Impact of Indian Knowledge System across Domains and NPE 2020: A Critical Analysis

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Abstract— The New Education Policy of 2020 was designed to revolutionize Indian education through holistic student growth. The system expansion framework delivers an inclusive approach to develop the education sector through a unified strategy. NEP includes the prominent educational component of Indian Knowledge System (IKS). India's Indian Knowledge System includes multitude heritage knowledge about various domains spanning science and technology along with literature, philosophy, culture, medicine (ayurveda) and yoga. Crossovers between inter-disciplinary and trans-disciplinary learning models allow NEP to fuse modern knowledge with Indian Knowledge System content for dealing with current and future issues. Throughout the ages the IKS has collected knowledge assets starting from pre-historic times until today. NEP supports technological developments which create language platforms to facilitate IKS because the curriculum acknowledges IKS as an essential means for knowledge dissemination. investigates the profound impact of the Indian Knowledge System (IKS) across diverse domains, ranging from science and technology to healthcare, agriculture, and spirituality. By exploring the historical roots and contemporary relevance of IKS, the study aims to shed light on how traditional Indian wisdom has influenced and continues to shape various facets of modern society. The research underscores the significance of preserving and integrating this rich knowledge heritage for holistic development and cross-cultural understanding.

This combination between IKS and NEP serves to clarify modern-day societal problems while conducting research into these issues. This approach will help various stakeholders develop a deep comprehension of diverse indigenous knowledge systems through modern technological support that revitalizes traditional knowledge bases.

Keywords—Indian Knowledge System (IKS); Traditional Wisdom; Science and Technology; Agriculture; Healthcare; Holistic Development; Contemporary Knowledge, Interdisciplinary Knowledge.

I. INTRODUCTION

India stands as a nation possessing an ancient civilizational heritage together with historically significant practices that all human societies understand. The country has acquired certain knowledge during its historical duration. This historical information remained stored on palm leaves as an oral transmission method between succeeding generations. The traditional knowledge transformation process underwent sudden transitional changes which resulted in the loss of indigenous knowledge. The newly established education framework has attempted to distribute this information to society in accordance with their demands. The three components of Indian Knowledge System (IKS) include Indian, Knowledge and System. The traditional knowledge system-based network of systems through the Indian subcontinent serves as a primary foundation that supports its cultural development along with scientific advancement and social infrastructure (Mahadevan & Bhat, 2022; Rawat & Nagar, 2021).

1 Indian: The phrase describes Akhanda Bharata which means an undivided territory of the Indian subcontinent. From Burma on the east extends the territory which includes modern-day Afghanistan on the west to the north by the Himalayas and the south by the Indian Ocean.

Modern-day Afghanistan on the west, the Himalayas on the north, and the Indian Ocean on the south. When Panini authored Sanskrit grammar, he learned at Takshashila University of ancient India which currently exists in Punjab Pakistan while Chanakya established the Mauran Empire. The Indian educational tradition taught eighteen Vidya Sthanas through its famous teaching centers Nalanda and Takshashila. The worldwide recognition of India emerged from the achievements the country made across Art, Architecture, Science, Technology, Craft, Engineering, Philosophy and Practices. The majority of foreigners pursuing knowledge in India passed

their acquired education to both Western societies and around the world. This is a part of IKS.

1.2 Knowledge: Knowledge exists within the wisdom obtained by those who seek knowledge but consists of unexpressed expertise. It is gained by insights into People achieve knowledge as they observe situations while facing real-life problems and finding solutions. Knowledge appears both within literary materials and in every other non-literary form. Explicit knowledge transfers by means of theoretical proposals as well as framework development and literary works.

1.3. System: System represents an ordered method and classification system which enables users to access information within a body of knowledge. The scheme of classification stems from three key factors: knowledge seeker needs, interest and capacity which enables their access to inherent knowledge. They will receive complete understanding through effective knowledge components which form a logical connection between each other.

1.4 Ancient Texts: The collective writings of ancient India that include Vedas and Upanishads with Bhagavad Gita among others make up a diverse collection of texts about literature religion history philosophy and teachings. Three are some keys word -Spiritual Wisdom, Ethical Conduct, Dharama, Karma, Detachment, Yoga and Meditation. These texts provide important learning points that we can examine.

a) Spiritual Wisdom: The ancient Indian texts present profound knowledge about spiritual wisdom while revealing understanding about the nature of existence together with self-knowledge and the universal nature.

The paths toward spiritual fulfilment consist of self-awareness and mindfulness with inner peace being the ultimate target according to these texts.

b) Ethical Conduct: The Mahabharata and Ramayana among various Indian texts emphasize ethical conduct together with righteous behavior.

The texts both Ramayana and Mahabharata emphasize that ethical behavior together with righteous principles play essential roles behavior. These texts emphasize four essential virtues that consist of honesty alongside integrity alongside compassion along with respect toward others.

c) Dharma: The religious belief of dharma functions as both duty and righteousness throughout Indian sacred texts. Through its definition of Dharma the text explains that moral and social obligations are essential toward fulfilling purposes with authenticity and commitment.

d) Karma: The religious belief of dharma functions as both duty and righteousness throughout Indian sacred texts. Through its definition of Dharma the text explains that moral and social obligations are essential toward fulfilling purposes with authenticity and commitment.

e) Detachment: The religious belief of dharma functions as both duty and righteousness throughout Indian sacred texts. Through its definition of Dharma the text explains that moral and social obligations are essential toward fulfilling purposes with authenticity and commitment.

f) Unity in Diversity: Indian sacred writings honor both the many ways that humans relate to the world while recognizing each living thing closely affect others. They advocate for Indian texts make a call for tolerance combined with acceptance and understanding among cultures along with religious groups and social backgrounds.

h) Importance of Knowledge: Both spiritual and worldly knowledge have equal prominence throughout the Indian written texts because knowledge pursuit holds central value.

They pursuit of enlightenment requires formal education combined with mental improvement and perpetual learning for obtaining both spiritual enlightenment and personal development. i) Renunciation and Service:

j) The Impermanence of Life: Literary works from India demonstrate to readers that our time here is brief before everything changes thus we should practice remaining steady while detached to life's unpredictable turns. People should practice emotional detachment and inner peace to handle the continuous changes life brings.

These texts provide invaluable insights into the cultures, beliefs, and philosophies of ancient civilizations and continue to influence modern thought and culture.

1.5 IKS on Science and Technology: The Indian knowledge system made deep contributions to mathematics and science by establishing important scientific fields which expanded knowledge for multiple fields of study for like as -number system, Trigonometry, Algebra, Geometry, Astronomy.

a) Number System: The Number System developed by them marked a revolutionary moment in worldwide mathematics through their creation of decimal representation together with zero symbolism. Indian mathematicians achieved noteworthy progress in arithmetic as well as algebra and geometry fields.

b) Geometry: The Sulba Sutras, ancient Indian texts dating back to around New scientific ideas related to altar construction appeared in the Sulba Sutras between 800-500 BCE. altars used in Vedic rituals. Indian mathematicians also made contributions to geometric concepts such as area, volume, and the Pythagorean theorem.

c) Astronomers: Indian astronomers made significant observational achievements by accurately forecasting astronomical occurrences and making precise calculations of celestial positions. Their mathematical models were successful in explaining both planetary movements and eclipses.

e) Medicine: The Indian knowledge system derives from ancient books like the Charaka Samhita and the Sushruta Samhita that explain medical and anatomical knowledge thoroughly. Indian medical practitioners established fundamental advances in medical science by creating new surgical procedures as well as herbal medicines and diagnostic examination tools.

f) Metallurgy: Metallurgy skills which involved metal extraction along with refinement reached high levels among ancient Indian people. They mastered the processing of iron while achieving expertise in copper and bronze techniques and gold extraction. The indigenous population perfected techniques for metal alloying and created complex metal artwork through casting methods.

1.6 Ancient Indian Vastu on Contemporary Architectural Practices: The Indian knowledge system has substantially influenced architecture and built structures through its profound architectural achievements [1]. The built environment experienced several significant contributions because of the Indian knowledge system. Vastu Shastra, Temple Architecture, Stupa and Chaitya Architecture, Urban Planning.

a) Vastu Shastra: As an ancient Indian architectural tradition Vastu Shastra conducts principles of design alongside layout architecture and space planning and spatial geometry. The architectural system uses natural elements and sacred geometric forms to build structures which result in prosperous living environments.

b) Temple Architecture: Indian temple architecture manifests complex decorative elements with strict mathematical designs as well as religious sacred symbolism. Temples are The builders establish these architectural spaces as holy grounds to support religious sanctuary. Different regions of India employ different temple architectural styles such as Dravidian, Nagara and Vesara styles.

c) Stupa and Chaitya Architecture: Buddhist architectural structures known as stupas and chaityas started their origins from ancient Indian territory. Stupas are dome-shaped structures containing sacred objects function as stupas yet different from the prayer halls known as chaityas. The Buddhist philosophical essence of mindfulness and spiritual contemplation together with simplicity characterizes these architectural structures.

1.7 IKS in Agriculture and Sustainable Practices: The Indian knowledge system made enduring contributions to sustainable farming methods including sustainable agriculture and environmental protection and community stability. The impact of Indian knowledge system on agriculture contains these essential components:

a) Traditional Farming Practices: Through centuries India has maintained a well-known traditional farming system which unites nature conservation with responsible land stewardship. Sustainable land management. Soil health and biodiversity together with pest and disease resistance can be achieved through traditional farming strategies which include organic farming and crop rotation and intercropping and agro forestry. sustainable land management. Soil health and biodiversity, along with pest and disease resistance, can be achieved through traditional farming strategies, such as organic farming, crop rotation, intercropping, and agroforestry.

b) Water Management: Indian farmers use advanced water management strategies to deal with the problems of unreliable precipitation and inadequate water supply. Rainwater harvesting and check dams and canal irrigation together form traditional water distribution methods that enhance water efficiency and decrease agricultural groundwater dependence.

c) Crop Diversity: The agricultural sector in India features diverse crop varieties which adapt to its various climatic regions and ecological zones. Traditional crops and higher yielding modern crops are grown by farmers in India to protect their gene pool and protect their fields from environmental threats and their specific environment.

1.8: IKS in Healthcare and Holistic Well-being: Indian knowledge system relies on Ayurveda practices along with yoga and meditation and native healing approaches to define healthcare and complete wellness [5]. The following outlines how Indian knowledge shaping healthcare as well as holistic well-being:

a) Ayurveda: Recognized as the "science of life" Ayurveda survives as one of the ancient holistic healing methods in existence. The health system of Ayurveda employs individualized care to achieve mental and physical balance across all three aspects of the human being by utilizing dietary choices and life practices together with herbal remedies and traditional therapies. The healthcare practices in India and across various nations follow Ayurvedic principles which include dosha theories alongside natural habitat preservation methods.

b) Yoga and Meditation: The Indian knowledge system identifies Yoga and meditation as essential elements which develop physical along with mental and spiritual wellbeing. Well-Being Yoga involves various disciplines, such as postures (asanas), breath control (pranayama), and meditation (dhyana), that aid in the advancement of flexibility and strength while also promoting mindfulness and relaxation.

c) Mind-Body Connection: According to Indian traditions of healing the essential elements of mind body and spirit function together to support health and wellness.

well-being Meditation alongside pranayama and mindfulness practices enable people to develop understanding of their psychological states which helps them improve emotional strength and healing that originates from the mind-body connection.

d) Herbal Medicine: In the context of traditional herbal medicine, thousands of medicinal plants serve as important therapeutic and preventative instruments in Indian healthcare. The formulation of customized herbal treatments for various health issues by Ayurvedic pharmacology depends on studying complete plant characteristics such as flavors and strength and vital energy aspects.

1.4. IKS Division: In October 2020 the AICTE headquarters established the new IKS division under the Ministry of Education (MoE). The knowledge repository contains 29 research centers of IKS alongside 17 Teacher Training Centers and 7 Bhasha Kendra institutions of IKS. The interdisciplinary research centers act as repositories for knowledge they will distribute both for additional societal use and academic research. IKS Teacher Training Centers will teach instructors about indigenous knowledge together with their mandatory training to handle traditional history at IKS Bhasha Kendras which serve as sites to advance linguistic and literary knowledge. These centers need to preserve endangered languages and their collective knowledge to help revitalize both components which can consequently transform the country. ("Indian Knowledge Systems (IKS)", n.d.).

Challenges of the Indian Knowledge System: The development of globalization initiated a competition to transform traditional educational systems into global standards through modern educational reforms. A major transformation affects both educational teaching methods alongside curriculum delivery and the languages in which instruction takes place. The social framework of our society underwent significant progress because of these developments (Sharma and Joshi, 2018). The transformation has resulted in social imperialism together with cultural imperialism. The process of cultural domination operates when countries with high social standing control social systems along with cultural expressions of societies possessing lower social standing (Coleman, 2010). Our educational system which originated from Macaulay continues to exist in its original form despite having no changes. Modern vast information systems together with our continued use of this education system have eliminated our culturally rooted heritage and knowledge systems. Our loss of traditional farming

practices created stress on food security, nutritional quality and general agricultural progress. Many scholars have determined that the world undergoes extensive intellectual industrial demotion. Our Indian Knowledge System includes more than 7000 medicinal plant types together with over 15,000 different herbal formulations. The system has gained great recognition due to its attractiveness but researchers now focus on both biopiracy and foreign or domestic patent protection. The incorrect ownership becomes more prominent because of this (Ghosh, 2015). Society divides into two groups regarding their preference between indigenous cultural ways of life and modern mainstream living standards.

NEP and IKS Inclusion: The NEP 2020 specifies that IKS education should become part of school curricula while implementing it through scientific methods. IKS combined with tribal knowledge will become part of mathematical education and engineering education and philosophy education and yoga education and medical education and athletic education and game education as well as education about literature and languages and more fields of knowledge. Specific tribal ethnomedicinal practice courses and forest management programs and organic farming and natural agricultural instruction form the core elements of NEP. The National Education Policy introduces IKS as an alternative course selection in secondary education institutions. The delivery method depends on modern technologies paired with fun games as well as cultural exchange activities between states. NEP supports multiple languages while the IKS repository contains various languages. Student education under NEP will utilize their native languages with Sanskrit being taught as the most ancient language to all students. The experience of studying multiple languages will reveal to them the extensive and diverse cultural heritage of the country. As part of the multilanguage approach the educational system will implement Constitutional guidelines which will foster unified national culture across India ("National Education Policy 2020", n.d.). Normal math classes should incorporate the history of Indian mathematics without any difficulty. An equivalent approach should be implemented for the study of architecture as well as philosophy alongside Ayurveda. Utility experts claim that this goal needs gradual implementation according to the NEP.

Challenges of Implementation: Several obstacles exist in the process of merging IKS with NEP. The population and those involved lack sufficient understanding about IKS significance. IKS exists mainly in nonverbal formats yet people have transmitted it through spoken methods from one generation to the next.

Indian Knowledge Systems (IKS) transmit through spoken speech from one generation to the next ("Indian Knowledge Systems (IKS): Challenges of implementing it in", n.d.). The organization of IKS appears in non-literary forms preventing the establishment of educational programs based on IKS throughout educational institutions. Educationists are left puzzled because IKS lacks organized educational guidelines ("Autonomous colleges in state face challenges in implementing", n.d.). The majority of stakeholders view this concept as outdated information. The different language availability of IKS creates accessibility issues since some users lack proficiency in these languages. The Indian Educational system still operates under the influence of colonial education which promotes an unfavorable attitude toward IKS knowledge systems. The current Indian education system depends mostly on Western knowledge standards which makes it hard to accept alternative educational approaches. IKS lacks an adequate number of qualified instructors since it remains a marginal teaching subject.

Conclusion: Through IKS implementation in India stakeholders would obtain awareness of cultural heritage and form profound knowledge about the environment.

understanding of the environment. Students who learn from IKS based tacit knowledge will better handle the actual life challenges including climate change and food security dilemmas they will encounter. Before IKS is included there are specific obstacles that must be solved. The Indian government initiated a move through NEP to introduce IKS instructional content. Teachers require immediate training because it brings knowledge about IKS which they need to teach effectively. The existing information about IKS requires structured organization using information technology to distribute it based on stakeholder capabilities and requirements. The Indigenous Knowledge Systems developed throughout thousands of years in India so changes cannot happen right away. The knowledge system will take time to transform through natural

succession. Previous ancient writings show essential understanding about historical societies and their spiritual systems and knowledge practices.

Traditional beliefs and philosophies of ancient societies shape contemporary ideas while shaping modern culture. The Indian knowledge system has left permanent marks in mathematics and science and architecture and agriculture and healthcare while affecting contemporary scientific development and architectural evolution and agricultural practices as well as healthcare systems.

The ancient Indian knowledge system has developed modern scientific subjects as well as technological systems, architectural methods, ecologically sustainable farming and overall wellness methods. Through the combination of traditional wisdom and innovative approaches India keeps its leadership status in multiple fields.

India promotes sustainability of the environment with simultaneous protections for food security and rural economies and wellness of the whole human body.

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