

Awareness of MED Students about the Concepts of the Indian Knowledge System and Its Applications in Education

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ABSTRACT

This study investigates the awareness of Master of Education (M.Ed.) students regarding the Indian Knowledge System (IKS) and its applications in contemporary education, in alignment with the National Education Policy (NEP) 2020. IKS encompasses a rich tapestry of indigenous knowledge developed over centuries in fields such as philosophy, mathematics, astronomy, medicine, art, architecture, and spirituality. With the NEP 2020 emphasizing a multidisciplinary and culturally rooted approach, understanding the level of awareness among future educators is crucial.

Using a descriptive survey method, data were collected from 80 M.Ed students from Pune through a self-constructed questionnaire. The study revealed that the majority of students demonstrated significant awareness of IKS, especially in concepts like Ahimsa, Ayurveda, Bharatanatyam, and mathematical contributions such as zero and the decimal system. For instance, 91% were aware of the invention of zero in India, 90% recognized Bharatanatyam's spiritual value, and 93% correctly identified Dharma, Karma, and Moksha as the philosophical foundations of IKS. However, gaps were noted in understanding historical attributions—only 60% correctly credited Brahmagupta with the concept of zero, while 38% misattributed it to Aryabhata.

The findings emphasize both strengths in cultural awareness and areas where curricular support and teacher training are needed. Recommendations include deeper integration of IKS across disciplines, use of digital tools, and teacher preparation programs. Ultimately, this study supports the integration of IKS to foster identity, innovation, and holistic learning in India's future education system.

Keywords: Indian Knowledge System (IKS), Applications of IKS in Education, NEP2020 multidisciplinary approach and Indian culture and heritage.

INTRODUCTION

The Indian Knowledge System (IKS) refers to the diverse and profound body of indigenous knowledge that has been developed in India over thousands of years. It encompasses various domains, including philosophy, science, mathematics, medicine, astronomy, the arts, architecture, governance, linguistics, and spirituality. Rooted in Sanskrit, Pali, Prakrit, Tamil, Persian, and other regional languages, IKS reflects India's unique civilizational ethos, which emphasizes harmony with nature, holistic well-being, and a pursuit of knowledge for self-realization and societal good.

India's ancient texts—such as the Vedas, Upanishads, Smritis, Puranas, Arthashastra, Charaka Samhita, Sushruta Samhita, and Natya Shastra—are repositories of this wisdom. Despite centuries of colonial disruption, this vast knowledge reservoir continues to inspire scholars and practitioners across the world. In recent years, there has been a renewed focus on reviving and integrating IKS into modern education and research, especially under the National Education Policy (NEP) 2020.

Need for Indian Knowledge System:

The need to revive and integrate IKS in contemporary discourse arises from multiple imperatives:

1. **Cultural Identity and National Pride:** IKS represents the intellectual and cultural heritage of India. Embracing it fosters national pride and strengthens cultural identity among young learners.
2. **Decolonizing the Curriculum:** Much of India's modern education system has been modeled on Western paradigms, often ignoring indigenous knowledge. Reintegrating IKS corrects historical imbalances and fosters a more rooted, holistic approach to learning.
3. **Holistic Education:** IKS emphasizes the interconnectedness of life, values, and disciplines. It offers an alternative to fragmented modern disciplines by promoting integrative thinking.
4. **Sustainability and Harmony with Nature:** IKS promotes sustainable living practices, as seen in traditional agriculture, architecture, and Ayurveda. In an age of environmental crises, these insights are invaluable.
5. **Global Relevance:** Many Indian traditions, such as Yoga and Ayurveda, have gained global recognition. Systematic study and innovation based on these traditions can enhance India's soft power and contribute to global knowledge.

Factors Influencing the Indian Knowledge System:

Several key factors have shaped the development and evolution of IKS:

1. **Geographical Diversity:** India's vast and varied geography—from the Himalayas to the coastal plains—fostered diverse cultural practices and knowledge traditions, suited to different ecological contexts.
2. **Philosophical Foundations:** Indian philosophy provided the foundational basis for inquiry in various disciplines. The six systems of Indian philosophy (Shad-darshanas) encouraged critical thinking, debate, and knowledge generation.
3. **Oral and Written Traditions:** Knowledge transmission occurred both orally and through written texts in Sanskrit, Tamil, and other regional languages. The Guru-Shishya parampara played a critical role.
4. **Social Structures:** Institutions like Gurukulas, Pathshalas, Madrasas, and Buddhist monasteries served as centers of learning, allowing the system to evolve organically over time.
5. **Integration of Practice and Theory:** IKS has always emphasized practical applications of theoretical knowledge, such as in Ayurveda, architecture (Vastu), metallurgy, and textiles.

Scope of Indian Knowledge System:

IKS encompasses a vast spectrum of disciplines, making it a multidisciplinary system of great relevance:

1. **Science and Technology:** Ancient Indian achievements in metallurgy (e.g., iron pillar of Delhi), mathematics (zero, decimal system), astronomy (Aryabhata, Bhaskara), and civil engineering are well-documented.
2. **Medicine and Wellness:** Ayurveda, Siddha, Yoga, and Naturopathy offer time-tested holistic health practices with growing global popularity.
3. **Philosophy and Ethics:** Indian philosophies, including Vedanta, Buddhism, and Jainism, offer profound insights into metaphysics, logic, and ethics.

4. Linguistics and Literature: Sanskrit, Pali, Tamil, and other classical languages are repositories of literary, poetic, and linguistic excellence.
5. Art and Aesthetics: IKS includes rich traditions of music (e.g., Natya Shastra), dance, sculpture, and painting, reflecting deep symbolic and spiritual dimensions.
6. Governance and Economics: Texts like Arthashastra and Manusmriti offered systems of administration, law, and economics based on ethical and social principles.
7. Environmental Sustainability: Traditional Indian practices emphasized living in harmony with nature through eco-friendly practices in agriculture, water management, and architecture.

Importance of the Indian Knowledge System:

1. Preserving Heritage: IKS helps preserve and revitalize ancient wisdom systems that are relevant for contemporary challenges.
2. Alternative Worldview: It offers a non-Western perspective on knowledge, encouraging pluralism in thought and education.
3. Value-Based Education: Emphasizes dharma (duty), ahimsa (non-violence), and satya (truth), fostering moral and ethical development.
4. Innovation and Research: Offers a wealth of knowledge that can inspire innovation in healthcare, education, sustainable technologies, and cultural studies.
5. Employment Opportunities: Reviving crafts, traditional medicine, and heritage tourism can generate employment and promote rural livelihoods.
6. Cultural Diplomacy: Promotes India's cultural and intellectual contributions globally, enhancing international collaboration and soft power.

Indian Knowledge System in NEP 2020:

The National Education Policy (NEP) 2020 recognizes the importance of IKS and proposes its systematic integration into the education system. Key highlights include:

1. Curricular Integration:
 - NEP 2020 recommends including IKS in school and higher education curricula across subjects such as science, arts, philosophy, and environmental studies.
 - Emphasis on using local examples, folklore, and traditional practices in pedagogy.
2. Promotion of Multidisciplinary:
 - Universities and colleges are encouraged to offer multidisciplinary courses that include IKS components.
 - Institutions like IITs and NITs are urged to integrate IKS into technical education and research.
3. Research and Development:
 - NEP supports the establishment of dedicated IKS Centres for research, translation of ancient texts, and evidence-based validation of traditional practices.

- The Indian Knowledge System Division under the Ministry of Education promotes scholarly activities in this area.
4. Language and Culture:
- Promotes the use and teaching of classical languages such as Sanskrit, Tamil, and Pali which are carriers of traditional knowledge.
 - Encourages documentation and digitization of oral traditions, folklore, and regional knowledge systems.
5. Teacher Training and Capacity Building:
- Teachers are to be trained in integrating IKS in classroom teaching using interactive and experiential methods.
 - Inclusion of IKS in B.Ed. and M.Ed. curricula is emphasized.
6. Preserving Indigenous Traditions:
- Efforts to revive fading art forms, tribal knowledge, crafts, and endangered languages.
 - Collaboration with local communities to ensure authentic and ethical use of traditional knowledge.

LITERATURE REVIEW

The Indian Knowledge System (IKS) is a multidisciplinary and holistic body of traditional knowledge rooted in India's civilizational heritage. Scholars like Kapil Kapoor (2016) and Michel Danino (2010) have emphasized that IKS includes areas such as mathematics, astronomy, medicine (Ayurveda), architecture (Vastu), metallurgy, arts, music, language, and spirituality. IKS is embedded in classical texts such as the Vedas, Upanishads, Puranas, Smritis, and Shastras, and has been preserved through oral and written traditions.

Shrimalibhoi Nirajkumar Ramanbhai et al. (March 2025) Studied on *Integrating Indian Knowledge System (IKS) in Education: Roles of Teachers, Schools, and Governments* and found teachers, institutions, and policy-makers must collaborate with innovative pedagogy and institutional backing to effectively weave IKS into mainstream education, enabling sustainable and globally relevant learning.

Dr. P. S. Rajput, Ruchi Singh, Kaveri Joshi & Dr. S. N. Chari Study: *Exploring IKS in the Context of NEP 2020: A Survey-Based Study* (2025) Their survey across Rajasthan colleges reveals high enthusiasm for IKS under NEP 2020, citing its compatibility with interdisciplinary education, sustainability, and culturally anchored identity formation.

Research questions

The researcher tried to find out awareness of the MED students about the Concepts of Indian Knowledge System and its Applications in Education-

1. Which of the following best describes the Indian Knowledge System (IKS)?
2. What aspect of Indian civilization has significantly influenced modern psychological practices?
3. What principle derived from Indian philosophies emphasizes ethical living and mindfulness?
4. Which mathematical concept, invented in India, is fundamental to modern arithmetic?
5. What is a major contribution of Indian civilization to the field of science?

6. How did Indian astronomers like Aryabhata contribute to our understanding of the cosmos?
7. Which Indian art form is known for its intricate dance movements and spiritual significance?
8. Which ancient Indian text is known for its moral and ethical teachings?
9. What is a key feature of Indian art forms in relation to spirituality?
10. Which of the following best describes the significance of Ayurveda in modern health practices?
11. Which discipline is not encompassed within the Indian Knowledge System?
12. Which of the following concepts is NOT a philosophical foundation of the Indian Knowledge System?
13. What is one of the primary focuses of Ayurveda within the Indian Knowledge System?
14. Which mathematician is known for introducing the concept of zero?
15. What approximation of Pi (π) did Aryabhata provide?

Method:

For this study Descriptive Survey Method was used to find out the awareness of MED students about the Concepts of the Indian Knowledge System and its Applications in Education.

Population and sample:

In this study, all the students of MEd in the year 2025 from Pune have been taken as the population. The sample of its population, which is 1.31% was taken in the present study. A total of 80 M.Ed. students has been selected randomly from different MEd colleges in Pune.

Tool for data collection:

For data collection self-made questionnaire was used. The questionnaire was developed on the basis of the literature review.

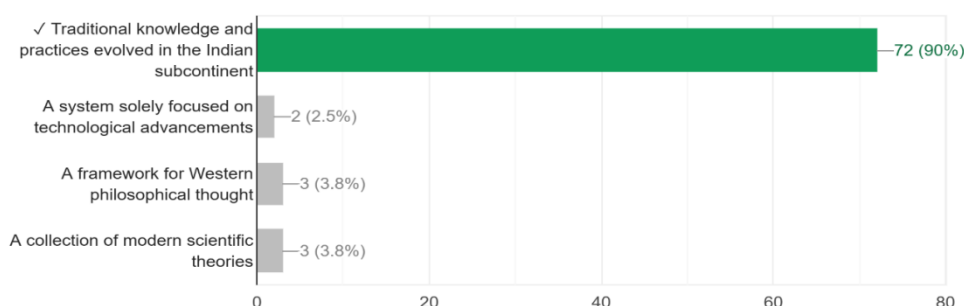
Delimitation:

- This research study includes only M.Ed. College Students in Pune.
- This research study was conducted only on 80 M.Ed. College students.

Analysis:

1. Which of the following best describes the Indian Knowledge System (IKS)?

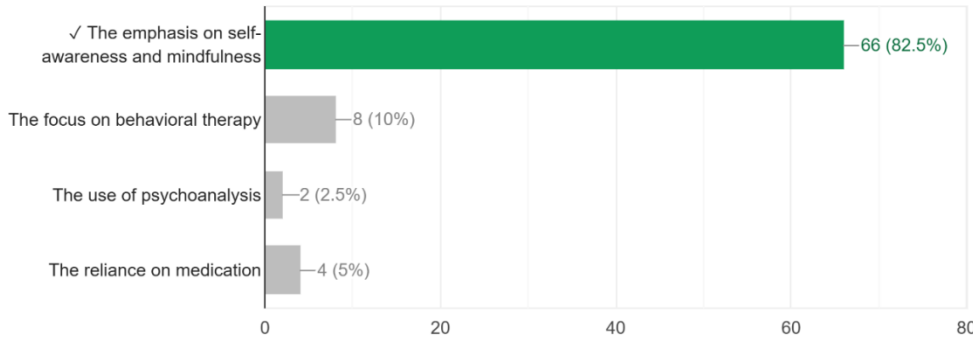
72 / 80 correct responses



The definition of IKS is traditional knowledge and practices evolved in the Indian subcontinent is the correct answer. Out of 80 students, 72 gave the correct answer. It shows that 90% students are aware of the definition of IKS.

2. What aspect of Indian civilization has significantly influenced modern psychological practices?

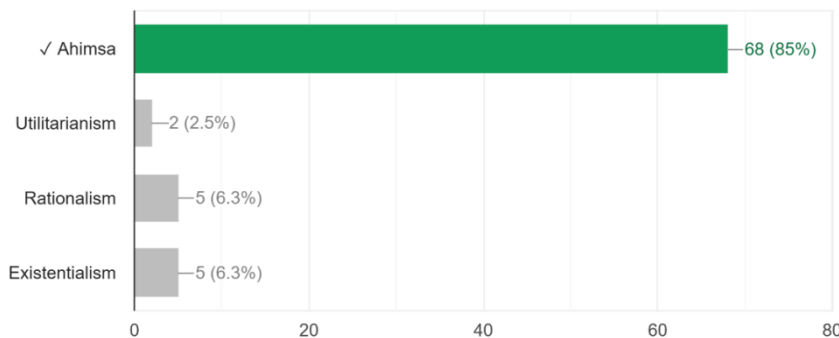
66 / 80 correct responses



The emphasis on self-awareness and the mindfulness aspect of Indian civilization has significantly influenced modern psychological practices. Regarding this aspect, 82.5% students gave the correct answer.

3. What principle derived from Indian philosophies emphasizes ethical living and mindfulness?

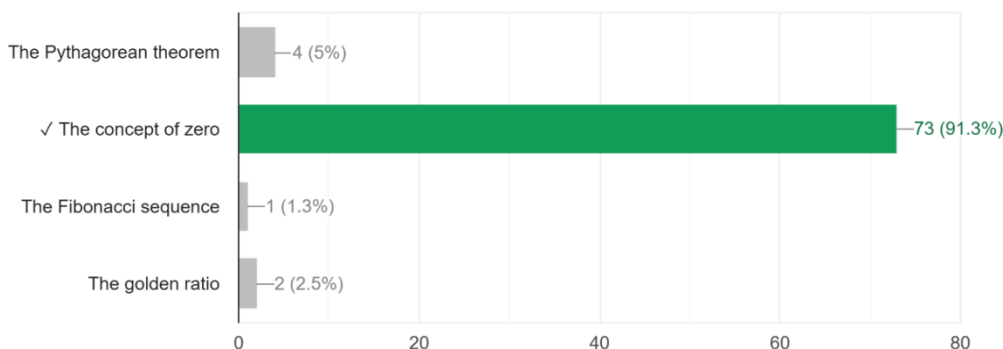
68 / 80 correct responses



The principle of AHIMSA, derived from Indian philosophy, emphasizes ethical living and mindfulness. About this concept, 85% students are aware, and 15% students gave the wrong answer.

4. Which mathematical concept, invented in India, is fundamental to modern arithmetic?

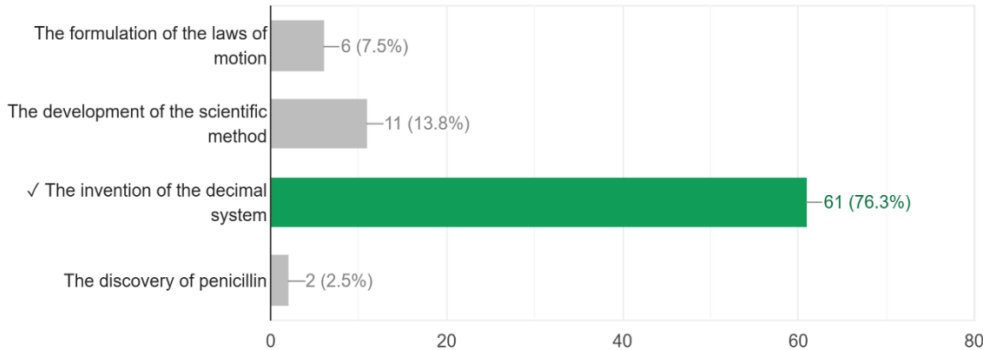
73 / 80 correct responses



About the concept of zero invented in India 91% students gave correct answer. Only 9% students were not aware about this general knowledge.

5. What is a major contribution of Indian civilization to the field of science?

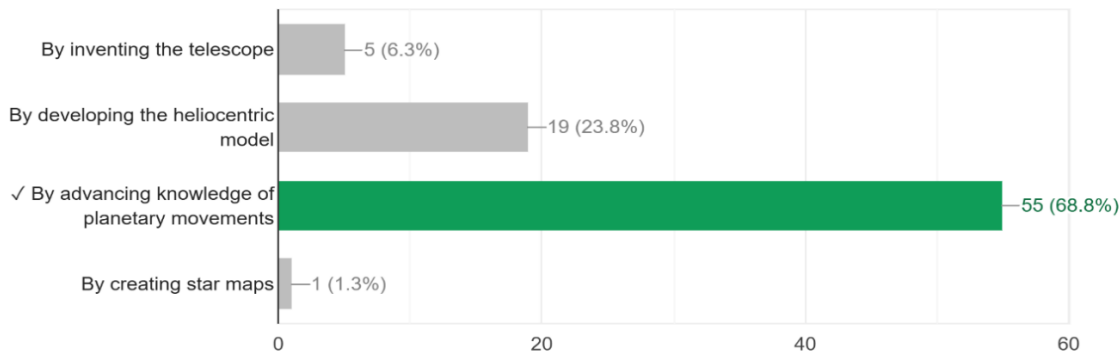
61 / 80 correct responses



The major contribution of India in the field of science is the invention of the decimal system. Regarding to this knowledge only 76 % students gave correct answer. 24% students were not aware about this.

6. How did Indian astronomers like Aryabhata contribute to our understanding of the cosmos?

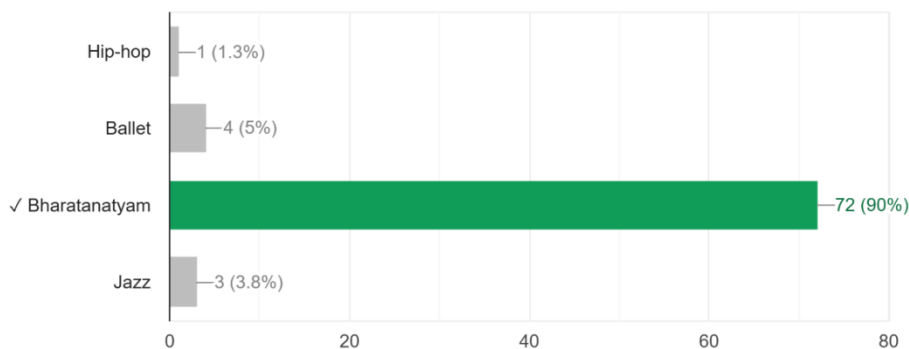
55 / 80 correct responses



The Advancing knowledge of planetary movements were given by Indian Astronomers like Aryabhata about this knowledge only 68.8% students respond correctly. And 24% students responded about developing the heliocentric model, 6% students were confused about inventing the telescope.

7. Which Indian art form is known for its intricate dance movements and spiritual significance?

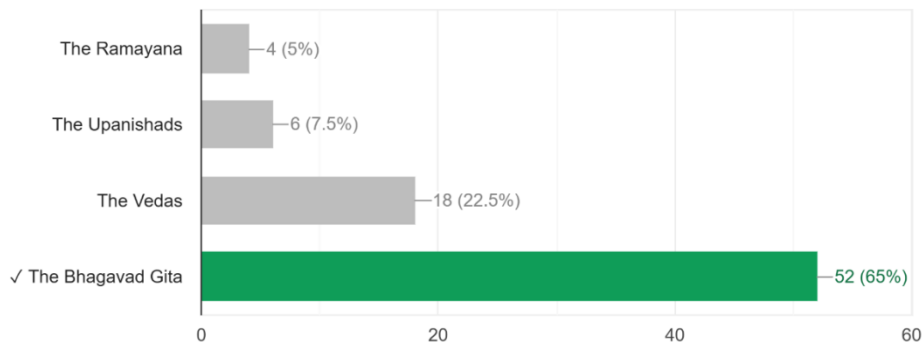
72 / 80 correct responses



The Indian art form Bharatanatyam is known for its intricate dance movements and spiritual significance. Knowledge of this was known to 90% of students. It shows that mostly MEd students are aware about this.

8. Which ancient Indian text is known for its moral and ethical teachings?

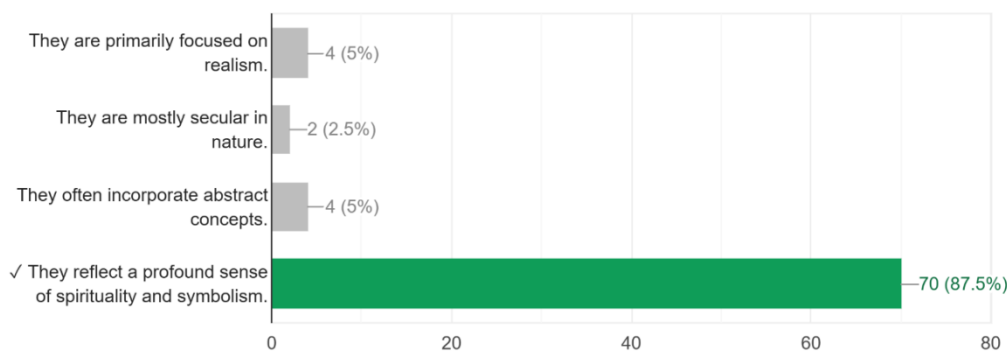
52 / 80 correct responses



Out of 80 students 65% MEd students are aware about that the ancient Indian text The Bhagavad Gita is known for its moral and ethical teachings and about 45% students gave wrong answers.

9. What is a key feature of Indian art forms in relation to spirituality?

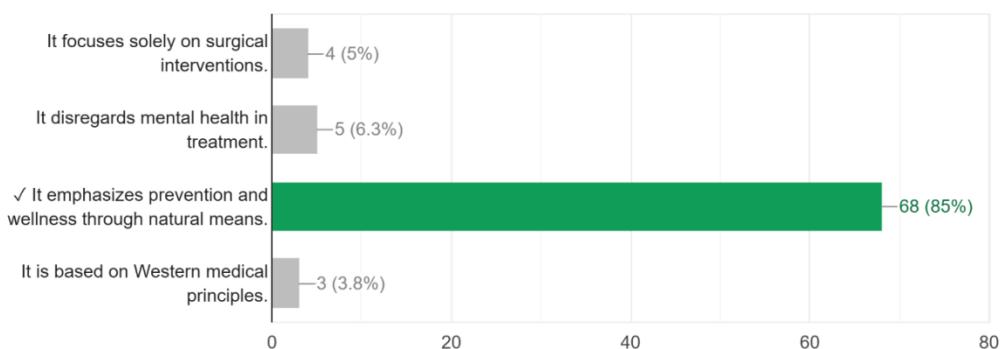
70 / 80 correct responses



Approximately 88% of students are aware that the Indian art form reflects a profound sense of spirituality and symbolism. Only 12% of students were not aware about this knowledge.

10. Which of the following best describes the significance of Ayurveda in modern health practices?

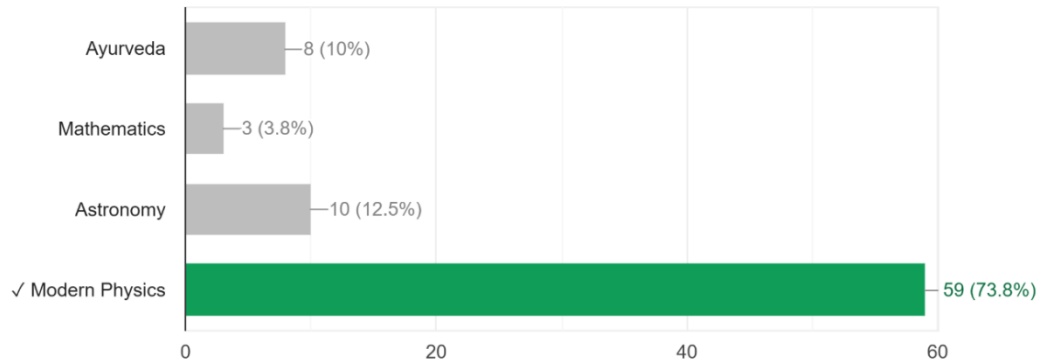
68 / 80 correct responses



About Ayurveda 85% students were aware that it emphasizes prevention and wellness through natural means. Only 15% students gave wrong answers.

11. Which discipline is NOT encompassed within the Indian Knowledge System?

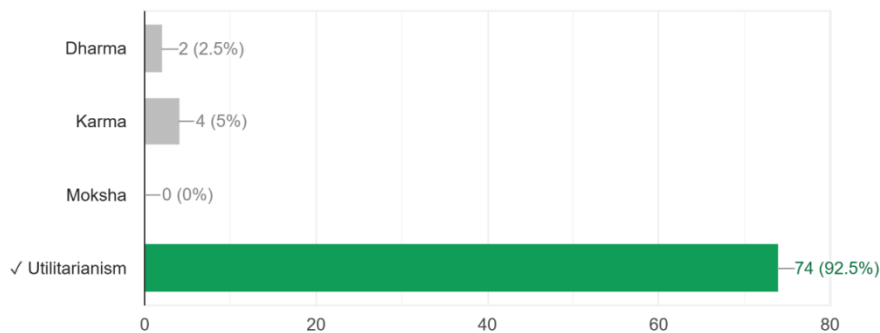
59 / 80 correct responses



The modern Physics discipline is not encompassed within the Indian Knowledge System 74% students gave correct answer and approximately 13% students were confused by Astronomy.

12. Which of the following concepts is NOT a philosophical foundation of the Indian Knowledge System?

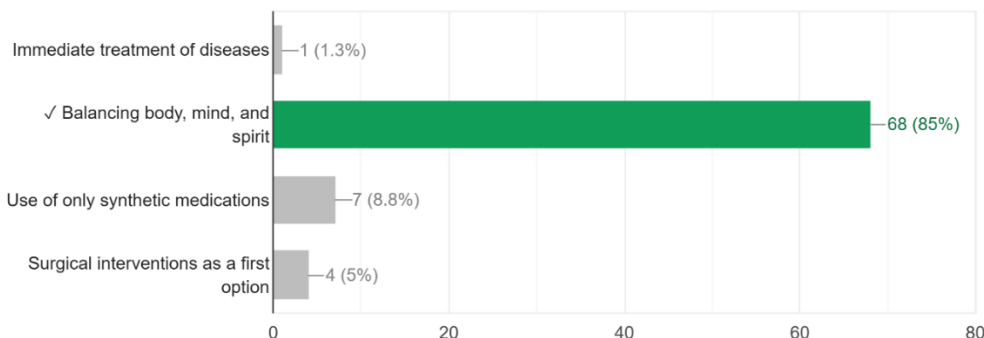
74 / 80 correct responses



All most 93% student are aware that Dharm, Karma and Moksha concept is a philosophical foundation of Indian Knowledge System Not Utilitarianism.

13. What is one of the primary focuses of Ayurveda within the Indian Knowledge System?

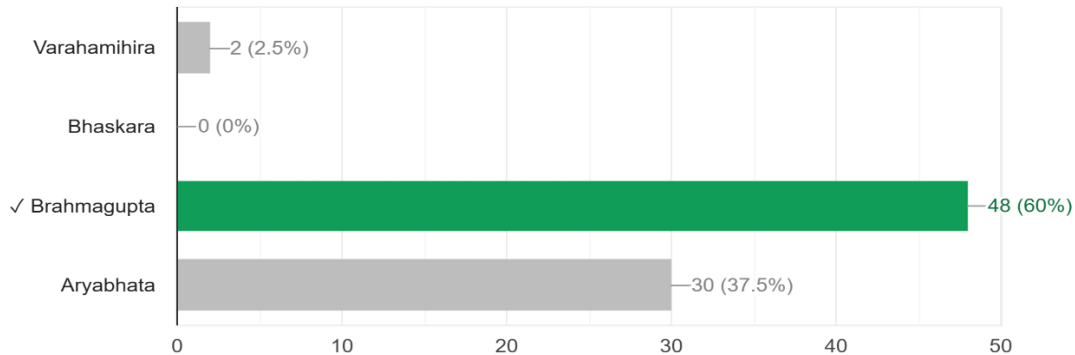
68 / 80 correct responses



In the Indian Knowledge System, the primary focuses of Ayurveda is to balancing body, mind and spirit about this concept 85% students are aware and 15% students gave wrong answer.

14. Which mathematician is known for introducing the concept of zero?

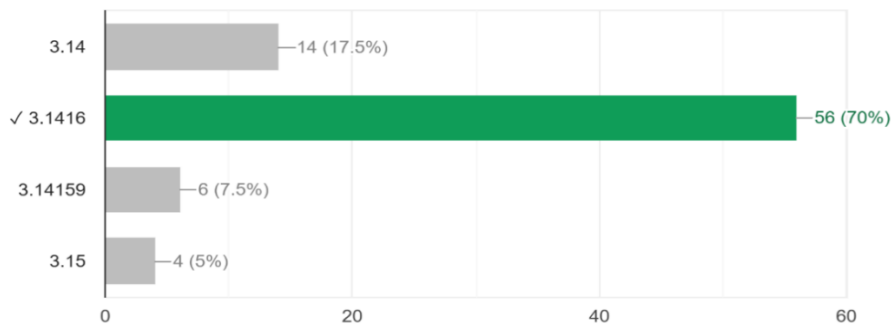
48 / 80 correct responses



The concept of Zero introduced by mathematician Brahmagupta for this knowledge only 60% students are aware and wrong answer Aryabhata gave 38% students and about 3% students gave Varahamihira.

15. What approximation of Pi (π) did Aryabhata provide?

56 / 80 correct responses



Out of 80 students 70% students are aware that Approximation of Pi did Aryabhata provided is 3.14159 and 30% student gave wrong answer.

FINDINGS

1. Definition Awareness: 90% of students correctly identified IKS as traditional knowledge and practices evolved in the Indian subcontinent, indicating high foundational awareness.
2. Mindfulness and Psychology: 82.5% correctly connected IKS to self-awareness and mindfulness, showing understanding of its influence on psychological practices.
3. Ahimsa (Non-violence): 85% were aware of this principle, reflecting strong recognition of ethical components in IKS.
4. Zero as a Concept: 91% knew about the Indian origin of zero, showcasing good general knowledge of mathematical heritage.
5. Decimal System: 76% were aware that the decimal system was an Indian contribution, while 24% lacked this awareness.

6. Planetary Movements: Only 68.8% identified Aryabhata's contribution correctly; confusion existed about heliocentrism (24%) and telescopic invention (6%).
7. Bharatanatyam: 90% recognized it as a spiritual and intricate Indian classical dance form.
8. The Bhagavad Gita: Only 65% acknowledged its ethical and moral teachings; 45% answered incorrectly, showing a gap in literary awareness.
9. Spiritual Symbolism in Art: 88% associated Indian art with spirituality and symbolism.
10. Ayurveda (Preventive Health): 85% understood Ayurveda's holistic and preventive health philosophy.
11. Modern Physics and IKS: 74% correctly recognized that modern physics is not part of IKS; some confusion with astronomy (13%).
12. Philosophical Concepts (Dharma, Karma, Moksha): 93% correctly identified these as core IKS foundations, indicating strong conceptual understanding.
13. Ayurveda's Holistic Focus: 85% recognized its emphasis on balance between body, mind, and spirit.
14. Brahmagupta and Zero: Only 60% correctly attributed zero to Brahmagupta; 38% incorrectly credited Aryabhata, and 3% said Varahamihira.
15. Approximation of Pi: 70% identified Aryabhata's value for Pi (3.14159) correctly, while 30% were unaware or misinformed.

CONCLUSION

The content analysis reveals that a majority of M.Ed students possess substantial awareness of key components of the Indian Knowledge System, particularly in areas related to spirituality, mathematics, and traditional sciences like Ayurveda. High awareness is observed in concepts such as Ahimsa, the invention of zero, Bharatanatyam, and philosophical teachings like Dharma and Moksha. However, notable gaps exist in the accurate attribution of historical figures (e.g., confusion between Aryabhata and Brahmagupta) and understanding of certain literary and astronomical contributions. These findings suggest a generally positive engagement with IKS among future educators, while highlighting the need for deeper and more accurate dissemination of specific historical and scientific contributions within teacher education curricula.

RECOMMENDATIONS

- Investigate the reasons behind common misconceptions, such as confusing Aryabhata with Brahmagupta regarding the invention of zero, to identify gaps in curriculum or teaching methods.
- Conduct comparative studies between students from different disciplines (e.g., science vs. humanities) to explore variation in IKS awareness and its integration across academic fields.
- Evaluate the effectiveness of National Education Policy (NEP) 2020 in integrating IKS into teacher education programs and how it influences students' understanding.
- Examine how digital learning platforms and online content affect students' knowledge of IKS, and identify the most effective media formats for learning.
- Study student engagement with key Indian philosophical texts like the Bhagavad Gita, Upanishads, and Vedas to understand their interpretation and relevance in modern education.
- Explore the pedagogical value of Indian art forms (e.g., Bharatanatyam, classical music) in promoting holistic education and their integration in teacher training.

- Conduct longitudinal studies to assess changes in IKS awareness over time among M.Ed students, especially after exposure to revised or enriched curriculum.
- Analyze how regional background, mother tongue, and cultural environment influence students' understanding and reception of IKS concepts.
- Research how ancient Indian contributions to astronomy, mathematics, and medicine can be effectively included in modern STEM education.
- Study the preparedness, attitudes, and perceptions of teacher educators regarding the teaching of IKS to understand institutional readiness and identify professional development needs.

The Indian Knowledge System is not merely a relic of the past; it is a living, evolving framework with immense potential to contribute to modern science, education, and sustainable development. The NEP 2020 has rightly acknowledged its relevance by embedding it into the national educational framework. As India aspires to become a global knowledge leader, a balanced integration of its ancient wisdom with contemporary advancements will pave the way for an inclusive, sustainable, and enlightened future. Embracing IKS is not just about reclaiming the past, but about empowering generations to come with a deeper sense of identity, purpose, and innovation.

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