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RESEARCH ARTICLE

INDIAN KNOWLEDGE SYSTEMS IN MODERN CLASSROOMS: A COMPARATIVE ANALYSIS OF STUDENT PERCEPTION IN GOVERNMENT AND PRIVATE SECONDARY SCHOOLS

Munendra Kumar

1. Principal Dewan Institute Of Management Studies Meerut, U.P., India.

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Abstract

The integration of Indian Knowledge Systems (IKS) into modern education represents a significant paradigm shift, driven primarily by the National Education Policy (NEP) 2020. This study explores the incorporation of Indian Knowledge Systems (IKS) into secondary school education and investigates how students perceive these systems in government and private institutions.Employing a few mixed methods approaches, this study surveyed 200 students (100 from government and 100 from private schools) and conducted focus group discussions and classroom observations.This report presents a comparative analysis of student perception of IKS in government and private secondary schools of Meerut in Uttar Pradesh. Results indicate substantial differen ces between the two school types in terms of student awareness and engagement with IKS. Current data suggests that overall student aware ness of IKS remains moderate across demographics, indicating a gap between policy aspirations and ground-level understanding. However, when IKS is effectively integrated, students report enhanced self-awareness, emotional resilience, ethical reasoning, and increased engag ement, highlighting the potential for positive affective and cognitive outcomes.

Introduction:-

Introduction to Indian Knowledge Systems (IKS):-

Historical Context and Enduring Relevance of IKS in Indian Education:-

Historically, the Indian education system was deeply rooted in a philosophy that prioritized "moral, life skill based practical, spiritual, and intellectual values," with its origins traceable to the ancient Rigvedic period. Ancient Indian knowledge and education were fundamentally structured around the concept of "human welfare," deeply integrating philosophical concepts such as the "seven Janmas (Births)" and the theory of Karma, which includes the four Purusharthas: Dharma (righteousness), Artha (wealth), Kama (desire), and Moksha (liberation). This value-based approach aimed at holistic development, extending beyond mere academic achievement. The Vedas—Rig Veda, Sama Veda, Yajur Veda, and Atharva Veda—stand as the world's oldest surviving literary works. Initially, this knowledge was transmitted orally as "Shruti" (heard) and "Smriti" (memory) across generations. The compilation

Corresponding Author:- Prof (Dr) Munendra Kumar
Address:-Principal Dewan Institute Of Management Studies Meerut, U.P., India.

and written preservation of these texts by figures like Veda Vyasa became necessary due to concerns about "reduced memory capacity" over time, highlighting an early recognition of the importance of knowledge preservation. Beyond these foundational texts, ancient Indian scholars such as Aryabhatta, Bhaskaracharya, Charaka, Chanakya, Panini, and Patanjali made monumental contributions across diverse fields including astronomy, architecture, mathematics, metallurgy, medicine, and yoga. These historical achievements underscore a rich tradition of intellectual inquiry and innovation.

However, in recent centuries, the Indian educational system underwent a significant transformation, heavily influenced by Western approaches. This shift led to the "sidelining" or "marginalization" of IKS in mainstream education. The current policy emphasis on IKS integration can be interpreted as a strategic and deliberate effort to decolonize the Indian education system. This initiative aims to reclaim and revitalize India's "rich cultural heritage" and intellectual sovereignty. This framing suggests that student perception of IKS is likely influenced by broader societal and nationalistic narratives surrounding cultural identity and pride. Schools that effectively communicate this decolonization aspect and the inherent value of indigenous knowledge may foster greater student engagement and a deeper sense of belonging. Conversely, any observed resistance to IKS integration, as noted in some studies, could indicate deeply entrenched Western pedagogical models and a broader cultural or ideological challenge that extends beyond simple curriculum adjustments.

Defining Indian Knowledge Systems (IKS): A Comprehensive Overview:-

Indian Knowledge Systems (IKS) are formally defined as the "vast reservoir of wisdom, practices, and knowledge systems that have been developed and preserved over millennia within the diverse cultural and intellectual landscape of India". This definition extends beyond a mere collection of historical facts or cultural artifacts, portraying IKS as a coherent intellectual framework. It encompasses an extensive array of disciplines, including but not limited to philosophy, science, mathematics, engineering, technology, agriculture, medicine, arts, architecture, psychology, law, jurisprudence, economics, social sciences, and linguistics, including rich oral traditions.A defining characteristic of IKS is its emphasis on a "noteworthy equilibrium between Life and Science, Ordinary and Transcendent, Karma and Dharma, along with Enjoyment and Sacrifice". This holistic perspective suggests a profound interconnectedness across various domains of existence and intellectual inquiry. Furthermore, IKS is presented as a "structured system and a process of knowledge transfer rather than a tradition".

This classification is crucial, as it implies that IKS possesses its own methodologies for knowledge generation, preservation, and dissemination. Its fundamental principles are rooted in Vedic literature, the Upanishads, the Vedas, and the Upvedas. The core components of IKS—Jnan (Knowledge), Vignan (Science), and Jeevan Darshan (Philosophy of Life)—are described as having evolved through "experience, observation, experimentation, and rigorous analysis". The understanding that IKS is a systematic and empirical framework, rather than solely a traditional or anecdotal collection, holds significant implications for its integration into modern education. For effective implementation, IKS must transcend superficial inclusion of historical anecdotes or cultural events. Instead, it necessitates a pedagogical approach that engages with its underlying principles, methodologies, and inherent interdisciplinary connections. If IKS is indeed a "system," its successful integration demands a systemic shift in educational philosophy and practice, moving beyond mere content addition to a more profound engagement with its intellectual rigor. This perspective also provides a basis for addressing criticisms concerning "pseudoscientific" elements sometimes associated with IKS, by emphasizing the rigorous analytical and experimental foundations that are intrinsic to its comprehensive definition.

The National Education Policy (NEP) 2020 and the Resurgence of IKS:-

The National Education Policy (NEP) 2020 marks a "significant shift" in India's education landscape, placing a strong "emphasis on the importance of the Indian Knowledge System (IKS) in shaping the country's educational framework". This policy positions IKS as central to "revitalizing India's rich cultural heritage", signaling a national commitment to re-engaging with India's indigenous intellectual traditions. IKS encompasses a vast and diverse reservoir of wisdom, practices, and systematic knowledge developed over millennia within India's rich cultural and intellectual landscape, spanning philosophy, science, mathematics, arts, and more. The NEP 2020 positions IKS as central to revitalizing India's cultural heritage and fostering holistic student development, aiming to bridge traditional wisdom with modern knowledge to address contemporary societal challenges. A core objective of the NEP 2020 is to "enhance interdisciplinary and transdisciplinary understanding, integrate modern knowledge with traditional wisdom, and address current societal challenges". This reflects a deliberate effort to create a synergistic educational model that leverages both ancient and contemporary knowledge for practical application. Beyond

academic content, the policy explicitly aims to inculcate in students "moral, humane and constitutional value-based qualities" such as empathy, respect, courtesy, democratic spirit, a sense of service, scientific thinking, freedom, responsibility, equality, and justice. This focus on character development and ethical citizenship underscores the holistic aspirations of the policy. The NEP 2020 is highlighted as the "first education policy of the 21st century" designed to address "many growing developmental imperatives of our country", indicating its forward-looking and comprehensive nature. The policy also seeks to "bridge the gaps in the existing education system," promote language resources and technology, and actively encourage research in IKS.

The NEP 2020's approach to IKS integration carries a dual mandate: heritage preservation and future readiness. It explicitly links IKS to "revitalizing India's rich cultural heritage" and "preserving indigenous knowledge", demonstrating a clear backward-looking goal of cultural continuity. Simultaneously, it aims to "integrate modern knowledge with traditional wisdom" to "address current societal challenges" and prepare "future-ready youth", highlighting a forward-looking, innovation-driven objective. This dual objective presents a complex challenge for curriculum designers and educators. If IKS is perceived by students as solely historical or traditional, their engagement and perceived relevance might be limited. However, if it is effectively presented as a dynamic system that offers "practical, historically tested solutions for current environmental challenges" and inspires "innovative thinking" for contemporary issues, it could significantly boost student interest and engagement. The ultimate success of IKS integration hinges on effectively communicating and demonstrating its contemporary utility and problem-solving potential, not merely its historical significance.

Significance of the study:-

While policy frameworks like NEP 2020 and the National Curriculum Framework for School Education (NCF-SE) 2023 provide a comprehensive blueprint for IKS integration, the actual implementation varies considerably between school types. Government schools often grapple with systemic challenges such as limited infrastructure, teacher shortages, and training gaps, which can hinder effective IKS delivery. In contrast, private schools, generally possessing superior resources and pedagogical flexibility, are better positioned to adopt innovative approaches for deeper IKS engagement. The benefits of IKS are multidimensional, extending beyond academic gains to include critical thinking, cultural appreciation, sustainable practices, and personal development. Nevertheless, integration faces persistent challenges, including a lack of standardized curriculum, insufficient teacher training, resource scarcity, and historical biases against indigenous knowledge.

Literature Review:-

Historical neglect of IKS during colonial rule marginalized traditional systems in favor of Western education. Recent shifts, especially under NEP 2020, aim to reverse this trend. Several studies have advocated for integrating IKS to promote identity, sustainability, and interdisciplinary learning (Ranganathan, 2021; Mishra & Banerjee, 2023).However, challenges persist. According to Singh (2024), the lack of trained educators and contextual learning materials are major barriers. Research by Banerji (2022) found that private schools tend to have more flexibility in implementing innovative curricula, including IKS, due to better resources and autonomy

Research Methodology:-

Methodology: A mixed-method approach was employed:

The study was conducted across 10 schools (5 governments, 5 private) of Meerut in Uttar Pradesh, India. Stratified random sampling ensured demographic and regional diversity. A total of 200 students (100 from each school type) participated.

Quantitative: A survey was administered to 200 students (100 from government schools and 100 from private schools) using a structured questionnaire.

Qualitative: In-depth interviews were conducted with 10 teachers and 10 students from both school types.

Curriculum Review: Comparative analysis of textbooks and co-curricular activities focusing on IKS themes.

Data Collection Tools:-

Questionnaire: Included closed and open-ended questions on awareness, interest, and relevance of IKS. Focus Group Discussions (FGDs): Conducted with 10 students from each school type. Classroom Observations: Teachers' approaches and integration of IKS into lessons were noted.

Data Analysis:-
Quantitative data from the questionnaire were analyzed using descriptive statistics. Qualitative data from FGDs and observations were thematically analyzed to identify recurring patterns.

Policy and Regulatory Framework for IKS Integration:-
NEP 2020's Vision and Guiding Principles for IKS:-
The National Education Policy (NEP) 2020 serves as the foundational document for the resurgence of Indian Knowledge Systems (IKS) in modern education. It explicitly recognizes India's "rich heritage of ancient and eternal Indian knowledge and thought as a guiding principle" for its entire educational framework. The policy champions a "holistic, multidisciplinary approach to education", aiming to move beyond siloed disciplines to foster a more integrated understanding of knowledge. A central principle is to enhance "interdisciplinary and transdisciplinary understanding" through the strategic integration of IKS. This approach is designed to connect diverse fields of study, illustrating the inherent interconnectedness of knowledge.

Furthermore, a key objective of NEP 2020 is to "inculcate moral, humane, and constitutional value-based qualities" in students, such as empathy, respect, courtesy, democratic spirit, a sense of service, scientific thinking, freedom, responsibility, equality, and justice. This emphasis on values underscores that IKS integration is not merely about adding new academic content but signifies a fundamental reshaping of the educational experience to nurture well-rounded individuals. The policy is highlighted as the "first education policy of the 21st century" designed to address "many growing developmental imperatives of our country".

The consistent emphasis on "holistic development" and the inculcation of "moral, humane, and constitutional value-based qualities" reveals that IKS integration is intended to achieve broader outcomes than traditional academic performance. This suggests that the effectiveness of IKS integration, and consequently student perception, should not be measured solely by academic scores in IKS-related subjects. Instead, it should also be assessed by observable changes in students' ethical reasoning, self-awareness, emotional resilience, and their overall personal development. Student perception surveys, therefore, should be designed to include questions that gauge these broader developmental outcomes, moving beyond simple content knowledge or interest to capture the full scope of the policy's aspirations.

Role of the National Curriculum Framework for School Education (NCF-SE) 2023:-
The National Curriculum Framework for School Education (NCF-SE) 2023 is a pivotal document that translates the broad vision of NEP 2020 into concrete curricular guidelines for schools. It is described as an "offshoot policy document" derived from NEP 2020, specifically focusing on the "School Education Environment and its holistic growth". NCF-SE 2023 provides a "detail blueprint" for the systematic inclusion of Indian Knowledge Systems in school education. In alignment with this framework, NCERT has developed new textbooks that reflect NEP's emphasis on experiential learning, holistic development, and vocational education. Specific curriculum changes for Class 6, for instance, include integrating "historical connections," such as linking the origin of fractions to an Indian mathematician, and highlighting the contributions of Indian scientists. The NCF-SE document further incorporates "Ancient Indian Knowledge" through "Shlokas," "Dohas," and "Stories," illustrating "past relevant methods to deal with School System". This approach aims to embed IKS elements directly into the learning materials, making them accessible to students.

While NCF-SE 2023 offers a "detail blueprint" and suggests incorporating elements like "Shlokas," "Dohas," and "Stories" , the literature consistently points to challenges such as a "lack of standardized curriculum" and difficulties in "curriculum development". This indicates a potential gap between the policy's aspirational intent and its practical, actionable translation into classroom-ready content. Student perception of IKS might be heavily influenced by how these elements are translated into the curriculum. If IKS is merely presented as isolated facts or stories without deeper integration into core subjects or experiential learning, students might perceive it as an irrelevant add-on or an additional burden. The effectiveness of NCF-SE 2023's blueprint hinges on the quality of textbook development and, critically, the teacher training provided to ensure meaningful integration rather than superficial inclusion. This could lead to significant variations in student perceptions even among schools theoretically following the same framework, depending on the pedagogical implementation. The integration of IKS into the Indian education system is supported by directives and initiatives from various apex regulatory bodies, demonstrating a multi-level, top-down push.

- **Central Board of Secondary Education (CBSE):** CBSE aligns its curriculum with the principles of NEP 2020 and NCF-SE 2023. Its curriculum emphasizes experiential learning, competency-based assessments, and interdisciplinary approaches. CBSE has introduced vocational education from Class 6 onwards, including skill modules, which align with the broader goals of NEP 2020. While CBSE circulars do not explicitly detail IKS-specific content mandates for secondary schools in the provided information (beyond general alignment with NEP's holistic and value-based goals), its focus on "historical connections" (e.g., linking fractions to Indian mathematicians) and highlighting Indian scientists indirectly supports IKS integration. CBSE also mandates continuous professional development for teachers, requiring a minimum of 50 hours per year.

The specific directives from IKS in secondary schools from CBSE appear less explicit in terms of specific IKS content. Instead, CBSE's focus is on broader pedagogical shifts like experiential learning, value-based education, and integrating "historical connections". This suggests a "trickle-down" approach, where foundational principles are set at the policy level, but the specific IKS curriculum development and implementation at the secondary school level might be largely left to NCERT and individual schools. This "trickle-down" approach could lead to significant variations in the depth and quality of IKS integration across different secondary schools, even those affiliated with the same board. Private schools, often possessing greater autonomy and resources, might proactively develop richer and more innovative IKS programs. Conversely, government schools, facing systemic challenges like limited resources and teacher training gaps , might struggle with effective implementation if specific guidelines and support are lacking. This inconsistency in implementation would directly impact student perception, making a comparative analysis between government and private schools particularly insightful for understanding real-world outcomes.

Table 1: Key Policy Directives and Initiatives for IKS Integration

Policy/Body	Key Directive/Initiative	Target Educational Level	Specific IKS Focus
NEP 2020	Significant shift emphasizing IKS; holistic, multidisciplinary approach; integrate modern with traditional wisdom; inculcate moral/humane values; address societal challenges; bridge existing gaps.	All levels (School & Higher Education)	Holistic student development, cultural revitalization, interdisciplinary understanding, value-based education, research promotion.
NCF-SE 2023	Detailed blueprint for IKS inclusion; new textbooks reflecting NEP principles; integration of historical connections, shlokas, dohas, stories.	School Education (Foundational, Preparatory, Middle, Secondary)	Curriculum development, experiential learning, cultural heritage integration, vocational education.
AICTE (IKS Division)	Promotes interdisciplinary research on IKS; preserves and disseminates IKS for societal applications; organizes IKS theme-based competitions for school children.	All levels (School & Higher Education, particularly Technical)	Research, preservation, dissemination, awareness creation, application in diverse fields (Arts, Science, Engg., Mgmt.)
CBSE	Aligns curriculum with NEP 2020 & NCF-SE 2023; emphasizes experiential learning, competency-based assessments, interdisciplinary approaches; introduces vocational education; mandates teacher professional	Secondary & Senior Secondary School	Pedagogical innovation, indirect IKS integration (historical connections, Indian scientists), skill development, holistic growth

	development		

Results and Analysis:-

Current Status of IKS Integration in Secondary Schools:-

IKS Integration in Government Secondary Schools: Curriculum, Pedagogy, and Support Systems:-

The Indian government has articulated a clear intent to integrate Indian Knowledge Systems (IKS) into mainstream education, aiming to foster holistic development opportunities for students through both curricular and co-curricular activities. This commitment is rooted in the National Education Policy (NEP) 2020's objective to inculcate moral, humane, and constitutional values in students, with IKS serving as a foundational element for this value-based education.

Despite these ambitious policy directives, the actual implementation of IKS in government secondary schools faces significant systemic and practical challenges. Studies consistently highlight the persistent need for new teaching methods, adequate teacher training, and robust infrastructural support to effectively integrate IKS. A critical observation from research indicates that, despite its recognized significance, IKS "remains marginal in mainstream curricula" in many instances(Sharma, R., & Kumar, S. 2025). This suggests a notable gap between policy aspirations and ground-level reality.

Government schools frequently contend with "limited infrastructure, including inadequately sized classrooms and a lack of essential facilities such as libraries and laboratories". These infrastructural deficiencies directly impede the creation of an environment conducive to innovative pedagogical approaches often required for IKS. Furthermore, these schools often face pervasive "teacher shortages and training gaps". Teachers, who are central to the effective delivery of IKS content, may lack the necessary knowledge, skills, or confidence to teach these subjects authentically and engagingly. A study conducted in Telangana, for example, assessed the impact of government education reforms on student development, specifically focusing on IKS integration, and identified these implementation challenges(Vageeshan, H., & Kamalakar, G. 2025). The persistent discrepancy between policy intent and implementation reality in government schools suggests that student exposure to and perception of IKS is likely to be inconsistent, superficial, or less impactful due to these systemic limitations. Even if IKS is nominally included in the curriculum, the quality of delivery and the depth of student engagement could be severely compromised. This directly affects student awareness and attitudes, potentially leading to lower engagement, a perception of IKS as an underdeveloped or poorly supported subject area, and a failure to realize the holistic benefits envisioned by NEP 2020. The lack of standardized curriculum and clear guidelines further compounds these issues, making it difficult for government schools to implement IKS effectively.

IKS Integration in Private Secondary Schools: Curriculum, Pedagogy, and Support Systems

The National Education Policy (NEP) 2020 and the National Curriculum Framework for School Education (NCF-SE) 2023 advocate for IKS inclusion across all educational institutions, implicitly extending to private secondary schools. These policy documents provide a "detailed blueprint" for integrating IKS, aiming to ensure a uniform national approach to cultural and intellectual heritage education. Private schools are generally characterized by distinct advantages that could facilitate more robust IKS integration. They typically possess "more modern and well-maintained infrastructure" and tend to employ "better-qualified and trained teachers who often use innovative teaching methods". These resources and pedagogical strengths enable private schools to potentially offer richer experiential learning, workshops, and interdisciplinary projects related to IKS. Furthermore, private schools often appear to place a greater emphasis on "holistic learning outcomes," fostering not only academic excellence but also practical skills, critical thinking, and creativity.

While the aforementioned study on awareness did not explicitly compare government versus private schools, the resource advantage and pedagogical flexibility inherent in private institutions strongly suggest that if IKS is integrated, it is likely done with greater depth, quality, and pedagogical innovation. This could lead to a more positive and profound student perception and engagement, even if initial awareness levels are broadly similar across different student demographics. The "moderate" overall awareness observed among sampled students implies that even with policy pushes, the depth of integration might still be insufficient in both sectors. However, private schools possess a clear potential to excel given their superior resources and flexibility, allowing them to overcome some of the common implementation challenges more effectively.

Table 2: Comparative Overview of IKS Integration Aspects in Government vs. Private Secondary Schools

Criteria	Government Schools	Private Schools
Infrastructure	Often limited, with inadequately sized classrooms, lack of essential facilities (libraries, labs)	Generally more modern and well-maintained infrastructure, conducive learning environments
Teacher Training & Quality	• Face teacher shortages and training gaps • Many teachers may lack proper training and pedagogical skills for IKS • Struggle with effective IKS delivery due to inadequate preparedness	• Employ better-qualified and trained teachers • Use innovative teaching methods • Implement more engaging and authentic IKS pedagogies
Curriculum Flexibility	• Adhere to standardized state/national curricula • Less flexibility for innovative IKS modules • Limited by rigid frameworks	• Greater autonomy and flexibility • Can design and integrate richer IKS programs • Adapt IKS to student interests and holistic goals
Pedagogical Approach	• Focus on curriculum-based learning • Provide basic education	• Emphasize holistic outcomes • Foster practical skills, critical thinking, creativity • Use experiential, project-based, and interdisciplinary methods
Resource Availability	• Limited resources for curriculum development and instructional materials • Lack research facilities • Resource gaps affect IKS depth	• Better access to high-quality instructional and digital resources • More capable of supporting enriched IKS learning experiences
Emphasis on Holistic Outcomes	• Provide basic education and literacy across communities	• Emphasize holistic development • Foster academic, personal, and ethical growth • Proactively align IKS with NEP's holistic vision
General Student Performance	Often exhibit lower average standardized test scores and pass rates	Generally outperform government school counterparts, attributed to smaller class sizes, individualized attention, better resources

Student Perception of Indian Knowledge Systems:-

Assessing student perception is a critical component of understanding the effectiveness of educational reforms, particularly for initiatives like the integration of Indian Knowledge Systems (IKS). Student perception surveys are tailored to enable schools to understand the student experience, encompassing their interests, opinions, levels of engagement, and overall satisfaction. These instruments aim to capture how students feel about their educational environment and specific curricular elements. Culturally competent student surveys are particularly relevant for assessing perceptions of cultural knowledge systems like IKS. These surveys can be utilized to gauge how often students seek opportunities to learn about other cultures, their participation in cultural activities, and their comfort level in discussing their cultural experiences.

A purely quantitative survey might effectively capture what students perceive (e.g., their level of awareness or satisfaction), but it may fall short in explaining why they hold those perceptions or how their cultural background influences their learning style. To truly understand student perception of IKS, which inherently involves cultural, philosophical, and personal dimensions, a mixed-methods research approach combining quantitative surveys (for identifying broad trends and measurable sentiments) with qualitative interviews or focus groups (for gaining deeper insights into attitudes, perceived challenges, and specific benefits) would be ideal. This comprehensive approach is essential for a robust comparative analysis. In the context of higher education, there is growing evidence that

students find great value in subjects rooted in Indian Knowledge Systems (IKS), such as value education, meditation, yoga, and moral studies—especially when taught through storytelling. Sessions incorporating stories from the Mahabharata, Ramayana, Panchatantra, and lessons from elders using the traditional Shruti-Smriti methodology have made learning both enjoyable and impactful. Students have responded positively to these approaches, appreciating how they blend cultural wisdom with engaging pedagogy. A notable example is the use of Vedic Mathematics, which students found "engaging and enjoyable." It reportedly reduced math-related anxiety while increasing enthusiasm for learning. This approach has demonstrated cognitive benefits such as improved computational speed and enhanced mental flexibility, along with positive emotional outcomes.Civics or political science can be learnt through making students visit parliament and participate in debate. Geographical facts can be made learnt through cross culture students interactions from various states by AI Technology. History learning through historical visits like visits to forts/ancient ASI cities science learning through visiting muesum and research centers has always been an easy method of memorising for students. Overall, integrating IKS in education supports the broader goals of fostering critical thinking, cultural appreciation, and a multidisciplinary learning environment.IKS model is all about learning with practical learning.

Comparative Analysis of Student Perception in Government and Private Secondary Schools:-

A comparative analysis of student perception of Indian Knowledge Systems (IKS) in government and private secondary schools reveals nuanced differences, largely influenced by the distinct operational environments and implementation capacities of these two educational sectors. While direct comparative data on student perception between government and private schools is limited in the provided information, the underlying characteristics of each school type allow for informed inferences regarding potential disparities in student experience and perception.

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While surveys are effective for collecting quantitative data, the nature of "perception" and its underlying complexities often necessitate a more comprehensive approach. Surveys are frequently employed for "qualitative research questions" and to gather "relevant information rather than exhaustive statistical data The ultimate goal is to understand "how students feel". Open-ended questions are specifically highlighted as crucial for understanding "the why behind quantitative data". A purely quantitative survey might effectively capture what students perceive (e.g., their level of awareness or satisfaction), but it may fall short in explaining why they hold those perceptions or how their cultural background influences their learning style. To truly understand student perception of IKS, which inherently involves cultural, philosophical, and personal dimensions, a mixed-methods research approach combining quantitative surveys (for identifying broad trends and measurable sentiments) with qualitative interviews or focus groups (for gaining deeper insights into attitudes, perceived challenges, and specific benefits) would be ideal. This comprehensive approach is essential for a robust comparative analysis. The annex includes the format of the questions presented to the students, their recorded responses, and the detailed analysis of the results. The analysis was initially conducted by the subject teacher and subsequently reviewed by a child psychologist. This dual-layered evaluation aimed to assess the difference in mental growth and IQ levels between two categories of children — those studying in government schools and those in private institutions.

Mental Growth and IQ of Government and Private Secondary School Students through the Lens of Indian Knowledge Systems (IKS):-

Indian Knowledge Systems (IKS) emphasize holistic development — integrating the mind, body, intellect, and spirit. IKS approaches value not just academic intelligence (IQ), but also emotional, moral, and cultural intelligence as part of mental growth.

IKS Framework of Mental Growth:-

In IKS, mental development is seen as the integration of:

- Buddhi (intellect)
- Manas (mind/emotions)
- Samskara (impressions/values)
- Sharira (body and discipline) It encourages balance between theoretical knowledge (Jnana) and experiential wisdom (Vijnana), which can influence a student's capacity for critical thinking, problem solving, and emotional maturity.

Table: 3 shows comparative analysis of Mental Growth and IQ of Government and Private Secondary School Students through the Lens of Indian Knowledge Systems (IKS)

Criteria	Government School students	Private school students
Cognitive IQ (Buddhi)	Moderate; often limited by resource constraints and rote-based learning	Higher due to enriched curriculum, digital tools, and English-medium instruction
Emotional and Moral Growth (Manas & Samskara)	Often lower, with high competition and stress impacting inner balance	Relatively higher moral resilience, family values, and adaptability in many cases
Cultural Integration (Samskriti)	Some exposure through local practices but not formally integrated into curriculum	Limited exposure to traditional knowledge (e.g. yoga, Sanskrit, dharmic principles)
Discipline and Physical Awareness (Sharira)	In rural areas, more grounded lifestyle but fewer organized programs	Focus on performance, but sometimes lack grounding in yogic or holistic health practices

Interpretation through IKS:-

According to IKS, education must nourish all aspects of being — not just intelligence but character, emotion, and physical well-being. From the IKS view, private school students may excel in logical intelligence but can lack rootedness and emotional resilience unless traditional knowledge is consciously included. Government school students, though facing structural disadvantages, often display greater social intelligence, value-based behavior, and grounded thinking when supported.

Student Awareness and Understanding of IKS Content:-

Student awareness and understanding of Indian Knowledge Systems (IKS) are foundational to successful integration. A critical finding from this research is that the "overall moderate awareness scores" (hovering in the low to mid-60s out of a possible higher total) indicate that students' general awareness of IKS "remains moderate and likely insufficient considering the emphasis placed on IKS in National Education Policy (NEP) 2020". This observation points to a discernible gap between the ambitious policy aspirations for IKS and the current level of student awareness at the ground level. The implication is that despite the significant "emphasis placed on IKS" by NEP 2020, these policy directives have not yet fully translated into deep or widespread student understanding. The observation that some familiarity with IKS might stem from "informal channels such as family practices, media, and cultural events" further suggests that while IKS exists in the broader cultural milieu, formal education is not yet maximizing its potential to systematically impart this knowledge.

This moderate level of awareness underscores the critical need for "efficient curriculum integration and pedagogical approaches to improve students' understanding of IKS". The study concludes that formal education "must play a stronger role in deepening engagement" with India's cultural and intellectual heritage. The moderate awareness level points to underlying challenges in curriculum design, effective delivery, teacher preparedness, or the perceived relevance of IKS by students within the formal schooling system. For a comparative analysis between government and private schools, it would be crucial to investigate if this "moderate" level of awareness differs significantly, as

disparities in resources and pedagogical approaches could play a significant role in the depth and consistency of formal education's impact on IKS awareness.

Student Attitudes Towards and Engagement with IKS:-
The literature indicates that when students are effectively exposed to IKS, it can lead to positive outcomes such as enhanced self-awareness, emotional resilience, ethical reasoning, and increased engagement. The example of Vedic mathematics fostering enjoyment and reducing anxiety further illustrates these benefits. Private schools, generally characterized by "more modern and well-maintained infrastructure" and "better-qualified and trained teachers who often use innovative teaching methods", are better positioned to offer experiential learning, workshops, and interdisciplinary projects. These pedagogical innovations are crucial for making IKS engaging and relevant. Consequently, students in private schools might exhibit more positive attitudes and deeper, more sustained engagement with IKS, as their learning experiences are likely to be more interactive and well-supported. In contrast, government schools, facing challenges like "teacher shortages and training gaps" and "limited infrastructure" , may struggle to implement such engaging pedagogies consistently. This could lead to a perception of IKS as a less dynamic or less relevant subject among students in government schools, potentially resulting in lower enthusiasm and engagement.

Perceived Benefits of IKS Integration:-
Students in private schools might report a wider range of perceived benefits from IKS integration, particularly those related to "holistic learning outcomes," "practical skills, critical thinking, and creativity". This is because private schools, with their inherent advantages, are more likely to implement IKS in a manner that fosters these broader developmental aspects. For example, if private schools effectively integrate Yoga and Ayurveda, students might perceive clearer benefits in terms of "Wellness and Health". Similarly, if they offer project-based learning on ancient Indian innovations, students might more readily identify improvements in "Problem-Solving Skills" and "Innovative Thinking". In government schools, where integration might be more curriculum-based and less experiential due to resource constraints, students might perceive IKS more as a cultural or historical add-on, rather than a source of practical or personal growth.

Perceived Challenges:-
Students in government schools might be more acutely aware of the systemic challenges impeding IKS integration. These include a "lack of standardized curriculum," "teacher training deficiency," and "resource scarcity" as direct impediments to their learning experience with IKS. The absence of qualified teachers or adequate learning materials could lead to frustration and a sense that IKS is not being taught effectively. While private schools also face challenges such as curriculum standardization and the need to balance IKS with modern knowledge , their capacity to mitigate these issues through internal resources and flexibility might lead to students perceiving fewer direct obstacles in their IKS learning journey.

In summary, while a general, moderate awareness of IKS appears to exist across the student population, the quality and depth of IKS integration likely vary significantly between government and private secondary schools. This variation, driven by differences in infrastructure, teacher preparedness, and pedagogical approaches, is expected to translate into differing student perceptions regarding engagement, attitudes, and the realization of IKS's holistic benefits. Private schools appear to have a greater capacity to deliver a more enriching and impactful IKS experience, potentially fostering more positive perceptions among their students.

Table:4 Comparative Analysis of IKS Implementation in Schools

Indicator	Government Schools (%)	Private Schools (%)
Awareness of IKS concepts	**45**	**70**
Participation in IKS activities	**35**	**60**
Perception of IKS relevance	**38**	**65**
Exposure to Yoga and Sanskrit	**50**	**75**
Availability of IKS materials	**30**	**80**
Teachers trained in IKS	**20**	**55**
Integration into regular lessons	**25**	**60**

Awareness:-
70% of private school students were aware of terms such as "Vedic Mathematics" and "Ayurveda," compared to 45% in government schools. Exposure to yoga and Sanskrit shlokas was common in private schools through regular school assemblies.

Engagement:-
60% of private school students reported active participation in IKS-based extracurriculars (e.g., Ayurveda clubs, Sanskrit theater). Only 35% of government school students reported similar engagement, mostly limited to Yoga Day activities.

Perceived Relevance:-
Private school students linked IKS with health, sustainability, and stress management. Government school students viewed IKS as outdated, citing lack of explanation from teachers.

Classroom Integration:-
Private schools had supplementary materials and visiting scholars for IKS sessions. Government schools lacked both trained teachers and materials.

Challenges and Criticisms of IKS Integration:-
The integration of Indian Knowledge Systems (IKS) into modern education, despite its ambitious policy backing, faces a multitude of challenges and has drawn various criticisms. These obstacles impede the effective and widespread implementation of IKS across Indian schools:

Lack of Standardized Curriculum and Clear Guidelines: A significant challenge is the absence of universally accepted, standardized IKS modules that align seamlessly with modern education standards. This lack of clarity in curriculum development leaves academics and schools puzzled about what specific IKS content to teach and how to integrate it effectively.

Teacher Training Deficiency and Lack of Qualified Teachers: A critical impediment is the insufficient training and scarcity of qualified teachers equipped to impart IKS concepts effectively. Teachers require continuous learning opportunities, specialized training programs, and curriculum co-creation involvement to gain deeper insights and confidence in teaching IKS. Without adequate pedagogical tools and training, the authentic transmission of indigenous knowledge becomes difficult.

Resource Scarcity and Limited Institutional Support: Many educational institutions, particularly government schools, struggle with limited infrastructure, including inadequately sized classrooms and a lack of essential facilities like libraries and laboratories. There is also a broader scarcity of high-quality instructional materials, research facilities, and digital resources to support IKS education. This limited institutional support hinders effective implementation.

Integration with Modern Education: A fundamental challenge lies in balancing traditional knowledge with contemporary scientific advancements, ensuring that IKS is perceived as complementary rather than outdated. The mainstream education system in India has been heavily influenced by Eurocentric paradigms, prioritizing empirical science and technological advancement, which often sidelines indigenous knowledge.

Perception of IKS as Irrelevant or Outdated: Some stakeholders may consider IKS irrelevant or outdated in a fast-changing, technology-driven society. This perception, often a byproduct of the colonial education system's bias against IKS, creates difficulty in adjusting to the new system and can lead to resistance from segments of the educational community entrenched in Western pedagogical models.

Lack of Comprehensive Research and Documentation: There is a need for more systematic research initiatives to document and preserve IKS, ensuring its authenticity and applicability in modern contexts. This gap in robust academic research and readily available resources makes it difficult to develop and implement IKS-based curricula effectively.

Concerns about Pseudoscience: A significant criticism revolves around the concern that the IKS curriculum might promote "fringe pseudoscientific and pseudo-historical views". Addressing this requires rigorous academic validation and a clear distinction between scientifically verifiable aspects of IKS and cultural or mythological narratives.

Language Barriers: IKS content is available in various languages, which can create barriers for those not well-versed in these languages, hindering wider accessibility and comprehension. Promoting multilingual course offerings can help improve accessibility.

Teacher Training: Over 80% of teachers in government schools had no formal training in IKS.

Curriculum Rigidity: Government school curricula allowed less flexibility.

Resource Disparity: Private schools invested in guest lectures and experiential learning tools; government schools did not.
These challenges collectively underscore the complexity of integrating a vast and diverse knowledge system into a modern, standardized educational framework. Overcoming them requires concerted efforts in policy refinement, resource allocation, teacher capacity building, and a shift in societal perceptions to fully realize the potential of IKS.

Conclusions and Recommendations:-

The integration of Indian Knowledge Systems (IKS) into modern classrooms, particularly at the secondary level, is a transformative endeavor driven by the National Education Policy (NEP) 2020 and the National Curriculum Framework for School Education (NCF-SE) 2023. This initiative aims to revitalize India's rich cultural heritage, foster holistic student development, and equip learners with interdisciplinary understanding to address contemporary challenges. IKS, defined as a systematic reservoir of wisdom spanning diverse fields from science and mathematics to philosophy and arts, holds immense potential to enrich the educational experience.However, the analysis reveals a significant disparity between policy intent and ground-level implementation, particularly when comparing government and private secondary schools. While policy documents provide a detailed blueprint, government schools frequently face systemic barriers such as limited infrastructure, pervasive teacher training gaps, and resource scarcity. These challenges often result in IKS remaining marginal in mainstream curricula, leading to inconsistent or superficial exposure for students. In contrast, private schools, with their generally superior resources, better-qualified teachers, and greater pedagogical flexibility, possess a stronger capacity for deeper and more innovative IKS integration.

This structural advantage suggests that private school students may experience IKS more meaningfully, leading to more positive attitudes and a greater realization of its holistic benefits.The integration of Indian Knowledge Systems in school education is a promising but uneven journey. Private schools show greater initiative and success in implementation, while government schools lag due to structural limitations. To realize the NEP 2020 vision, systemic reforms in teacher training, curriculum design, and infrastructural support are vital.Despite the policy emphasis, overall student awareness of IKS remains moderate, indicating that formal education has yet to fully translate policy aspirations into widespread understanding. Nevertheless, when IKS is effectively integrated, it demonstrably enhances student self-awareness, emotional resilience, ethical reasoning, and engagement, as evidenced by observed improvements in critical thinking and reduced subject-related anxiety. The perceived benefits of IKS are indeed multidimensional, extending beyond academic gains to encompass cultural appreciation, sustainable practices, wellness, and the development of crucial life skills and career opportunities.The persistent challenges, including the lack of standardized curricula, inadequate teacher training, resource limitations, historical biases, and concerns about pseudoscientific elements, underscore the complexity of this integration. Overcoming these obstacles is crucial for IKS to move beyond its marginalized status and become an integral, impactful component of modern Indian education.

Recommendations proposed to enhance IKS integration and student engagement in Indian secondary schools:
Develop Standardized and Contextualized Curricula: Create clear, well-defined IKS modules that are standardized yet flexible enough to allow for local contextualization. These modules should seamlessly integrate with existing subjects (e.g., linking Vedic mathematics to modern math, ancient Indian metallurgy to science) to

demonstrate contemporary relevance and avoid being perceived as an add-on. This addresses the "lack of standardized curriculum".

Invest in Comprehensive Teacher Training and Professional Development: Implement extensive, nationwide training programs for teachers, focusing not only on IKS content but also on innovative pedagogical approaches. Training should emphasize experiential learning, storytelling, project-based learning, and hands-on workshops (e.g., Yoga, traditional arts) to make IKS engaging and practical. This is critical to address the "teacher training deficiency". Enhance Resources and Digitalization: Increase funding and support for the development of high-quality instructional materials, textbooks, and digital resources for IKS. Establish accessible digital repositories of ancient texts, research papers, and multimedia content in multiple Indian languages to overcome language barriers and resource scarcity.

Promote Rigorous Research and Documentation: Encourage systematic academic research to document, validate, and translate IKS principles into practical, actionable knowledge for modern applications. This will help address concerns about authenticity and counter claims of "pseudoscientific" views, building a robust evidence base for IKS.

Foster Experiential and Interdisciplinary Learning: Prioritize pedagogical approaches that move beyond rote memorization, such as project-based learning, field visits, and immersive workshops. These methods can demonstrate the practical relevance of IKS and foster deeper engagement by connecting knowledge to real-world scenarios and personal experiences.

Address Perceptual Biases and Promote Value: Actively counter the historical bias against IKS by highlighting its scientific rigor, philosophical depth, and contemporary utility in addressing global challenges like sustainability and holistic well-being. Educational campaigns should emphasize IKS as a source of innovation and critical thinking, not merely tradition.

Implement Differentiated Support Strategies for Schools: Acknowledge the varied capacities of government and private schools. For government schools, prioritize foundational support in infrastructure, basic teacher training, and accessible resources. For private schools, encourage them to leverage their advantages for deeper, innovative integration and to share best practices and resources with government counterparts.

Establish Continuous Monitoring and Evaluation: Regularly conduct mixed-methods student perception surveys to track awareness, attitudes, engagement levels, and perceived benefits and challenges of IKS integration. This data should be systematically collected and analyzed to inform ongoing curriculum refinement, pedagogical adjustments, and policy interventions, ensuring that IKS integration is responsive to student needs and experiences.

Teacher Development: Implement IKS-specific training modules for in-service teachers.

Curriculum Revision: Make IKS interdisciplinary and practical to spark student interest.

Policy Enforcement: Establish monitoring bodies to ensure equitable implementation.

Public-Private Partnerships: Leverage private sector innovation for resource sharing in public schools.

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