measures and advancements in technology further optimize resource utilization across various sectors.

The social equity dimension requires expertise in inclusive development, gender equality, poverty alleviation, and community engagement. Education plays a pivotal role, fostering awareness and empowering communities to actively participate in sustainable practices. Social justice advocacy and policies that address systemic inequalities are integral to building an equitable society.

Policy frameworks serve as the glue that binds these diverse elements into a cohesive strategy. Integrated planning, climate change mitigation, and

international collaboration are key policy components. Economic incentives, corporate responsibility, and adaptive governance structures ensure that sustainability is not merely an ideal but a guiding principle in decision-making at various levels.

In summary, a sustainable future necessitates a knowledge system that bridges traditional disciplinary boundaries. It involves a collective and adaptive approach, integrating expertise from environmental science, renewable energy, agriculture, resource management, social equity, and policy development. By embracing this multidimensional knowledge system, we pave the way for a future where humanity and the environment coexist harmoniously, fostering resilience and sustainability for generations to come

Keywords: *Renewable energy Sustainable future*

Introduction

Traditional Approach to a sustainable future refers to the recognition and utilization of traditional knowledge and practices that indigenous communities have developed over generations to interact with their environments in sustainable ways. Indigenous knowledge encompasses a deep understanding of local ecosystems, biodiversity, natural resources, and traditional practices for resource management, agriculture, healthcare, and adaptation to environmental changes.

Achieving a sustainable future necessitates a comprehensive and interdisciplinary knowledge system that addresses the intricate web of environmental, social, and economic challenges. In the realm of environmental science, a profound understanding of ecosystems, biodiversity, climate change, and resource dynamics is critical. This knowledge forms the foundation for informed decision-making to mitigate environmental degradation and promote resilience.

IN this paper, I will be dwelling deep into the following aspects:

1. Environmental science that promotes sustainable practices.
2. Renewal Energy technologies.
3. Sustainable agriculture,
4. Resource management,
5. Circular economy principles,
6. Social equity,

Collaboration across disciplines and global cooperation are crucial for addressing complex challenges like climate change, biodiversity loss, and resource depletion.

Review of Literature

N.M.P. Bocken, S.W. Short, P. Rana, (2014) A literature and practice review identifies various eco-innovations, eco-efficiency, and corporate social responsibility practices as insufficient for long-term sustainability. Sustainable business models (SBM) incorporate a triple bottom line approach, considering stakeholder interests, and can drive innovation and competitive advantage. Archetypes are introduced to describe mechanisms and solutions for building sustainable business models.

Mücahit Yıldırım, Gizem Tura Sustainable development in historic areas: Adaptive re-use challenges in traditional houses in Sanliurfa, Turkey The study explores the challenges of compatible and most appropriate re-use approaches for commercial and community development in historical areas. Commercial re-use, initiated by private entrepreneurship, generates income to cover restoration and maintenance costs. Community re-use, initiated by governmental involvement, provides social benefits but doesn't generate enough income. The research methodology uses six case studies to analyze sustainable development activities in Sanliurfa, Turkey, highlighting challenges and approaches to re-use in historical patterns and conservation areas.

Qing-Xiong Ba, Dau-Jye Lu ORCID, Warren Hwa-Jen Kuo and Po-Hsin Lai Traditional Farming and Sustainable Development of an Indigenous Community in the Mountain Area—A Case Study of Wutai Village in Taiwan The study explores traditional farming in the Wutai village of Taiwan, focusing on its role in sustainable development. The research used qualitative methods, including interviews, observations, and focus groups, to analyze field data from 2013 and 2017. The findings revealed that traditional farming practices, such as mixed cropping, inter cropping, and rotation, optimize the use of limited arable lands and maintain local food supply. This approach supports ecotourism as a sustainable alternative to mass tourism, preserves crop diversity, social institutions, and cultural traditions, and stabilizes the local environment. The study suggests that more policy incentives could promote traditional farming's role in sustainable development.

Environmental Science

Environmental science is a multidisciplinary field that explores the intricate interactions between humans and the natural world. It encompasses

various branches of knowledge, including biology, chemistry, physics, ecology, geology, and sociology. At its core, environmental science seeks to understand the Earth's systems, including the atmosphere, hydrosphere, lithosphere, and biosphere, and how human activities influence these systems.

One of the primary goals of environmental science is to assess the impact of human activities on the environment and to develop strategies for sustainable resource management and conservation. This involves studying pollution, climate change, biodiversity loss, habitat destruction, and other environmental issues.

Environmental scientists use observation, experimentation, modelling, and analysis to investigate environmental phenomena and develop solutions to environmental problems. They may work in fields such as environmental monitoring, environmental policy, conservation biology, pollution control, sustainable agriculture, renewable energy, and urban planning.

Environmental science plays a crucial role in informing public policy and decision-making processes at local, national, and global levels. It provides valuable insights into the consequences of human actions on the environment and helps identify strategies to mitigate these impacts.

Ultimately, environmental science aims to foster a deeper understanding of our relationship with the natural world and to promote responsible stewardship of the Earth's resources for the benefit of present and future generations.

This knowledge is essential for a sustainable future includes understanding ecosystems, biodiversity, climate change impacts, water and air quality, soil health, and environmental pollution.

Additionally, expertise in sustainable resource management, conservation strategies, and the application of green technologies is crucial. Interdisciplinary approaches that consider the interconnectedness of environmental, social, and economic systems are also key to fostering sustainability.

Renewable Energy Technologies

Investments in research, development, and deployment of renewable energy technologies continue to drive down costs and increase efficiency, making renewable energy increasingly competitive with fossil fuels. Embracing renewable energy technologies is critical for transitioning to a sustainable energy future and reducing dependence on finite and environmentally harmful fossil fuel resources.

Renewable energy expertise is indispensable & spanning solar, wind, hydro, and bioenergy. Mastery of these technologies ensures a transition to cleaner energy sources, reducing dependence on finite resources and mitigating climate change.

Renewable energy technologies harness natural resources such as sunlight, wind, water, and geothermal heat to generate clean and sustainable power. These technologies play a crucial role in reducing greenhouse gas emissions, mitigating climate change, and promoting energy independence. Several key renewable energy technologies are:

Achieving a sustainable future through renewable energy requires knowledge in various areas:

- **Solar Energy:** Solar photovoltaic (PV) panels convert sunlight directly into electricity, while solar thermal systems use sunlight to heat water or other fluids for use in heating or electricity generation. Hence, understanding photovoltaic technology, solar thermal systems, and advancements in solar panel efficiency is an integral part of this knowledge.
- **Wind Energy:** Wind turbines capture the kinetic energy of wind and convert it into electricity. Onshore and offshore wind farms are increasingly common around the world, providing a significant source of renewable energy. Knowledge of wind turbine technology, wind farm design, and integration into power grids, hence must be integrated.
- **Hydropower:** Hydropower plants harness the energy of flowing water, typically from rivers or dams, to generate electricity. It is one of the oldest and most widely used renewable energy sources. Hence, a must to Understand the environmental impact of hydropower, efficient dam design, and the potential for run-of-river projects is done here.
- **Bioenergy:** Biomass refers to organic materials such as wood, agricultural residues, and organic waste, which can be converted into biofuels or burned directly for heat or electricity generation. Knowledge of sustainable biofuel production, biomass utilization, and bioenergy systems is a useful tool.
- **Geothermal Energy:** Geothermal power plants utilize heat from the Earth's interior to generate electricity or provide heating and cooling for buildings. Understanding geothermal heat extraction, power plant design, and the exploration of geothermal resources.

Sustainable Agriculture

Sustainable agriculture is a holistic approach to food production that aims to meet the needs of the present without compromising the ability of future generations to meet their own needs. It encompasses practices and techniques that promote environmental health, economic viability, and social equity within the agricultural system.

By promoting regenerative practices that prioritize environmental stewardship, economic viability, and social responsibility, sustainable agriculture offers a pathway to address global food security challenges, mitigate climate change impacts, and build resilient and inclusive food systems for the future.

Sustainable agriculture knowledge is essential, encompassing agroecology, water management, and community engagement. Balancing food production with environmental stewardship is fundamental for long-term ecological health and food security.

Key principles of sustainable agriculture include:

- **Soil Health:** Practices such as crop rotation, cover cropping, minimal tillage, and composting help maintain soil fertility, structure, and biodiversity while reducing erosion and nutrient runoff.
- **Water Management:** Sustainable agriculture emphasizes efficient water use through techniques like drip irrigation, rainwater harvesting, and water conservation measures to minimize water waste and preserve freshwater resources.
- **Biodiversity Conservation:** Preserving and enhancing biodiversity through habitat restoration, crop diversity, and integrated pest management (IPM) helps maintain ecosystem balance and resilience, reducing the need for chemical inputs and promoting natural pest control.
- **Agroecological Approaches:** Agroecology integrates ecological principles into agricultural systems, emphasizing natural processes and relationships to optimize resource use, enhance productivity, and promote resilience to environmental stressors.
- **Social Equity:** Sustainable agriculture prioritizes fair labour practices, community engagement, and equitable access to resources and opportunities for farmers, farm workers, and local communities.
- **Precision Farming:** Use of technology for precise and efficient resource management, including water, fertilizers, and pesticides, minimizing environmental impact.

- **Organic Farming Practices:** Familiarity with organic farming methods, such as composting, integrated pest management, and avoiding synthetic inputs.
- **Water Management:** Understanding efficient irrigation techniques, rainwater harvesting, and strategies for water conservation.
- **Agroforestry:** Integration of trees and shrubs into agricultural systems to enhance biodiversity, improve soil fertility, and provide additional income sources.
- **Genetic Diversity:** Awareness of the importance of preserving and utilizing diverse plant and animal genetic resources for resilient and adaptable agricultural systems.
- **Climate-Smart Agriculture:** Implementing practices that adapt to and mitigate climate change impacts on agriculture.
- **Community Engagement:** Involving local communities in sustainable agricultural practices, promoting social equity and local resilience.
- **Policy and Regulation:** Understanding and advocating for policies that support sustainable agriculture, including subsidies, land-use planning, and conservation programs.

Combining these aspects promotes sustainable practices that balance environmental conservation, economic viability, and social equity in agriculture.

Resource Management

Resource management involves the efficient and sustainable utilization of natural, human, and capital resources to meet present needs while preserving resources for future generations. It encompasses a range of practices, policies, and strategies aimed at optimizing resource use, minimizing waste, and promoting long-term environmental and economic sustainability.

Resource management knowledge involves principles of circular economy, waste reduction, and efficient resource utilization. Life cycle assessments, sustainable forestry, and responsible mineral extraction contribute to a balanced approach that minimizes resource depletion and environmental impact. Energy efficiency measures and advancements in technology further optimize resource utilization across various sectors.

Achieving a sustainable future through resource management requires a comprehensive knowledge system that includes:

- **Natural Resource Economics:** Natural resource management focuses on the conservation, preservation, and sustainable utilization of natural

resources such as water, forests, minerals, land, and biodiversity. This involves implementing strategies to protect ecosystems, prevent habitat destruction, mitigate pollution, and promote biodiversity conservation. Understanding the economic principles governing the use and conservation of natural resources, considering factors such as supply and demand, externalities, and market mechanisms.

- **Circular Economy:** Knowledge of circular economy principles, emphasizing recycling, reusing, and reducing waste to minimize resource extraction and environmental impact.
- **Life Cycle Assessment:** Evaluating the environmental impact of products and processes throughout their entire life cycle, considering resource use, emissions, and waste generation.
- **Water Resource Management:** Water resource management involves the responsible allocation and protection of freshwater sources for drinking, agriculture, industry, and ecosystems. Strategies include water conservation measures, watershed management, water recycling and reuse, and sustainable irrigation practices. Understanding sustainable water use practices, efficient irrigation techniques, watershed management, and the protection of water quality.
- **Forest Management:** Knowledge of sustainable forestry practices, including selective logging, reforestation, and conservation strategies to maintain biodiversity.
- **Mineral Resource Management:** Balancing the extraction of minerals with responsible mining practices, recycling efforts, and exploring alternatives to reduce dependence on finite resources.
- **Waste Management:** Implementing strategies for waste reduction, recycling, and proper disposal to minimize the environmental impact of waste.
- **Energy Efficiency:** Knowledge of technologies and practices that improve energy efficiency in industries, transportation, and buildings to reduce resource consumption.
- **Land Use Planning:** Understanding sustainable land-use practices, including urban planning, agriculture, and conservation, to optimize land resources.
- **Policy and Governance:** Awareness of policies and regulations that promote sustainable resource management, including incentives for conservation and penalties for unsustainable practices.

- **Technological Innovation:** Staying informed about and promoting the development of technologies that enhance resource efficiency and reduce environmental impact.

A holistic approach to resource management, considering social, economic, and environmental aspects, is essential for building a sustainable future.

Circular Economy Principles

Circular economy principles represent a paradigm shift in resource management, advocating for a systemic approach to sustainability by minimizing waste, maximizing resource efficiency, and promoting closed-loop systems across various industries and sectors. At its core, the circular economy aims to decouple economic growth from resource consumption and environmental degradation, offering a holistic framework for achieving long-term prosperity while reducing environmental impacts. This economy principles aim to minimize waste and maximize resource efficiency by promoting a closed-loop system. This approach emphasizes reducing, reusing, and recycling materials throughout their lifecycle. It prioritizes designing products for longevity and easy disassembly to facilitate repair, remanufacturing, and recycling. Circular economy principles advocate for shifting from a linear “take-make-dispose” model to a regenerative system where materials and resources are continuously circulated within the economy. By promoting resource conservation, reducing environmental impacts, and fostering innovation in sustainable practices, circular economy principles strive to create a more resilient and equitable economy while mitigating the pressures of resource depletion and environmental degradation.

To achieve a sustainable future through a circular economy, several key principles are crucial:

- At the heart of the circular economy lies the concept of ‘reduce, reuse, recycle,’ which emphasizes minimizing resource inputs, extending product lifecycles, and recapturing materials at the end of their useful life.
- Designing products for durability, reparability, and recyclability is fundamental to the circular economy. By incorporating these principles into product design, manufacturers can minimize waste generation and resource depletion.
- Product lifecycle thinking encourages businesses to consider the environmental and social impacts of products from raw material

extraction to end-of-life disposal, fostering responsible production and consumption patterns.

- Closed-loop systems aim to keep materials and resources in circulation for as long as possible, thereby reducing the need for virgin resource extraction and minimizing waste generation.
- Material recovery and recycling play a crucial role in the circular economy by recovering valuable resources from waste streams and reintroducing them into the production process.
- The circular economy fosters innovation in sustainable materials, technologies, and business models, driving the transition towards a more resource-efficient and resilient economy.
- Collaborative approaches involving stakeholders from government, industry, academia, and civil society are essential for scaling circular economy initiatives and overcoming systemic barriers to implementation.
- Circular economy principles extend beyond waste management to encompass energy efficiency, water conservation, and biodiversity preservation, addressing interconnected environmental challenges.
- Closing the loop on critical resource flows such as rare earth metals, minerals, and water is essential for building a circular economy that is both economically viable and environmentally sustainable.
- The circular economy offers opportunities for job creation, economic growth, and innovation while reducing dependency on finite resources and mitigating the impacts of climate change.
- Sustainable consumption and production practices are central to the circular economy, encouraging consumers to make informed choices, prioritize quality over quantity, and embrace the sharing economy.
- Circular business models such as product-as-a-service, sharing platforms, and remanufacturing offer innovative solutions for meeting consumer needs while minimizing environmental footprints.
- Circular cities leverage urban infrastructure, design, and planning to optimize resource use, reduce waste generation, and enhance quality of life for residents.
- The circular economy emphasizes the importance of transparency, traceability, and accountability throughout supply chains, enabling informed decision-making and responsible sourcing practices.

- Circular procurement practices encourage public and private organizations to prioritize products and services with minimal environmental impacts, driving demand for circular solutions.
- Financial mechanisms such as extended producer responsibility (EPR), deposit-refund systems, and green taxation incentivize businesses to internalize environmental costs and adopt circular business models.
- Education, awareness-raising, and capacity-building initiatives are essential for fostering a culture of sustainability and empowering individuals and communities to participate in the transition to a circular economy.
- Policy frameworks and regulatory measures play a crucial role in creating an enabling environment for circular economy initiatives, providing incentives, setting standards, and removing barriers to implementation.
- International cooperation and knowledge-sharing platforms facilitate the exchange of best practices, technologies, and lessons learned, accelerating the global transition towards a circular economy.
- Monitoring, evaluation, and continuous improvement are integral to the success of circular economy initiatives, enabling stakeholders to assess progress, identify challenges, and adapt strategies accordingly.
- Circular economy principles can be applied across diverse sectors, including manufacturing, construction, agriculture, transportation, and consumer goods, unlocking opportunities for sustainable development and resilience.
- By embracing circular economy principles, businesses can enhance competitiveness, reduce operational costs, and future-proof their operations against resource scarcity and regulatory risks.
- Life cycle assessment (LCA) methodologies provide valuable insights into the environmental impacts of products and processes, informing decision-making and driving continuous improvement towards sustainability.
- Circular supply chains prioritize resource efficiency, waste reduction, and value optimization, fostering resilience and adaptability in the face of evolving market dynamics and environmental pressures.
- Innovation hubs, incubators, and accelerators play a vital role in nurturing circular economy startups, fostering entrepreneurship, and scaling up disruptive technologies and business models.

- Green public procurement (GPP) policies integrate environmental criteria into government purchasing decisions, driving demand for sustainable products and services and supporting market transformation.
- Circular economy hubs and demonstration projects serve as living laboratories for testing and showcasing circular solutions, inspiring replication and adaptation in other contexts.
- Digital technologies such as blockchain, internet of things (IoT), and artificial intelligence (AI) enable transparency, traceability, and optimization across circular supply chains, enhancing efficiency and accountability.
- Circular design thinking encourages creativity, collaboration, and user-centricity in the development of products, services, and systems, unlocking opportunities for circular innovation and value creation.
- Circular business ecosystems foster synergies, partnerships, and knowledge exchange among stakeholders, catalysing collective action and driving systemic change towards a circular economy.
- Biomimicry principles draw inspiration from nature to design sustainable products and systems that emulate natural cycles and processes, enhancing resource efficiency and resilience.
- Circular bioeconomy approaches harness renewable biological resources such as biomass, organic waste, and agricultural residues to create value-added products and materials, promoting sustainability and circularity.
- Circular cities leverage urban infrastructure, design, and planning to optimize resource use, reduce waste generation, and enhance quality of life for residents.
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Implementing these principles requires a holistic and collaborative approach across industries, policymakers, and consumers to create a regenerative and sustainable economic system.

Social Equity

Social equity is essential for building a sustainable future that benefits all members of society, regardless of their backgrounds, identities, or socio-economic status. In the context of sustainability, social equity refers to fair

access to resources, opportunities, and decision-making processes, as well as the recognition and inclusion of diverse voices and perspectives.

A sustainable future must prioritize social equity by addressing systemic inequalities, promoting justice, and empowering marginalized communities. This involves ensuring access to basic human rights such as clean water, healthcare, education, and affordable housing for all individuals.

Social equity also entails creating inclusive economies that provide decent work, fair wages, and economic opportunities for marginalized groups, including women, minorities, indigenous peoples, and people with disabilities. It requires dismantling barriers to employment, entrepreneurship, and economic mobility, while fostering diversity and inclusion in the workforce.

Moreover, social equity encompasses environmental justice, which advocates for the fair distribution of environmental benefits and burdens across communities, particularly those disproportionately affected by pollution, climate change, and environmental degradation.

By promoting social equity in sustainable development initiatives, we can foster resilient, inclusive societies where everyone has the opportunity to thrive, contribute to positive change, and enjoy a high quality of life, both now and in the future.

Achieving a sustainable future with a focus on social equity involves a knowledge system that encompasses various aspects:

- **Inclusive Development:** Understanding and promoting development that benefits all segments of society, ensuring that marginalized communities are not left behind.
- **Community Engagement:** Implementing strategies to involve local communities in decision-making processes related to sustainable development projects, respecting their cultural context and preferences.
- **Access to Education:** Promoting equal access to quality education for all, as education is a key driver for breaking the cycle of poverty and fostering sustainable development.
- **Gender Equality:** Advocating for gender equity in all aspects of society, including education, employment, and decision-making processes, recognizing the crucial role of women in sustainable development.
- **Poverty Alleviation:** Developing and implementing strategies to reduce poverty, ensuring that economic growth benefits the entire population, especially those in vulnerable situations.

- **Healthcare Access:*** Ensuring access to healthcare services for all, addressing disparities in health outcomes and promoting well-being as a fundamental aspect of social equity.
- **Affordable Housing:** Implementing policies and practices that ensure access to safe and affordable housing for everyone, addressing urbanization challenges and avoiding displacement of vulnerable communities.
- **Social Safety Nets:** Establishing social safety nets to protect individuals and communities during economic transitions or crises, preventing social inequalities from widening.
- **Cultural Respect and Inclusion:** Valuing and respecting diverse cultural perspectives, recognizing the importance of cultural heritage in sustainable development, and avoiding cultural marginalization.
- **Equitable Resource Distribution:** Ensuring fair distribution of resources, benefits, and opportunities to avoid concentration in the hands of a few while leaving others in poverty.
- **Social Justice Advocacy:** Building awareness and advocacy for social justice issues, addressing systemic inequalities and promoting policies that foster a more equitable society.
- A sustainable future requires a holistic approach that integrates social equity considerations into all aspects of decision-making, policy formulation, and community development.

Policy Frameworks:

Policy frameworks are instrumental in guiding societies towards a sustainable future by establishing goals, standards, incentives, and regulations that promote environmental protection, social equity, and economic prosperity. These frameworks provide a roadmap for governments, businesses, and communities to collaborate effectively and implement sustainable development strategies at local, national, and global levels.

Achieving a sustainable future through effective policy frameworks involves a comprehensive knowledge system, including:

- **Integrated Planning:** Understanding the interconnectedness of environmental, social, and economic aspects to develop holistic policies that address multiple dimensions of sustainability.
- **Climate Change Mitigation and Adaptation:** Developing policies to reduce greenhouse gas emissions, promote renewable energy, and address the impacts of climate change on vulnerable communities.

- **Biodiversity Conservation:** Implementing policies to protect and restore ecosystems, prevent habitat loss, and promote biodiversity conservation.
- **Circular Economy Policies:** Enacting regulations that encourage circular economy principles, such as waste reduction, recycling, and responsible resource management.
- **Renewable Energy Support:** Providing incentives and regulations to promote the adoption of renewable energy sources and technologies.
- **Sustainable Agriculture Policies:** Implementing agricultural policies that promote sustainable practices, reduce environmental impact, and support small-scale farmers.
- **Water Resource Management:** Developing policies for sustainable water use, efficient irrigation, and protection of water quality.
- **Urban Planning and Sustainable Transportation:** Integrating sustainable urban development policies, promoting public transportation, and reducing reliance on fossil fuel-based transportation.
- **Economic Incentives:** Implementing financial incentives, subsidies, and tax breaks that encourage businesses and individuals to adopt sustainable practices.
- **Social Equity and Inclusion Policies:*** Enacting policies that promote social equity, inclusivity, and address disparities in access to resources and opportunities.
- **Corporate Responsibility:** Encouraging corporate responsibility through policies that promote transparency, ethical business practices, and accountability for environmental and social impacts.
- **International Collaboration:** Participating in global initiatives and agreements that foster cooperation among nations to address shared sustainability challenges.
- **Education and Awareness:** Developing policies to promote environmental education, awareness, and public engagement to build a culture of sustainability.
- **Adaptive Governance:** Implementing governance structures that can adapt to changing environmental and social conditions, incorporating feedback from diverse stakeholders.

By aligning policy frameworks with sustainable development goals, governments can catalyse transformative change, foster innovation, and

create enabling environments for sustainable practices to flourish across sectors and jurisdictions. Hence, this is an effective tool for the effective policy framework among governments, businesses, NGOs, and communities, as well as a commitment to continuous improvement and adaptation to emerging challenges.

Discussion

The content presented underscores the multifaceted nature of achieving a sustainable future and highlights the importance of integrating traditional knowledge with contemporary approaches across various sectors. From environmental science to renewable energy technologies, sustainable agriculture, resource management, circular economy principles, and social equity, each aspect plays a critical role in shaping a more sustainable world.

Environmental science serves as the foundation for understanding the complexities of our natural systems and informing decision-making processes. It provides valuable insights into the impacts of human activities on the environment and offers solutions for mitigating environmental degradation.

Renewable energy technologies are essential for transitioning away from fossil fuels and reducing greenhouse gas emissions. Investments in research and development continue to drive down costs and improve efficiency, making renewable energy increasingly competitive in the global energy market.

Sustainable agriculture emphasizes regenerative practices that promote environmental health, economic viability, and social equity within the food production system. By prioritizing soil health, water management, biodiversity conservation, and social inclusivity, sustainable agriculture offers a pathway to address global food security challenges while mitigating the impacts of climate change.

Resource management involves the efficient and sustainable utilization of natural, human, and capital resources to meet present needs without compromising the ability of future generations to meet their own needs. Circular economy principles play a pivotal role in optimizing resource use, minimizing waste, and promoting closed-loop systems across various industries and sectors.

Social equity is essential for ensuring that the benefits of sustainable development are shared equitably among all members of society. By addressing systemic inequalities and promoting justice, social equity contributes to building resilient, inclusive communities where everyone has the opportunity to thrive.

Recommendations

1. **Interdisciplinary Collaboration:** Foster collaboration across disciplines and sectors to develop holistic solutions to sustainability challenges. Integrating traditional knowledge with scientific expertise can lead to more culturally sensitive and effective strategies.
2. **Investments in Renewable Energy:** Increase investments in research, development, and deployment of renewable energy technologies to accelerate the transition to a low-carbon economy.
3. **Promotion of Sustainable Agriculture:** Support policies and initiatives that promote sustainable agricultural practices, including organic farming, agroecology, and regenerative agriculture.
4. **Implementation of Circular Economy Policies:** Enact regulations and incentives to promote circular economy principles, such as extended producer responsibility, product stewardship, and eco-design.
5. **Social Equity Initiatives:** Prioritize social equity in sustainable development initiatives by addressing systemic inequalities, promoting inclusive economic growth, and ensuring access to essential services for marginalized communities.
6. **Policy Frameworks for Sustainability:** Develop and implement policy frameworks that integrate environmental, social, and economic considerations to foster transformative change towards a sustainable future.

Conclusion

In conclusion, achieving a sustainable future requires a comprehensive and integrated approach that encompasses environmental stewardship, renewable energy, sustainable agriculture, resource management, circular economy principles, and social equity. By leveraging traditional knowledge and modern technologies, collaborating across disciplines, and implementing effective policy frameworks, we can create a more resilient, inclusive, and prosperous world for present and future generations. It is imperative that governments, businesses, civil society, and individuals work together to address the complex challenges of sustainability and ensure a thriving planet for all.

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Chapter-42

पारम्परिक ज्ञान में योग की भूमिका

योगेश कुमार

अस्सिस्टेंट प्रोफेसर, आर्मी इंस्टीट्यूशन ऑफ एजुकेशन

सारांश

आज के समाज में शिक्षा व्यवस्था के अन्दर छात्र और शिक्षकों के मध्य अर्धैर्य, सांविगिक असन्तुलन, अमानवीयता, नैतिकता व संस्कृति की हसता पायी जा रही है। अतः स्पष्ट है कि आज की शिक्षा व्यवस्था एक सभ्य सुसंस्कृत समाज बनाने में अपना योगदान नहीं दे पा रही है। इस क्षेत्र में हमें योग को एक सामाजिक, मनोवैज्ञानिक आध्यात्मिक और शैक्षिक उपागम के रूप में प्रयोग करना होगा। प्रारम्भिक शिक्षा स्तर पर अनिवार्य रूप से योग का प्रयोग और योग से बच्चों को परिचित किया जाना चाहिये। कक्षा का आरम्भ और समापन कुछ सरलआसनों जैसे प्राणायाम आदि से होना चाहिये। विद्यालय में प्रमुखतया एक योग अध्यापक की नियुक्ति होनी चाहिये। कभी-कभी उन्हें ऐसे स्थानों पर भी ले जाकर यह अभ्यास कराया जाना चाहिये। जहाँ वे प्रसन्न होने के साथ-साथ सुविधा पूर्ण हो। माध्यमिक स्तर व उच्च शिक्षा के विद्यार्थियों के शिक्षा संस्थानों में दिन का प्रारम्भ इसी प्रकार योगाभ्यासों द्वारा किया जाना चाहिये। सर्वप्रथम उनकी व्यक्तिगत विभिन्नता को ध्यान में रखते हुये सभी कार्यक्रमों का आयोजन होना चाहिये। सभी को बराबर ध्यान व सम्मान मिलना चाहिये। उनके मनोविज्ञान के समझते हुये उन्हें योगाभ्यासों से निरन्तर परिचित किया जाना चाहिये। मानव संसाधन विकास मंत्री स्मृति ईरानी ने 22 जून 2015 को NCERT की ओर से तैयार किये गये छठी से दसवीं कक्षा तक के योग पाठ्यक्रम को जारी किया। योगा : ए 'ऐल्दी वे ऑफ लिविंग' पुस्तक का अनावरण किया गया यह पुस्तक मोरारजी देशाई इन्स्टीट्यूट ऑफ योगा, नई दिल्ली एवं कैवल्यधाम, योग इन्स्टीट्यूट, पूणे और अन्य संस्थानोंके सहयोग से तैयार की गयी है। सिलेबस के साथ ही इन कक्षाओं के लिये पाठ्य सामग्री भी जारी कर दी गयी है। इसके बाद केन्द्र सरकार की ओर से चलाये जाने वाले सभी स्कूलों के इन कक्षाओं में योग विषय अनिवार्य रूप से पढ़ाया जाने लगेगा। इसी तरह CBSE से संचालित होने वाले निजी स्कूलों को भी नौवीं और दसवीं में यह विषय अनिवार्य रूप से लागू करना होगा। ईरानी जी ने कहा कि इस विषय में 80 प्रतिशत अंक व्यावहारिक परीक्षा के होंगे, जबकि 20 प्रतिशत थ्योरी के होंगे। इसी मौके पर NCTE की ओर से योग विषय के लिये अलग से तैयार किया गया। शिक्षक प्रशिक्षण पाठ्यक्रम भी जारी किया गया।

प्रस्तावना

किशोरों और युवा वयस्कों के बीच मानसिक परेशानी और बीमारी को रोकने में मदद करने और विद्यालय स्तर पर मानसिक लचीलापन बनाने के लिए बहुत कुछ किया जा सकता है। प्रारंभिक चेतावनी संकेतों और मानसिक बीमारी के लक्षणों के बारे में जागरूक होने और समझने से रोकथाम शुरू होती है। माता-पिता और शिक्षक बच्चों और किशोरों के जीवन कौशल का निर्माण करने में मदद कर सकते हैं ताकि उन्हें घर और स्कूल में रोजमर्रा की चुनौतियों से निपटने में मदद मिल सके। सरकारों द्वारा निवेश और युवाओं के मानसिक स्वास्थ्य के लिए व्यापक, एकीकृत, साक्ष्य आधारित कार्यक्रमों में सामाजिक, स्वास्थ्य और शिक्षा क्षेत्रों की भागीदारी आवश्यक है। किशोरों के मानसिक स्वास्थ्य की देखभाल करने के लिए और साथियों, माता-पिता और शिक्षकों को अपने दोस्तों, बच्चों और छात्रों का समर्थन करने का तरीका जानने में मदद करने के लिए इस निवेश को कार्यक्रमों से जोड़ा जाना चाहिए। यहीं योग एक महत्वपूर्ण भूमिका निभा सकता है। योग विज्ञान, मानव के भीतरी स्थान का एक गहरा विज्ञान है, जो पूरे अस्तित्व के साथ पूरी सीध और तालमेल में होने की क्षमता देता है। खुशहाली और आजादी की स्थिति में जीने और चेतना को ऊंचा उठाने की प्रणाली के रूप में योग जितनी विस्तृत प्रणाली कोई नहीं है। यूनाइटेड नेशंस की आमसभा ने 11 दिसम्बर, 2014 के भारत द्वारा पेश किए गए प्रस्ताव को 193 सदस्यों द्वारा पारित किया गया और संयुक्त राष्ट्र महासभा के अध्यक्ष सैमकुत्सा ने 21 जून को अन्तर्राष्ट्रीय योग दिवस मनाने का फैसला लिया। यूनाइटेड नेशंस ने योग की महत्ता को स्वीकारते हुए माना कि “योग मानव स्वास्थ्य व कल्याण की दिशा में एक संपूर्ण नजरिया है।” 21 जून, 2022 को आठवें अन्तर्राष्ट्रीय योग दिवस का विषय ‘मानवता के लिए योग है।’ प्रधानमंत्री मोदी ने मैसूर पैलेस ग्राउंड में किया योग, देश के 75 ऐतिहासिक स्थलों पर हुए कार्यक्रम 8th International Yoga Day: पीएम मोदी ने देश और दुनिया को अंतरराष्ट्रीय योग दिवस की बधाई दी। उन्होंने कहा कि योग की यह अनादि यात्रा अनंत भविष्य की दिशा में ऐसे ही चलती रहेगी। हम सर्वे भवतु सुखिनः, सर्वे सन्तु निरामया के भाव के साथ एक स्वस्थ और शांतिपूर्ण विश्व को योग के माध्यम से भी गति देंगे. योग हमेशा से हमारी संस्कृति का हिस्सा रहा है और हमें इसके प्रसार के लिए आगे आना चाहिए। योग से शांति और सौहार्द जुड़े हैं और दुनिया भर में लोगों को इसका अभ्यास करना चाहिए। आज योग विज्ञान पहले किसी भी समय के मुकाबले ज्यादा महत्वपूर्ण है। इतिहास में पहली बार, हमारे पास धरती की हर समस्या-पोषण, स्वास्थ्य, शिक्षा को हल करने की क्षमता है। हमारे पास विज्ञान और तकनीक के जबरदस्त साधन हैं जिनमें पूरी दुनिया को कई बार बनने पर तबाह करने की क्षमता है। लेकिन अगर इतने शक्तिशाली साधनों का इस्तेमाल

करने की काबिलियत के साथ संतुलन, परिपक्वता और शामिल करने की एक गहरी भावना न हो तो, हम विश्वस्तरीय तबाही के काफी करीब हो सकते हैं। हमारी बाहरी खुशहाली खोज की वजह से, धरती भी आज तबाही के कगार पर है।

“योग”- शब्द की उत्पत्ति संस्कृत भाषा के शब्द ‘युज’ से हुई है जिसका अर्थ जोड़ना और बांधना है, तथा ध्यान को एकाग्रचित्त करके इसे प्रयोग में लाना। इसका अर्थ संयोग या भावनाओं का आदान-प्रदान भी है। यह हमारी इच्छा का भगवान की इच्छा के साथ एक सच्चा मिलन है। योग एक व्यवहार है जो जीवन को उनके अवयवों से अलग करने के लिए चेतना के पदार्थों को आत्म ज्ञान की ओर केन्द्रित करता है।

योग शब्द का अर्थ- पाणिनी ने ‘योग’ शब्द की व्युत्पत्ति ‘युजिर् योगे’, ‘युज समाधो’ तथा ‘युज् संयमने’ इन तीन धातुओं से मानी है। प्रथम व्युत्पत्ति के अनुसार ‘योग’ शब्द का अनेक अर्थों में प्रयोग किया गया है, जैसे- जोड़ना, मिलाना, मेल आदि। इसी आधार पर जीवात्मा और परमात्मा का मिलन योग कहलाता है। इसी संयोग की अवस्था को “समाधि” की संज्ञा दी जाती है जो कि जीवात्मा और परमात्मा की समता होती है।

योग की परिभाषाएं

भारतीय दर्शन में योग विद्या का स्थान सर्वोपरि एवं विशेष है। भारतीय ग्रन्थों में अनेक स्थानों पर योग विद्या से सम्बन्धित ज्ञान भरा पड़ा है। वेदो, उपनिषदो, गीता एवं पुराणों आदि प्राचीन ग्रन्थों में योग शब्द वर्णित है। दर्शन में योग शब्द एक अति महत्त्वपूर्ण शब्द है जिसे अलग-अलग रूप में परिभाषित किया गया है।

योग सूत्र के प्रणेता महर्षि पतंजलि के अनुसार योग की परिभाषा

योगश्चित्तवृत्तिनिरोधः’ यो.सू.1/2

अर्थात् चित्त की वृत्तियों का निरोध करना ही योग है। चित्त का तात्पर्य, अन्तःकरण से है। बाह्यकरण ज्ञानेन्द्रियां जब विषयों का ग्रहण करती हैं, मन उस ज्ञान को आत्मा तक पहुँचाता है। आत्मा साक्षी भाव से देखता है। बुद्धि व अहंकार विषय का निश्चय करके उसमें कर्तव्य भाव लाते हैं। इस सम्पूर्ण क्रिया से चित्त में जो प्रतिबिम्ब बनता है, वही वृत्ति कहलाता है। यह चित्त का परिणाम है। चित्त दर्पण के समान है। अतः विषय उसमें आकर प्रतिबिम्बित होता है अर्थात् चित्त विषयाकार हो जाता है। इस चित्त को विषयाकार होने से रोकना ही योग है।

श्रीमद्भगवद्गीता में योगेश्वर श्रीकृष्ण के अनुसार योग

योगस्थः कुरु कर्माणि संगं त्यक्त्वा धनंजयः।

सिद्ध्यसिद्ध्योः समो भूत्वा समत्वं योग उच्यते॥ 2/48

अर्थात् - हे धनंजय! तू आसक्ति त्यागकर समत्व भाव से कार्य कर।

सिद्धि और असिद्धि में समता-बुद्धि से कार्य करना ही योग है। सुख-दुःख, जय-पराजय, शीतोष्ण आदि द्वन्द्वों में एकरस रहना योग है।

बुद्धियुक्तो जहातीह उभे सुकृतदुष्कृते।

तस्माधोग युज्यस्व योगः कर्मसुकौशलम्॥ 2/50

अर्थात् कर्मों में कुशलता में कुशलता ही योग है। कर्म इस कुशलता से किया जाए कि कर्म बन्धन न कर सके। अर्थात् अनासक्त भाव से कर्म करना ही योग है। क्योंकि अनासक्त भाव से किया गया कर्म संस्कार उत्पन्न न करने का कारण भावी जन्मादि का कारण नहीं बनता। कर्मों में कुशलता का अर्थ फल की इच्छा न रखते हुए कर्म का करना ही कर्मयोग है।

योग दर्शन के अनुसार शिक्षा के उद्देश्य

- योगाचार और आसन, प्राणायाम, प्रत्याहार, धारणा एवं ध्यान को शिक्षार्थी या साधक की दिनचर्या का सहज अंग बनाया जाये, जिससे शिक्षा व्यवस्था एवं प्रक्रिया का विकास हो सके।
- शिक्षार्थी का शारीरिक विकास करना।
- विद्यार्थी को अनुशासित बनाना।
- शिक्षार्थी के बुद्धि-विवेक का विकास करना।
- शिक्षार्थी के व्यक्तित्व का सर्वांगीण विकास करना।
- शिक्षार्थी को कैवल्यपाद (मोक्ष) को प्राप्त करने के लिए तत्पर बनाना।

शिक्षा व्यवस्था में योग से लाभ -

- जागरूकता का विकास करने में सहायक है।
- दृढ़ता व सृजनात्मक चेतना के विकास में सहायक है।
- सांवेगिक सन्तुलन शक्ति बढ़ती है।
- योग से विद्यार्थियों में ब्रम्हचर्य रक्षा में सहायक है।
- यह आत्म विश्वास को विकसित करने में सहायक है।
- योग रस, रक्त आदि शरीर की धातुओं की समुचित रूप से वृद्धि करने में सहायक है।
- मुद्राओं का अभ्यास विद्यार्थियों के लम्बे समय तक अध्ययन में बैठने लिए सहायक है।

- नैतिक और मूल्यों के विकास में सहायक है।
- आलस्य को दूर करने में सहायक है।
- मनोवैज्ञानिक क्षमताओं का विकास कर मानसिक तनाव दूर करने में सहायक है।
- विद्यार्थियों के स्वस्थ रहने की क्षमता बढ़ती है।
- शरीर और मन में सम्बन्ध स्थापित करने में सहायक है।
- विद्यार्थियों के मन को एकाग्र बनाने में सहायक है।
- चरित्र निर्माण, स्वाध्याय व स्वानुभूति में सहायक है।
- ऊर्जावान व उत्साहित बनाने में सहायक है।
- स्मरण शक्ति बढ़ती है।

महर्षि पतञ्जलि ने योग विद्या के रूप में ऐसी एक बेजोड़ संकटमोचक सीढ़ी प्रदान की है जिससे हम जीवन की ऊँचाइयों को प्राप्त कर सकते हैं। योग एक साधन है जिसके द्वारा हम स्वयं को सफलीभूत बना सकते हैं। यह साधारण एवं विद्वान दोनों प्रकार के मनुष्यों को परमात्मा से जोड़ने में सहायक है। वास्तविकता तो यह है कि योग हमें स्वस्थ शरीर, गहन विचारशीलता और परम आनंददायक ऊर्जा प्रदान करता है। यहीं समस्त उत्थानों का मूल स्रोत है और कभी न समाप्त होने वाला आध्यात्मिक आनन्द प्रदान करता है।

योग के निरंतर अभ्यास से सभी भ्रम जो मनुष्य के मस्तिष्क को घेरते हैं, भाग जाते हैं। यहाँ तक कि, शारीरिक बैठने, खड़ा होने एवं चलने आदि की मुद्राएँ जो स्थान विशेष या समय विशेष पर सर्वाधिक प्रचलित हैं, को भी योग माना जाता है और ये मुद्राएँ शरीर को स्वस्थ रखने में सक्षम हैं। आजकल योग का उपयोग नवीन चिकित्सा के रूप में कई प्रकार के रोगों से सफलतापूर्वक छुटकारा पाने के लिए विश्वभर में किया जाने लगा है। समस्त प्राचीन भारतीय साहित्य में योग विद्या पर गहरा चिंतन-अवलोकन प्राप्त होता है। हमारे महान संत, महात्माओं ने योग के निरन्तर अभ्यास और शिक्षण के द्वारा ही परिपूर्णता एवं असीम शक्तियाँ प्राप्त कीं। योग के महत्व को उजागर करते हुए उत्तर गीता में संदेश है कि योग से सामंजस्य बिठाकर मनुष्य रातोंरात में जन्मा के पापों से मुक्त हो सकता है।

उपसंहार

अतः व्यक्ति के चरित्र निर्माण में योग की सर्वोच्च भूमिका है। योग मनुष्यों में मनुष्यता के मूल्यों को जागृत करता है। योग के अभ्यास से कई प्रकार के भाव जैसे

क्षमा, दयाभाव, कृपालुता, ज्ञान एवं उदारता प्राकृतिक रूप से ही प्रस्फुलित होने लगती है। अतएव कोई भी शक्ति योग शक्ति के समान नहीं है और न ही योग से बढ़कर कोई मनुष्य का मित्र हो सकता है।

इसीलिए योग को भारतीय सभ्यता की भरी-पूरी सभ्यता कहा जाता है। योग का महत्व और उपयोग आधुनिक जगत में भी निरन्तर बढ़ रहा है। शिक्षा हमारे समाज में, जीवन का एक अभिन्न अंग है। पुरातन काल से ही हमारा भारतवर्ष विश्व को धार्मिक, साँस्कृतिक, आध्यात्मिक एवं शैक्षणिक विचार धाराएँ प्रदान करता आया है। दुर्भाग्य से पश्चिमी सभ्यता के अन्धाधुंध अनुशरण से भारत में धार्मिक-आध्यात्मिक और नैतिक शिक्षा का विलोप हो रहा है। हमारे पूर्वजों की भाँति, आधुनिक जगत के नेताओं को भी विद्यार्थियों के चँहमुखी विकास के लिए नैतिक शिक्षा एवं योग शिक्षा पर बल देना चाहिए। आधुनिक शिक्षा पद्धति में योग को सम्मिलित किए जाने की आवश्यकता है। योग विश्व के लिए उपयोगी है।

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Chapter-43

वर्तमान परिदृश्य में स्वदेशी शिक्षा की प्रासंगिकता

शालिनी मिश्रा

शोध छात्रा, शिक्षाशास्त्र विभाग, महात्मा गांधी काशी विद्यापीठ, वाराणसी, उ.प्र. (भारत)

सारांश

भारतीय ज्ञान परंपरा प्राचीन काल से ही ज्ञान और आध्यात्म में दुनिया में सर्वोच्च शिखर पर रहा है। यहां की शिक्षा व्यवस्था लौकिक तथा पारलौकिक दोनों ही दृष्टि में अति महत्वपूर्ण रही है। स्वदेशी ज्ञान प्रणाली के माध्यम से ही भारतीय सभी क्षेत्रों में अग्रणी भूमिका में दुनिया में रहे। यहां की समृद्ध विरासत ने ही बाहरी लोगों को आकर्षित किया। स्वदेशी शिक्षा व्यवस्था में सभी प्रकार की शिक्षा की व्यवस्था की जाती थी। छात्र गुरुकुल में रहकर आत्मनिर्भर बनकर बाहर निकलता था। गुरुकुल में धार्मिक, सांस्कृतिक, आध्यात्मिक, तकनीकी आदि की शिक्षा की व्यवस्था की जाती थी। वर्तमान में भी स्वदेशी ज्ञान प्रणाली भारतीय सांस्कृतिक और तकनीकी विरासत को सशक्त बनाने का प्रयास करती है। इस प्रणाली का मुख्य उद्देश्य स्वदेशी तकनीकी और ज्ञान का संरक्षण और प्रशिक्षण है, जिससे यह ज्ञान प्रणाली देश की आत्मनिर्भरता में सहायक हो सके। स्वदेशी विधि द्वारा भारतीय समाज में इस प्रणाली की महत्वपूर्णता, उसके लाभ, और सामाजिक-आर्थिक पहलुओं पर ध्यान केंद्रित कर सकता है। इस प्रणाली में उपयोग होने वाले स्थानीय तकनीकी ज्ञान ने विभिन्न क्षेत्रों में नई और स्वदेशी समाधानों की रचना की है। इसके माध्यम से उद्यमिता को प्रोत्साहित किया जा रहा है और नौकरी की दृष्टि से भी योगदान दे रहा है। स्थानीय तकनीकी ज्ञान का संरक्षण और उनका समुचित प्रशिक्षण देशवासियों को उच्च स्तर की नौकरियों के लिए तैयार करने में मदद कर रहा है। इसके साथ ही, स्वदेशी तकनीकी से उत्पन्न उत्पादों का अधिक प्रचार-प्रसार होने से देश की आर्थिक स्थिति में सुधार हो रहा है। इसलिए, स्वदेशी ज्ञान प्रणाली तकनीकी क्षेत्र में सहायक है और यह देश को नए ऊर्जावान, स्वास्थ्य सेवाएं, और नई तकनीकी उत्पादों में नेतृत्व करने में मदद कर रही है।

संकेत शब्द- वर्तमान परिदृश्य, भारतीय, स्वदेशी शिक्षा प्रणाली, प्रासंगिकता

प्रस्तावना

स्वदेशी शिक्षा वह शिक्षा प्रणाली है जो स्वदेशी ज्ञान, स्वदेशी मॉडल, स्वदेशी विधियों और स्वदेशी पाठ्यक्रम को पढ़ाने पर बल देती है। वर्तमान समय में स्वदेशी ज्ञान प्रणाली

पर बल दिया जा रहा है क्योंकि उपनिवेशवाद, वैश्वीकरण और आधुनिकता आदि की मांग के कारन स्वदेशी ज्ञान विलुप्त होने की कगार पर है। स्वदेशी ज्ञान प्रणाली विलुप्त होने से रोकने की दिशा में सरकार नई शिक्षा नीति 2020 में भारतीय ज्ञान परम्परा पर जोर दे रही है जिससे ये शिक्षा विलुप्त ना होकर फिर से प्रचलित हो जाये। जिसमे आधुनिकता के साथ प्राचीन शिक्षा की उपयोगिता को भी जान सके।

प्राचीन शिक्षा प्रणाली अद्वितीय ज्ञान और प्रज्ञा का प्रतीक रहा है। जिसमें ज्ञान और विज्ञान, लौकिक और पारलौकिक, कर्म और धर्म, तथा भोग और त्याग का अद्भुत समन्वय है। ऋग्वेद के समय से ही शिक्षा प्रणाली जीवन के नैतिक, भौतिक, आध्यात्मिक और बौद्धिक मूल्यों पर केन्द्रित होकर विनम्रता, सत्यता, अनुशासन, आत्मनिर्भरता और सभी के सम्मान जैसे मूल्यों पर जोर देती थी। वेदों में विद्या को मनुष्यता की श्रेष्ठता का आधार स्वीकार किया गया था (ऋग्वेद, 10/71/7) छात्रों को मानव, प्राणियों एवं प्रकृतिके मध्य संतुलन को बनाये रखना सीखाया जाता था। शिक्षण और सिखने के लिए वेद और उपनिषद के सिदान्तों का अनुपालन कराया जाता था, जिसमें व्यक्ति स्वयं, परिवार और समाज के कर्तव्यों को पूरा कर सके। इस प्रकार जीवन के सभी पक्ष इस प्रणाली में सम्मिलित थे।

भारतीय स्वदेशी ज्ञान प्रणाली ज्ञान का भंडार है जिसे भारत के लोगों द्वारा पीढ़ियों से विकसित और प्रसारित किया गया है। यह एक समग्र प्रणाली है जिसमें दर्शन, विज्ञान, गणित, चिकित्सा, कला, वास्तुकला और साहित्य सहित विषयों की एक विस्तृत शृंखला शामिल है। भारतीय ज्ञान प्रणाली वैदिक परंपरा में निहित है, जो दुनिया की सबसे पुरानी और सबसे प्रभावशाली बौद्धिक परंपराओं में से एक है। वेद प्राचीन संस्कृत ग्रंथों का एक संग्रह है जिसमें भजन, अनुष्ठान और दार्शनिक ग्रंथ शामिल हैं। उपनिषद, जो वैदिक परंपरा का हिस्सा हैं, वास्तविकता, चेतना और स्वयं की प्रकृति का पता लगाते हैं। भारतीय विज्ञान और गणित ने दुनिया में महत्वपूर्ण योगदान दिया है। भारतीय खगोलविदों और गणितज्ञों ने त्रिकोणमिति, कलन और बीजगणित के क्षेत्र में महत्वपूर्ण खोजें कीं। भारतीय चिकित्सा का एक लंबा और समृद्ध इतिहास है, और भारतीय चिकित्सकों ने कई प्रकार की बीमारियों के लिए प्रभावी उपचार विकसित किए हैं। भारतीय कला और वास्तुकला अपनी सुंदरता और जटिलता के लिए प्रसिद्ध हैं। भारतीय शास्त्रीय संगीत और नृत्य भी अत्यधिक विकसित और सम्मानित कला रूप हैं। भारतीय साहित्य समृद्ध और विविध है, और इसमें कविता, नाटक, कथा और गैर-काल्पनिक रचनाएँ शामिल हैं। भारतीय ज्ञान परम्परा भारत के लिए एक राष्ट्रीय निधि है क्योंकि यह सदियों से भारतीय लोगों के संचित ज्ञान का प्रतिनिधित्व करता है। इसने भारतीय संस्कृति और समाज को गहन तरीकों से आकार दिया है, और यह आधुनिक दुनिया के लिए प्रासंगिक बना हुआ है।

स्वदेशी ज्ञान प्रणाली की विभिन्न शाखाएं

वेद-ज्ञान का स्रोत-भारतीय ज्ञान का आधार वेद हैं, जो सबसे पुराने हिंदू धर्मग्रंथों का संकलन है। वे ऋग्वेद, यजुर्वेद, सामवेद और अथर्ववेद, चार मुख्य ग्रंथों से बने हैं जिनमें भजन, समारोह और दार्शनिक चर्चाएं भी शामिल हैं। वेद वह आधार हैं जिस पर प्राचीन भारत में ज्ञान की असंख्य शाखाएँ विकसित हुईं। वैदिक परंपरा में दर्शन, विज्ञान, गणित, चिकित्सा, कला, वास्तुकला और साहित्य सहित विषयों की एक विस्तृत श्रृंखला शामिल है।

उपनिषद: ज्ञान का सार-दार्शनिक लेखों का एक संग्रह जिसे उपनिषद के नाम से जाना जाता है, वास्तविकता की प्रकृति, स्वयं (आत्मन) और सर्वोच्च वास्तविकता (ब्रह्मण) का पता लगाता है। भारतीय दर्शन की नींव अस्तित्व के आध्यात्मिक और आध्यात्मिक पहलुओं में महत्वपूर्ण अंतर्दृष्टि प्रदान करती है।

सांख्य और योग मुक्ति के मार्ग- सांख्य के नाम से जाना जाने वाला दर्शन का द्वैतवादी विद्यालय पुरुष (चेतना) और प्रकृति (पदार्थ) के बीच विभाजन को परिभाषित करता है। यह ब्रह्मांड और स्वयं की प्रकृति की समझ प्रदान करता है। सांख्य का योग से गहरा संबंध है, जो आध्यात्मिक विकास के लिए संभावित तरीके प्रदान करता है। योग आसन (आसन), ध्यान, और अभ्यास के अन्य पहलू सभी पतंजलि के योग सूत्र में उल्लिखित हैं।

मीमांसा और धर्म अनुष्ठानों का विज्ञान-मीमांसा शब्द का अर्थ है किसी वास्तु के स्वरूप का यथार्थ वरण है। वेद के मुख्यतः दो भाग हैं: प्रथम भाग में “कर्मकांड” बताया गया है जिससे अधिकारी मनुष्य की प्रवर्ती होती है तथा द्वितीय भाग में “ज्ञान कांड” बताया गया है, जिसमें अधिकारी मनुष्य की निर्वर्ती होती है। मीमांसा एक दार्शनिक विद्यालय है जो अनुष्ठानों और वेदों की व्याख्या करने पर केंद्रित है। यह कर्म (गतिविधि) और धर्म (दायित्व या अच्छाई) की अवधारणाओं की पड़ताल करता है। पवित्र लेखों को समझने और व्याख्या करने के लिए, मीमांसा विद्वानों ने व्याख्याशास्त्र की रचना की है।

वर्तमान परिदृश्य में स्वदेशी ज्ञान प्रणाली की प्रासंगिकता

1. **योग और ध्यान की वैश्विक स्वीकृति-** योग और ध्यान अब दुनिया भर में व्यापक रूप से स्वीकार किए जाते हैं। ऐसा हाल के दशकों में हुआ है। दुनिया भर के शहरों में योग स्टूडियो, ध्यान केंद्र और स्वास्थ्य केंद्र हैं। ये प्रथाएं शरीर और दिमाग पर सकारात्मक प्रभाव के कारण सभी पृष्ठभूमि और संस्कृतियों के लोगों के बीच लोकप्रिय हैं। विज्ञान ने साबित कर दिया है कि योग और ध्यान प्रभावी हैं। अध्ययनों से पता चला है कि ये तकनीकें हृदय स्वास्थ्य में सुधार कर सकती हैं,

- रक्तचाप कम कर सकती हैं, तनाव कम कर सकती हैं, हृदय में रक्त के विकार को मिटा सकती हैं तथा हमें रोगमुक्त कर सकती हैं।
2. **शास्त्रीय नृत्य शैलियाँ**- भरतनाट्यम, ओडिसी, कथक और कुचिपुड़ी जटिल और उच्च शैली वाले भारतीय शास्त्रीय नृत्य शैलियों के कुछ उदाहरण हैं। वे रचनात्मक अभिव्यक्ति के अलावा कहानी कहने और आध्यात्मिक आदान-प्रदान के लिए मंच के रूप में भी काम करते हैं। ये नृत्य शैलियाँ अपनी कृपा और सुंदरता से दर्शकों को मंत्रमुग्ध करने से कभी नहीं चूकतीं।
 3. **शास्त्रीय संगीत**- अपने जटिल रागों और लय के साथ, भारतीय शास्त्रीय संगीत भाषा और संस्कृति दोनों से परे है। दक्षिण भारत का कर्नाटक संगीत और उत्तर भारत का हिंदुस्तानी संगीत इसकी दो मुख्य परंपराएँ हैं। इन संगीत परंपराओं को अभी भी जाने-माने कलाकारों और गुणी लोगों द्वारा नवीनीकृत और संरक्षित किया जा रहा है।
 4. भारतीय दर्शन हमें वास्तविकता और स्वयं की प्रकृति को समझने और नैतिक और नैतिक मूल्यों को विकसित करने में मदद कर सकता है।
 5. भारतीय विज्ञान और गणित का उपयोग इंजीनियरिंग, चिकित्सा और प्रौद्योगिकी जैसे क्षेत्रों में जटिल समस्याओं को हल करने के लिए किया जा सकता है।
 6. भारतीय साहित्य हमारा मनोरंजन, ज्ञानवर्धन और प्रेरणा दे सकता है।
 7. स्वदेशी ज्ञान प्रणाली एक राष्ट्रीय निधि भी है क्योंकि यह आधुनिक दुनिया में प्रासंगिक है। यह हमें बेहतर और अधिक संतुष्टिदायक जीवन जीने के बारे में अंतर्दृष्टि प्रदान कर सकता है। उदाहरण के लिए, भारतीय दर्शन हमें वास्तविकता और स्वयं की प्रकृति को समझने और नैतिक और नैतिक मूल्यों को विकसित करने में मदद कर सकता है।
 8. भारतीय वास्तुकला का उपयोग, इंजीनियरिंग, चिकित्सा और प्रौद्योगिकी जैसे क्षेत्रों में जटिल समस्याओं को हल करने के लिए उपयोग किया जाता है। भारतीय कला और वास्तुकला हमें नई और सुंदर चीजें बनाने के लिए प्रेरित कर सकती है। भारतीय साहित्य हमारा मनोरंजन, ज्ञानवर्धन और प्रेरणा दे सकता है।
 9. भारतीय ध्यान तकनीकों का उपयोग सभी धर्मों के लोग तनाव कम करने और एकाग्रता में सुधार के लिए करते हैं।
 10. भारतीय आयुर्वेदिक चिकित्सा स्वास्थ्य और कल्याण के लिए एक प्राकृतिक और समग्र दृष्टिकोण के रूप में लोकप्रियता हासिल कर रही है।

11. शून्य और दशमलव प्रणाली जैसी भारतीय गणितीय अवधारणाएँ अब पूरी दुनिया में उपयोग की जाती हैं।
12. भारतीय खगोलीय खोजें, जैसे विषुव की पूर्वता, का अध्ययन आज भी वैज्ञानिकों द्वारा किया जाता है।
13. भारतीय साहित्य, जैसे रामायण और महाभारत, आज भी सभी उम्र के लोगों द्वारा पढ़े और पढाये जाते हैं। भारतीय महाकाव्य पढ़ने और चिंतन करने से आध्यत्मिक विकास होता है।
14. संस्कृति और भारतीय मूल्यों का समर्थन- शिक्षा को भारतीय संस्कृति और मूल्यों के साथ जोड़कर बनाए रखना, ताकि छात्र अपनी परंपरागत भूमिका और सांस्कृतिक पहचान को समझ सकें।
15. **अद्भुत शिक्षा तंत्र-** नवीनतम शिक्षा तंत्रों का उपयोग करके छात्रों को अद्भुत शिक्षा प्रदान करना, जिससे वे विज्ञान, गणित, कला, और भूगोल में महारत हासिल कर सकें।
16. समृद्धि की साधना के लिए उदार शिक्षा- छात्रों को व्यापारिक और सामाजिक समृद्धि की दिशा में अच्छी शिक्षा प्रदान करना, जिससे वे समृद्धि की दिशा में योजना बना सकें।
17. **सामाजिक सामंजस्यभाव और जिम्मेदारी-** छात्रों को सामाजिक सामंजस्यभाव, आत्म-प्रगल्भता, और जिम्मेदारी के साथ शिक्षित करना, ताकि वे समाज में सकारात्मक योगदान कर सकें।

उपरोक्त के अलावा, भारतीय ज्ञान प्रणाली इसलिए भी महत्वपूर्ण है क्योंकि यह-विश्व पर एक अद्वितीय परिप्रेक्ष्य प्रदान करता है: भारतीय शिक्षा प्रणाली एक समग्र विश्वदृष्टिकोण पर आधारित है जिसमें भौतिक और आध्यात्मिक दोनों क्षेत्र शामिल हैं। यह हमें खुद को और अपने आस-पास की दुनिया को अधिक गहराई से समझने का एक तरीका प्रदान करता है।

जीवन का एक स्थायी तरीका प्रदान करता है: स्वदेशी शिक्षा प्रणाली प्रकृति की गहरी समझ और सभी जीवित चीजों के अंतर्संबंध पर आधारित है। यह प्रकृति के साथ सद्भाव में रहने और संसाधनों का निरंतर उपयोग करने के महत्व पर जोर देता है।

विविधता और समावेशन को बढ़ावा देता है: स्वदेशी ज्ञान प्रणाली भारत की विविध संस्कृतियों और परंपराओं का एक उत्पाद है। यह सभी संस्कृतियों और धर्मों का सम्मान करता है, और यह सभी लोगों के योगदान को महत्व देता है।

भारतीय पारंपरिक ज्ञान प्रणाली की मुख्य विशेषताएं हैं

समग्र दृष्टिकोण- भारतीय पारंपरिक ज्ञान प्रणाली का समग्र दृष्टिकोण इसकी सबसे महत्वपूर्ण विशेषताओं में से एक है। यह इस विश्वास पर आधारित है कि दुनिया एक दूसरे से जुड़ी हुई है और हर चीज एक दूसरे पर निर्भर है। यह दृष्टिकोण स्वदेशी ज्ञान प्रणाली के सभी पहलुओं में परिलक्षित होता है, इसकी चिकित्सा से लेकर इसकी कृषि और इसकी संस्कृति तक।

सामाजिक सद्भाव- स्वदेशी ज्ञान प्रणाली का समग्र दृष्टिकोण भी अधिक सामाजिक सद्भाव को जन्म दे सकता है। हमें सभी चराचर जगत में मनुष्य से पशु सभी का सम्मान करना चाहिए तथा मनुष्यों को सरल और नैतिक जीवन जीना सिखाकर, हम एक अधिक न्यायपूर्ण और न्यायसंगत समाज का निर्माण कर सकते हैं। समग्र दृष्टिकोण संपूर्ण मानवता के लिए एक मूल्यवान संसाधन है। यह हमें बेहतर और अधिक संतुष्टिदायक जीवन जीने की अंतर्दृष्टि प्रदान करता है। यह नई प्रौद्योगिकियों के विकास और वैश्विक चुनौतियों के समाधान के लिए प्रेरणा का स्रोत बन सकता है।

छात्रों में नैतिकता का विकास ख स्वदेशी ज्ञान प्रणाली नैतिकता और सदाचार पर जोर देती है। यह भारतीय ज्ञान परंपरा के सभी पहलुओं में परिलक्षित होता है, इसकी चिकित्सा से लेकर इसकी कृषि और इसकी संस्कृति तक। भारतीय ज्ञान परम्परा के प्रमुख नैतिक सिद्धांतों में से एक अहिंसा है।

चरित्र का निर्माण - गुरुओं की चरित्र एवं आचरण पद्धति ही शिष्यों के चरित्र संरक्षण का प्रथम पाठ था। विद्यार्थियों में विभिन्न प्रकार से चरित्र विकास किया जाता था। शिक्षा व्यवस्था का उद्देश्य न केवल व्यक्ति का बौद्धिक विकास करना था बल्कि प्रकृति प्रदत्त समस्त शक्तियों का विकास करना था। गुरुकुल का कार्य चरित्र निर्माण के माध्यम से राष्ट्र के लिए आदर्श नागरिक तैयार करना था।

व्यक्तित्व विकास - गुरु की दृष्टि में प्रत्येक विद्यार्थी समान था। शिक्षा वाद-विवाद, प्रश्न-उत्तर, विचार-विमर्श के माध्यम से दी जाती थी, जिससे एक प्रकार से व्यक्तित्व निर्माण में सहायता मिलती थी। आंतरिक शक्ति को विकसित करने, आत्मविश्वास को मजबूत करने, न्याय की भावना पैदा करने, आत्म-सम्मान, त्याग की भावना पैदा करने के लिए गुरुकुल की दैनिक गतिविधियाँ, जिसके माध्यम से व्यक्तित्व का निर्माण होता है।

सामाजिक उत्तरदायित्व का विकास- वैदिक शिक्षा का उद्देश्य न केवल छात्र में आध्यात्मिक भावना का विकास करना था, बल्कि 'भविष्य के जीवन को सुखी और समृद्ध बनाने के लिए सामाजिक कार्य कौशल प्रदान करके एक उपयोगी प्रणाली का निर्माण करना था। शिक्षा प्रदान करने की प्रणाली थी उस समय यह छात्रों को भावी

जीवन के लिए तैयार करता है। संस्कृति का विकास और प्रसार वैदिक शिक्षा का एक महत्वपूर्ण उद्देश्य था। यह एक प्राचीन परंपरा है। इन परंपराओं, मूल्यों, नैतिकता, संस्कृति और कलाओं को संरक्षित करना और उन्हें अगले तक पहुंचाना पीढ़ी, वेदों के अध्ययन, भोजन की आदतों, दैनिक रूटिंग कार्य के बारे में सख्त नियम हैं, यही कारण है कि यह भारतीय संस्कृति को संरक्षित करने में मदद करता है।

विविधता का सम्मान- भारतीय ज्ञान प्रणाली की विशेषता विविधता के प्रति सम्मान है। यह विविधता भारत को बनाने वाली संस्कृतियों, धर्मों और भाषाओं की विस्तृत श्रृंखला में परिलक्षित होती है। यह स्वयं भारतीय ज्ञान की विविधता में भी परिलक्षित होता है, जिसमें स्वदेशी समुदायों, वैदिक परंपरा और विचार के अन्य दार्शनिक विद्यालयों सहित विभिन्न स्रोतों से ज्ञान को प्रकाशित करती है।

रचनात्मकता में वृद्धि- जब अलग-अलग पृष्ठभूमि के लोग एक साथ आते हैं, तो वे अपने साथ अलग-अलग दृष्टिकोण और विचार लेकर आते हैं। इससे नवप्रवर्तन और रचनात्मकता में वृद्धि हो सकती है। उदाहरण के लिए, पारंपरिक भारतीय चिकित्सा प्रणालियों ने स्वदेशी समुदायों और अरब दुनिया सहित विभिन्न संस्कृतियों के ज्ञान और प्रथाओं को शामिल किया है, जिससे विभिन्न प्रकार की बीमारियों के लिए नए और प्रभावी उपचार का विकास हुआ है।

मूल्यों का विकास - स्वदेशी ज्ञान प्रणाली में छात्रों के अंदर नैतिक मूल्य विकसित करने की बात कही गयी है जिसमें सत्य, अहिंसा, ईमानदारी आदि मूल्य विकसित किये जाये। सदाचारी जीवन जीने के लिए सत्य आवश्यक है। यह मूल्य जीवन के सभी पहलुओं में ईमानदारी और सत्य के साथ जीवन जीने को प्रेरित करती है।

भारतीय ज्ञान परंपरा को लागू करने की चुनौतियां

1. **तकनीकी समृद्धि और संरक्षण:** ज्ञान परंपरा को सुरक्षित रखते हुए भी, तकनीकी समृद्धि के साथ संरक्षण साधारित करना चुनौतीपूर्ण है। आधुनिकता के साथ अपने सांस्कृतिक मूल्यों को संरक्षित रखना महत्वपूर्ण है।
2. **भाषा का संरक्षण:** भारतीय ज्ञान का महत्वपूर्ण हिस्सा भाषा है। लोकल भाषाओं को संरक्षित करना और उन्हें आधुनिकता से मिलाना मुश्किल हो सकता है।
3. **शिक्षा का उन्नतिकरण:** भारतीय ज्ञान परंपरा को बच्चों और युवा पीढ़ी के साथ साझा करने के लिए शिक्षा के क्षेत्र में उन्नतिकरण की आवश्यकता है।
4. **अंतरजातीय संबंधों की सुरक्षा:** जबकि सांस्कृतिक संबंध बढ़ावा देते हैं, इसे दुनिया भर में सुरक्षित रखना और बढ़ाना भी चुनौतीपूर्ण है।

5. **धार्मिक सहजीवन और मौखिक परंपरा:** धार्मिक सहजीवन के माध्यम से ज्ञान परंपरा को बनाए रखना और मौखिक परंपरा को बचाए रखना भी चुनौतीपूर्ण है।
6. **सांस्कृतिक स्थानीयता का समर्थन:** भारतीय सांस्कृतिक समृद्धि को स्थानीय स्तर पर समर्थन करना और बढ़ावा देना भी महत्वपूर्ण है।
7. **युवा पीढ़ी का समर्थन:** युवा पीढ़ी को अपनी धरोहर के प्रति समर्पित रखने के लिए समर्थन प्रदान करना और उन्हें ज्ञान के महत्व का आदर्श दिखाना अत्यंत महत्वपूर्ण है।
8. **स्वदेशी ज्ञान प्रणाली के बारे में जागरूकता और समझ की कमी:** कॉलेज प्रशासकों और संकाय सहित कई लोगों को भारतीय ज्ञान या इसके महत्व के बारे में जानकारी नहीं है। जागरूकता और समझ की कमी के कारण कॉलेजों में स्वदेशी ज्ञान को लागू करना मुश्किल हो सकता है।
9. **संसाधनों की कमी:** स्वदेशी ज्ञान प्रणाली अक्सर अलिखित होता है और पीढ़ी-दर-पीढ़ी मौखिक रूप से पारित होता रहता है। इससे कॉलेजों में स्वदेशी ज्ञान आधारित पाठ्यक्रमों और कार्यक्रमों को विकसित करना और लागू करना मुश्किल हो जाता है। इसके अतिरिक्त, भारत में स्वदेशी शिक्षा के अनुसंधान और शिक्षा के लिए धन की कमी है।
10. **परिवर्तन का विरोध:** कुछ लोग कॉलेजों में स्वदेशी ज्ञान को लागू करने के विचार के प्रति प्रतिरोधी हो सकते हैं। वे स्वदेशी ज्ञान प्रणाली को पुराना या अप्रासंगिक मान सकते हैं।
11. **औपनिवेशिक विरासत:** भारत में ब्रिटिश औपनिवेशिक शिक्षा प्रणाली को भारतीय ज्ञान प्रणालियों को पश्चिमी ज्ञान प्रणालियों से बदलने के लिए डिजाइन किया गया था। इस विरासत ने भारतीय शिक्षा प्रणाली में स्वदेशी ज्ञान के प्रति पूर्वाग्रह पैदा कर दिया है।
12. **पश्चिमी ज्ञान प्रणालियों पर ध्यान:** भारतीय शिक्षा प्रणाली अभी भी काफी हद तक पश्चिमी ज्ञान प्रणालियों पर केंद्रित है।
13. **योग्य फैकल्टी की कमी:** कॉलेजों में स्वदेशी शिक्षा पाठ्यक्रम पढ़ाने के लिए योग्य फैकल्टी की कमी है। ऐसा इसलिए है क्योंकि स्वदेशी ज्ञान को व्यापक रूप से नहीं पढ़ाया जाता है।
14. **पाठ्यक्रम और शिक्षाशास्त्र में स्वदेशी ज्ञान को शामिल करने का समर्थन करने वाली शिक्षा नीतियों की समीक्षा करने के लिए सरकार की प्रतिबद्धता की कमी है।**

नई राष्ट्रीय शिक्षा नीति, 2020 में स्वदेशी ज्ञान प्रणालियों का उल्लेख

भारत के केंद्रीय मंत्रिमंडल ने 29 जुलाई 2020 को नई राष्ट्रीय शिक्षा नीति (एनईपी), 2020 को मंजूरी दे दी, जिसका उद्देश्य भारतीय शिक्षा में विभिन्न सुधारों को शुरू करते हुए भारत की शिक्षा प्रणाली की नई दिशाओं की रूपरेखा तैयार करना है। राष्ट्रीय शिक्षा नीति 2020 का लक्ष्य भारत को एक वैश्विक ज्ञान महाशक्ति बनाना है। यह नीति एक नई प्रणाली बनाने के लिए इसके विनियमन और प्रबंधन सहित शिक्षा प्रणाली के सभी पहलुओं की समीक्षा, पुनर्निर्माण और पुनर्गठन का प्रस्ताव करती है, जो भारतीय संस्कृति और मूल्य प्रणाली के अनुसार विकसित होते हुए 21वीं सदी की शिक्षा के लक्ष्यों को प्राप्त करती है। ज्ञान, प्रज्ञा और सत्य की खोज को हमेशा भारतीय विचार में मानवता के सर्वोच्च लक्ष्य के रूप में माना जाता था।

प्राचीन काल में शिक्षा का उद्देश्य न केवल ज्ञान प्राप्त करना और सांसारिक जीवन के लिए तैयारी करना था, बल्कि स्वयं की पूर्ण प्राप्ति और मुक्ति भी था। भारतीय शिक्षा प्रणालियों ने, वराहमिहिर, भास्कराचार्य, ब्रह्मगुप्त, चरक, सुश्रुत, आर्यभट्ट चाणक्य, पाणिनि, पतंजलि, नागार्जुन, पाणिनि जैसे कई प्रसिद्ध दार्शनिकों को जन्म दिया, जिन्होंने विभिन्न क्षेत्रों में विश्व ज्ञान में अग्रणी योगदान दिया। गणित, खगोल विज्ञान, सिविल इंजीनियरिंग, वास्तुकला, चिकित्सा विज्ञान और सर्जरी, जहाज निर्माण और नेविगेशन, ललित कला, योग, शतरंज और भी बहुत कुछ। इस विश्व धरोहर संपदा को न केवल विकसित किया जाना चाहिए और भावी पीढ़ी को हस्तांतरित किया जाना चाहिए, बल्कि बेहतर शिक्षा के लाभ के लिए कई तरीकों से शोध, विकास और उपयोग भी किया जाना चाहिए।

संपूर्ण शिक्षा प्रणाली का मार्गदर्शन करने वाले मूलभूत सिद्धांतों में नैतिक, मानवीय और मानवतावादी सुनिश्चित करने के लिए शिक्षकों और अभिभावकों के ज्ञान के माध्यम से छात्रों के समग्र विकास को बढ़ावा देने के लिए शिक्षकों और अभिभावकों को संवेदनशील बनाकर प्रत्येक छात्र की अद्वितीय क्षमता को पहचानना, समर्थन करना शामिल है। नई शिक्षा नीति, 2020 ने हमारे प्राचीन और कालातीत भारतीय ज्ञान की समृद्ध विरासत को मान्यता दी है और इसे भविष्य की शिक्षा नीति के लिए मार्गदर्शक सिद्धांत माना गया है।

निष्कर्ष

स्वदेशी ज्ञान प्रणाली एक विशाल और मूल्यवान संसाधन है। यह हमें प्रकृति के साथ सतत और सामंजस्यपूर्ण ढंग से रहने की अंतर्दृष्टि प्रदान करता है। यह हमें एक समृद्ध सांस्कृतिक विरासत भी प्रदान करता है। हमें भावी पीढ़ियों के लिए यह ज्ञान संजोकर तथा प्रचार-प्रसार करने की आवश्यकता है।

राष्ट्रीय शिक्षा नीति 2020 के अनुसार, भारत की विशाल भाषाई, सांस्कृतिक और रचनात्मक विरासत इसकी शैक्षिक प्रणाली के डिजाइन में दिखाई देगी। भारतीय कला और संस्कृति को बढ़ावा देने के लिए भारतीय कलाओं को मुख्य पाठ्यक्रम में प्रभावी ढंग से शामिल किया जा सकता है, जो कि बहुत महत्वपूर्ण माना जा रहा है। इससे न केवल बच्चों में पहचान की मजबूत समझ और सौंदर्य संबंधी दृष्टिकोण विकसित करने में मदद मिलेगी बल्कि उनकी रचनात्मक और संज्ञानात्मक क्षमताओं में भी सुधार होगा। साथ ही, भारतीय ज्ञान एक मूल्यवान संपत्ति है जो भारत में शिक्षा की गुणवत्ता और प्रासंगिकता को बढ़ा सकती है। भारतीय ज्ञान प्रणाली को शिक्षा में शामिल करके, शिक्षक छात्रों को एक सांस्कृतिक पहचान और आत्म-सम्मान विकसित करने में मदद कर सकते हैं जो उनकी विरासत में निहित है और उनकी आकांक्षाओं के अनुरूप है। भारतीय ज्ञान के द्वारा छात्रों को ज्ञान और कौशल से भी लैस कर सकता है जो उन्हें बड़े पैमाने पर समाज और मानवता के लिए सकारात्मक योगदान देने में सक्षम बना सकता है।

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