

1 Indian Knowledge Systems in Modern Classrooms: A 2 Comparative Analysis of Student Perception in Government 3 and Private Secondary Schools

8 Abstract

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

23 Keywords: IKS, secondary education, modern classrooms, perception

24 Introduction to Indian Knowledge Systems (IKS)

25 Historical Context and Enduring Relevance of IKS in Indian Education

26 Historically, the Indian education system was deeply rooted in a philosophy that prioritized "moral,life
27 skill based practical, spiritual, and intellectual values," with its origins traceable to the ancient Rigvedic
28 period. Ancient Indian knowledge and education were fundamentally structured around the concept of
29 "human welfare," deeply integrating philosophical concepts such as the "seven Janmas (Births)" and the
30 theory of Karma, which includes the four Purusharthas: Dharma (righteousness), Artha (wealth), Kama
31 (desire), and Moksha (liberation). This value-based approach aimed at holistic development, extending
32 beyond mere academic achievement.

33 The Vedas—Rig Veda, Sama Veda, Yajur Veda, and Atharva Veda—stand as the world's oldest
34 surviving literary works. Initially, this knowledge was transmitted orally as "Shruti" (heard) and "Smriti"
35 (memory) across generations. The compilation and written preservation of these texts by figures like

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

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

53 **Defining Indian Knowledge Systems (IKS): A Comprehensive Overview**

54 Indian Knowledge Systems (IKS) are formally defined as the "vast reservoir of wisdom, practices, and
55 knowledge systems that have been developed and preserved over millennia within the diverse cultural and
56 intellectual landscape of India". This definition extends beyond a mere collection of historical facts or
57 cultural artifacts, portraying IKS as a coherent intellectual framework. It encompasses an extensive array
58 of disciplines, including but not limited to philosophy, science, mathematics, engineering, technology,
59 agriculture, medicine, arts, architecture, psychology, law, jurisprudence, economics, social sciences, and
60 linguistics, including rich oral traditions.

61 A defining characteristic of IKS is its emphasis on a "noteworthy equilibrium between Life and Science,
62 Ordinary and Transcendent, Karma and Dharma, along with Enjoyment and Sacrifice". This holistic
63 perspective suggests a profound interconnectedness across various domains of existence and intellectual
64 inquiry. Furthermore, IKS is presented as a "structured system and a process of knowledge transfer rather
65 than a tradition". This classification is crucial, as it implies that IKS possesses its own methodologies for
66 knowledge generation, preservation, and dissemination. Its fundamental principles are rooted in Vedic
67 literature, the Upanishads, the Vedas, and the Upvedas. The core components of IKS—Jnan (Knowledge),
68 Vignan (Science), and Jeevan Darshan (Philosophy of Life)—are described as having evolved through
69 "experience, observation, experimentation, and rigorous analysis".

70 The understanding that IKS is a systematic and empirical framework, rather than solely a traditional or
71 anecdotal collection, holds significant implications for its integration into modern education. For effective
72 implementation, IKS must transcend superficial inclusion of historical anecdotes or cultural events.
73 Instead, it necessitates a pedagogical approach that engages with its underlying principles, methodologies,
74 and inherent interdisciplinary connections. If IKS is indeed a "system," its successful integration demands
75 a systemic shift in educational philosophy and practice, moving beyond mere content addition to a more

76 profound engagement with its intellectual rigor. This perspective also provides a basis for addressing
77 criticisms concerning "pseudoscientific" elements sometimes associated with IKS , by emphasizing the
78 rigorous analytical and experimental foundations that are intrinsic to its comprehensive definition.

79 **The National Education Policy (NEP) 2020 and the Resurgence of IKS**

80 The National Education Policy (NEP) 2020 marks a "significant shift" in India's education landscape,
81 placing a strong "emphasis on the importance of the Indian Knowledge System (IKS) in shaping the
82 country's educational framework". This policy positions IKS as central to "revitalizing India's rich
83 cultural heritage" , signaling a national commitment to re-engaging with India's indigenous intellectual
84 traditions.

85 IKS encompasses a vast and diverse reservoir of wisdom, practices, and systematic knowledge developed
86 over millennia within India's rich cultural and intellectual landscape, spanning philosophy, science,
87 mathematics, arts, and more. The NEP 2020 positions IKS as central to revitalizing India's cultural
88 heritage and fostering holistic student development, aiming to bridge traditional wisdom with modern
89 knowledge to address contemporary societal challenges.

90 A core objective of the NEP 2020 is to "enhance interdisciplinary and transdisciplinary understanding,
91 integrate modern knowledge with traditional wisdom, and address current societal challenges". This
92 reflects a deliberate effort to create a synergistic educational model that leverages both ancient and
93 contemporary knowledge for practical application. Beyond academic content, the policy explicitly aims to
94 inculcate in students "moral, humane and constitutional value-based qualities" such as empathy, respect,
95 courtesy, democratic spirit, a sense of service, scientific thinking, freedom, responsibility, equality, and
96 justice. This focus on character development and ethical citizenship underscores the holistic aspirations of
97 the policy. The NEP 2020 is highlighted as the "first education policy of the 21st century" designed to
98 address "many growing developmental imperatives of our country" , indicating its forward-looking and
99 comprehensive nature. The policy also seeks to "bridge the gaps in the existing education system,"
100 promote language resources and technology, and actively encourage research in IKS.

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

113

114 **Significance of the study**

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

125

126 **Literature Review**

127 Historical neglect of IKS during colonial rule marginalized traditional systems in favor of Western
128 education. Recent shifts, especially under NEP 2020, aim to reverse this trend. Several studies have
129 advocated for integrating IKS to promote identity, sustainability, and interdisciplinary learning
130 (Ranganathan, 2021; Mishra & Banerjee, 2023).

131

132 However, challenges persist. According to Singh (2024), the lack of trained educators and contextual
133 learning materials are major barriers. Research by Banerji (2022) found that private schools tend to have
134 more flexibility in implementing innovative curricula, including IKS, due to better resources and
135 autonomy

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137 **Research Methodology**

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139 **Methodology:** A mixed-method approach was employed:

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

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

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

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

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149 **Data Collection Tools**

150 **Questionnaire:** Included closed and open-ended questions on awareness, interest, and relevance of IKS.

151 **Focus Group Discussions (FGDs):** Conducted with 10 students from each school type.

152 **Classroom Observations:** Teachers' approaches and integration of IKS into lessons were noted.

153

154 **Data Analysis**

155 Quantitative data from the questionnaire were analyzed using descriptive statistics. Qualitative data from
156 FGDs and observations were thematically analyzed to identify recurring patterns.

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158 **Policy and Regulatory Framework for IKS Integration**

159 **NEP 2020's Vision and Guiding Principles for IKS**

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

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

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

183 **Role of the National Curriculum Framework for School Education (NCF-SE) 2023**

184 The National Curriculum Framework for School Education (NCF-SE) 2023 is a pivotal document that
185 translates the broad vision of NEP 2020 into concrete curricular guidelines for schools. It is described as
186 an "offshoot policy document" derived from NEP 2020, specifically focusing on the "School Education
187 Environment and its holistic growth". NCF-SE 2023 provides a "detail blueprint" for the systematic
188 inclusion of Indian Knowledge Systems in school education.

189 In alignment with this framework, NCERT has developed new textbooks that reflect NEP's emphasis on
190 experiential learning, holistic development, and vocational education. Specific curriculum changes for
191 Class 6, for instance, include integrating "historical connections," such as linking the origin of fractions to
192 an Indian mathematician, and highlighting the contributions of Indian scientists. The NCF-SE document
193 further incorporates "Ancient Indian Knowledge" through "Shlokas," "Dohas," and "Stories," illustrating
194 "past relevant methods to deal with School System". This approach aims to embed IKS elements directly
195 into the learning materials, making them accessible to students.

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

207 The integration of IKS into the Indian education system is supported by directives and initiatives from
208 various apex regulatory bodies, demonstrating a multi-level, top-down push.

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

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

230 comparative analysis between government and private schools particularly insightful for understanding
 231 real-world outcomes.

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233 **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 development | Secondary & Senior Secondary School | Pedagogical innovation, indirect IKS integration (historical connections, Indian scientists), skill development, holistic growth |

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Results and Analysis

238 **Current Status of IKS Integration in Secondary Schools**

239 **IKS Integration in Government Secondary Schools: Curriculum, Pedagogy,** 240 **and Support Systems**

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

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

253 Government schools frequently contend with "limited infrastructure, including inadequately
254 sized classrooms and a lack of essential facilities such as libraries and laboratories". These
255 infrastructural deficiencies directly impede the creation of an environment conducive to
256 innovative pedagogical approaches often required for IKS. Furthermore, these schools often face
257 pervasive "teacher shortages and training gaps". Teachers, who are central to the effective
258 delivery of IKS content, may lack the necessary knowledge, skills, or confidence to teach these
259 subjects authentically and engagingly. A study conducted in Telangana, for example, assessed
260 the impact of government education reforms on student development, specifically focusing on
261 IKS integration, and identified these implementation challenges(Vageeshan, H., & Kamalakar,
262 G. 2025). The persistent discrepancy between policy intent and implementation reality in
263 government schools suggests that student exposure to and perception of IKS is likely to be
264 inconsistent, superficial, or less impactful due to these systemic limitations. Even if IKS is
265 nominally included in the curriculum, the quality of delivery and the depth of student
266 engagement could be severely compromised. This directly affects student awareness and
267 attitudes, potentially leading to lower engagement, a perception of IKS as an underdeveloped or

268 poorly supported subject area, and a failure to realize the holistic benefits envisioned by NEP
269 2020. The lack of standardized curriculum and clear guidelines further compounds these issues,
270 making it difficult for government schools to implement IKS effectively.

271 **IKS Integration in Private Secondary Schools: Curriculum, Pedagogy, and** 272 **Support Systems**

273 The National Education Policy (NEP) 2020 and the National Curriculum Framework for School
274 Education (NCF-SE) 2023 advocate for IKS inclusion across all educational institutions,
275 implicitly extending to private secondary schools. These policy documents provide a "detailed
276 blueprint" for integrating IKS, aiming to ensure a uniform national approach to cultural and
277 intellectual heritage education.

278 Private schools are generally characterized by distinct advantages that could facilitate more
279 robust IKS integration. They typically possess "more modern and well-maintained
280 infrastructure" and tend to employ "better-qualified and trained teachers who often use
281 innovative teaching methods". These resources and pedagogical strengths enable private schools
282 to potentially offer richer experiential learning, workshops, and interdisciplinary projects related
283 to IKS. Furthermore, private schools often appear to place a greater emphasis on "holistic
284 learning outcomes," fostering not only academic excellence but also practical skills, critical
285 thinking, and creativity.

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

296 **Table 2: Comparative Overview of IKS Integration Aspects in Government** 297 **vs. Private Secondary Schools**

| Criteria | Government Schools | Private Schools |
|----------------|--|---|
| Infrastructure | Often limited, with inadequately sized classrooms, lack of essential | Generally more modern and well-maintained infrastructure, conducive |

| | facilities (libraries, labs) | learning environments |
|---------------------------------------|--|---|
| Teacher Training & Quality | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • Employ better-qualified and trained teachers • Use innovative teaching methods • Implement more engaging and authentic IKS pedagogies |
| Curriculum Flexibility | <ul style="list-style-type: none"> • Adhere to standardized state/national curricula • Less flexibility for innovative IKS modules • Limited by rigid frameworks | <ul style="list-style-type: none"> • Greater autonomy and flexibility • Can design and integrate richer IKS programs • Adapt IKS to student interests and holistic goals |
| Pedagogical Approach | <ul style="list-style-type: none"> • Focus on curriculum-based learning • Provide basic education | <ul style="list-style-type: none"> • Emphasize holistic outcomes • Foster practical skills, critical thinking, creativity • Use experiential, project-based, and interdisciplinary methods |
| Resource Availability | <ul style="list-style-type: none"> • Limited resources for curriculum development and instructional materials • Lack research facilities • Resource gaps affect IKS depth | <ul style="list-style-type: none"> • Better access to high-quality instructional and digital resources • More capable of supporting enriched IKS learning experiences |
| Emphasis on Holistic Outcomes | <ul style="list-style-type: none"> • Provide basic education and literacy across communities | <ul style="list-style-type: none"> • 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 | Generally outperform government school |

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| | pass rates | counterparts, attributed to smaller class sizes, individualized attention, better resources |
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298 Student Perception of Indian Knowledge Systems

299 Assessing student perception is a critical component of understanding the effectiveness of educational
300 reforms, particularly for initiatives like the integration of Indian Knowledge Systems (IKS). Student
301 perception surveys are tailored to enable schools to understand the student experience, encompassing their
302 interests, opinions, levels of engagement, and overall satisfaction. These instruments aim to capture how
303 students feel about their educational environment and specific curricular elements. Culturally competent
304 student surveys are particularly relevant for assessing perceptions of cultural knowledge systems like IKS.
305 These surveys can be utilized to gauge how often students seek opportunities to learn about other cultures,
306 their participation in cultural activities, and their comfort level in discussing their cultural experiences. A
307 purely quantitative survey might effectively capture *what* students perceive (e.g., their level of awareness
308 or satisfaction), but it may fall short in explaining *why* they hold those perceptions or *how* their cultural
309 background influences their learning style. To truly understand student perception of IKS, which
310 inherently involves cultural, philosophical, and personal dimensions, a mixed-methods research approach
311 combining quantitative surveys (for identifying broad trends and measurable sentiments) with qualitative
312 interviews or focus groups (for gaining deeper insights into attitudes, perceived challenges, and specific
313 benefits) would be ideal. This comprehensive approach is essential for a robust comparative analysis.

314 In the context of higher education, there is growing evidence that students find great value in subjects
315 rooted in Indian Knowledge Systems (IKS), such as value education, meditation, yoga, and moral
316 studies—especially when taught through storytelling. Sessions incorporating stories from the
317 Mahabharata, Ramayana, Panchatantra, and lessons from elders using the traditional Shruti-Smriti
318 methodology have made learning both enjoyable and impactful. Students have responded positively to
319 these approaches, appreciating how they blend cultural wisdom with engaging pedagogy. A notable
320 example is the use of Vedic Mathematics, which students found "engaging and enjoyable." It reportedly
321 reduced math-related anxiety while increasing enthusiasm for learning. This approach has demonstrated
322 cognitive benefits such as improved computational speed and enhanced mental flexibility, along with
323 positive emotional outcomes.

324 Civics or political science can be learnt through making students visit parliament and participate in
325 debate. Geographical facts can be made learnt through cross culture students interactions from various
326 states by AI Technology.

327 History learning through historical visits like visits to forts/ancient ASI cities science learning through
328 visiting muesum and research centers has always been an easy method of memorising for students.

329 Overall, integrating IKS in education supports the broader goals of fostering critical thinking, cultural
330 appreciation, and a multidisciplinary learning environment. IKS model is all about learning with practical
331 learning.

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333 **Comparative Analysis of Student Perception in Government** 334 **and Private Secondary Schools**

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

341 Assessing student perception is a critical component of understanding the effectiveness of educational
342 reforms, particularly for initiatives like the integration of Indian Knowledge Systems (IKS). Student
343 perception surveys are tailored to enable schools to understand the student experience, encompassing their
344 interests, opinions, levels of engagement, and overall satisfaction. These instruments aim to capture how
345 students feel about their educational environment and specific curricular elements. Culturally competent
346 student surveys are particularly relevant for assessing perceptions of cultural knowledge systems like IKS.
347 These surveys can be utilized to gauge how often students seek opportunities to learn about other cultures,
348 their participation in cultural activities, and their comfort level in discussing their cultural experiences.
349 This approach ensures that the assessment captures the nuanced interplay between cultural identity and
350 educational content.

351 While surveys are effective for collecting quantitative data, the nature of "perception" and its underlying
352 complexities often necessitate a more comprehensive approach. Surveys are frequently employed for
353 "qualitative research questions" and to gather "relevant information rather than exhaustive statistical data
354 The ultimate goal is to understand "how students feel". Open-ended questions are specifically highlighted
355 as crucial for understanding "the why behind quantitative data". A purely quantitative survey might
356 effectively capture what students perceive (e.g., their level of awareness or satisfaction), but it may fall
357 short in explaining why they hold those perceptions or how their cultural background influences their
358 learning style. To truly understand student perception of IKS, which inherently involves cultural,
359 philosophical, and personal dimensions, a mixed-methods research approach combining quantitative
360 surveys (for identifying broad trends and measurable sentiments) with qualitative interviews or focus
361 groups (for gaining deeper insights into attitudes, perceived challenges, and specific benefits) would be
362 ideal. This comprehensive approach is essential for a robust comparative analysis.

363 The annex includes the format of the questions presented to the students, their recorded responses, and the
364 detailed analysis of the results. The analysis was initially conducted by the subject teacher and
365 subsequently reviewed by a child psychologist. This dual-layered evaluation aimed to assess the
366 difference in mental growth and IQ levels between two categories of children — those studying in
367 government schools and those in private institutions.

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371 **Mental Growth and IQ of Government and Private Secondary School Students through the**
372 **Lens of Indian Knowledge Systems (IKS)**

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

376 **IKS Framework of Mental Growth**

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

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

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

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| 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 (Sanskriti) | 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 |

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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

426 pedagogical innovations are crucial for making IKS engaging and relevant. Consequently, students in
427 private schools might exhibit more positive attitudes and deeper, more sustained engagement with IKS, as
428 their learning experiences are likely to be more interactive and well-supported. In contrast, government
429 schools, facing challenges like "teacher shortages and training gaps" and "limited infrastructure" , may
430 struggle to implement such engaging pedagogies consistently. This could lead to a perception of IKS as a
431 less dynamic or less relevant subject among students in government schools, potentially resulting in lower
432 enthusiasm and engagement.

433 **Perceived Benefits of IKS Integration:**

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

444 **Perceived Challenges:**

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

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

459 **Table:4 Comparative Analysis of IKS Implementation in Schools**

460

| 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 |

461

462 **Awareness**

463 70% of private school students were aware of terms such as "Vedic Mathematics" and "Ayurveda,"
464 compared to 45% in government schools.

465 Exposure to yoga and Sanskrit shlokas was common in private schools through regular school assemblies.

466 **Engagement**

467 60% of private school students reported active participation in IKS-based extracurriculars (e.g., Ayurveda
468 clubs, Sanskrit theater).

469 Only 35% of government school students reported similar engagement, mostly limited to Yoga Day
470 activities.

471 **Perceived Relevance**

472 Private school students linked IKS with health, sustainability, and stress management.

473 Government school students viewed IKS as outdated, citing lack of explanation from teachers.

474 **Classroom Integration**

475 Private schools had supplementary materials and visiting scholars for IKS sessions.

476 Government schools lacked both trained teachers and materials.

477 **Challenges and Criticisms of IKS Integration**

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

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

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

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

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

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

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

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

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

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

516 **Curriculum Rigidity:** Government school curricula allowed less flexibility.

517 **Resource Disparity:** Private schools invested in guest lectures and experiential learning tools;
518 government schools did not.

519 These challenges collectively underscore the complexity of integrating a vast and diverse knowledge
520 system into a modern, standardized educational framework. Overcoming them requires concerted efforts
521 in policy refinement, resource allocation, teacher capacity building, and a shift in societal perceptions to
522 fully realize the potential of IKS.

523 **Conclusions and Recommendations**

524 The integration of Indian Knowledge Systems (IKS) into modern classrooms, particularly at the
525 secondary level, is a transformative endeavor driven by the National Education Policy (NEP) 2020 and
526 the National Curriculum Framework for School Education (NCF-SE) 2023. This initiative aims to
527 revitalize India's rich cultural heritage, foster holistic student development, and equip learners with
528 interdisciplinary understanding to address contemporary challenges. IKS, defined as a systematic
529 reservoir of wisdom spanning diverse fields from science and mathematics to philosophy and arts, holds
530 immense potential to enrich the educational experience.

531 However, the analysis reveals a significant disparity between policy intent and ground-level
532 implementation, particularly when comparing government and private secondary schools. While policy
533 documents provide a detailed blueprint, government schools frequently face systemic barriers such as
534 limited infrastructure, pervasive teacher training gaps, and resource scarcity. These challenges often result
535 in IKS remaining marginal in mainstream curricula, leading to inconsistent or superficial exposure for
536 students. In contrast, private schools, with their generally superior resources, better-qualified teachers,
537 and greater pedagogical flexibility, possess a stronger capacity for deeper and more innovative IKS
538 integration. This structural advantage suggests that private school students may experience IKS more
539 meaningfully, leading to more positive attitudes and a greater realization of its holistic benefits. The
540 integration of Indian Knowledge Systems in school education is a promising but uneven journey. Private
541 schools show greater initiative and success in implementation, while government schools lag due to
542 structural limitations. To realize the NEP 2020 vision, systemic reforms in teacher training, curriculum
543 design, and infrastructural support are vital.

544 Despite the policy emphasis, overall student awareness of IKS remains moderate, indicating that formal
545 education has yet to fully translate policy aspirations into widespread understanding. Nevertheless, when
546 IKS is effectively integrated, it demonstrably enhances student self-awareness, emotional resilience,
547 ethical reasoning, and engagement, as evidenced by observed improvements in critical thinking and
548 reduced subject-related anxiety. The perceived benefits of IKS are indeed multidimensional, extending
549 beyond academic gains to encompass cultural appreciation, sustainable practices, wellness, and the
550 development of crucial life skills and career opportunities.

551 The persistent challenges, including the lack of standardized curricula, inadequate teacher training,
552 resource limitations, historical biases, and concerns about pseudoscientific elements, underscore the
553 complexity of this integration. Overcoming these obstacles is crucial for IKS to move beyond its
554 marginalized status and become an integral, impactful component of modern Indian education.

555 **Recommendations proposed to enhance IKS integration and student** 556 **engagement in Indian secondary schools:**

557 **Develop Standardized and Contextualized Curricula:** Create clear, well-defined IKS modules that are
558 standardized yet flexible enough to allow for local contextualization. These modules should seamlessly
559 integrate with existing subjects (e.g., linking Vedic mathematics to modern math, ancient Indian
560 metallurgy to science) to demonstrate contemporary relevance and avoid being perceived as an add-on.
561 This addresses the "lack of standardized curriculum".

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

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

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

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

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

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

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

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

594 **Policy Enforcement:** Establish monitoring bodies to ensure equitable implementation.

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

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