

Integrating Indian Knowledge Systems into School and Higher Education: Challenges and Opportunities.

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Abstract: Indian Knowledge Systems are the sum of the intellectual and cultural heritage, science, philosophy and spirituality of India. They cover knowledge pertaining to Ayurveda, Yoga, mathematics, astronomy, language, grammar, arts, ethics, agriculture, environment and sustainable living. The incorporation of IKS in the school and higher education curriculum has been a hot topic of discussion, particularly in the context of educational reforms and the National Education Policy 2020. The major challenges and opportunities in integrating Indian Knowledge Systems in the present-day education system is to be explored in this paper.

The study points to the need to make education more holistic, value based, culturally rooted and socially relevant using IKS. In the school level, IKS may enable the students to gain awareness of Indian heritage, moral values, environmental responsibility, and respecting traditional wisdom. At the higher education level, it fosters interdisciplinary research and innovation, as well as the dialogue between ancient knowledge and modern science. The integration of IKS may also foster community-based education and experiential learning and sustainable development.

But there are also several challenges in applying IKS. These include the lack of trained teachers, lack of standardized materials for studying, language issues, curriculum overload, lack of research-based interpretation and the danger of shallow inclusion. Thus, for successful implementation, careful curriculum planning, effective teacher training, suitable resources and academic objectivity must be provided.

In summary, this paper suggests that Indian Knowledge Systems can be incorporated into the present education in a balanced, critical and inclusive manner to enrich it. IKS can connect tradition and modernity and help the development of learners who are culturally conscious, responsible and competent in the world.

Keywords: Indian Knowledge Systems, Curriculum Integration, School Education, Higher Education, NEP 2020, Traditional Knowledge, Holistic Education

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I. Introduction

Indian Knowledge Systems (IKS) are the enormous expanse of knowledge accumulated in India through long experience, observation, experimentation and real-life application. The subjects covered in IKS are philosophy, Ayurveda, Yoga, mathematics, astronomy, grammar, arts, architecture, agriculture, environment, ethics, and social practices. Based on the observation, experimentation, rigorous study and analysis, the Ministry of Education has explained that IKS has evolved into three aspects namely Jnan, Vignan, and Jeevan Darshan which have influenced education, health, law, arts, commercial activities and social life (Ministry of Education, 2023).

Incorporating traditional Indian knowledge into education holds significance as it enables the students to grasp their cultural heritage and acquire critical and practical knowledge. One of the main goals of modern education is to get students ready for the job, technology, and exam. But IKS can bring in moral values, holistic thinking, ecological awareness and community-based learning. For instance, the use of Yoga can assist in maintenance of physical and mental health, Ayurveda can encourage preventive health

awareness, and traditional agricultural knowledge can be used to educate students about sustainable living.

There is also a great demand for putting ancient wisdom into modern learning. It is not a call to abandon modern science, but rather to have a conversation between the traditional knowledge and the academic approach. The National Education Policy 2020 also states that Indian knowledge systems need to be covered in the curriculum at various levels and recommends a fascinating course on Indian Knowledge Systems for secondary school students (Ministry of Education, 2020). In the same way, the University Grants Commission suggests that learning needs to be rooted, multidisciplinary and relevant and therefore, embedding IKS in the education system in higher education is recommended (University Grants Commission, 2023).

The trend in curriculum reforms in recent years in India has been towards multidisciplinary education, value-based learning, skill development and cultural awareness. In this context, IKS is very applicable to school and higher education. At the school level, it can create identity, values and curiosity. At the higher education level, it can foster research, innovation, interdisciplinary studies. Hence, this study is focused

on exploring possibilities and hurdles of integrating IKS in a balanced, inclusive and academically enriching manner in the curriculum of the school and higher education.

II. Conceptual Understanding of Indian Knowledge Systems

Indian Knowledge Systems are the traditional knowledge systems that have evolved in India by observation, experience, reasoning, practice and across generations. IKS can be from religious, philosophical, scientific, social, cultural, artistic, ethical, environmental and practical knowledge. According to the Ministry of Education, IKS is a combination of knowledge (Jnan), science (Vignan) and philosophy of life (Jeevan Darshan) (Ministry of Education, 2023). Thus, IKS can be considered as an ensemble system of relating knowledge to life, society, nature and human development.

IKS is holistic, interdisciplinary. Does not compartmentalize knowledge into individual disciplines. Rather, it links physical health, mental health, moral values, environment, community life and spiritual development. For instance, Ayurveda emphasizes on wellness, disease prevention, diet, herbs, and maintaining balance of the body and mind. Yoga encourages to keep you physically fit, mentally peaceful, concentrated and emotionally stable. These are key areas in today's school as students should be equipped with both knowledge and good health.

The philosophy and ethics part of IKS also guides learners in comprehending issues of truth, duty, self-control, right conduct and social responsibility. Philosophical traditions like Nyaya, Vedanta, Sankhya, and Buddhist thought instil a love for logical thinking, critical analysis, and moral contemplation in Indian thought. In the same way the contributions of Indian mathematicians and astronomers also reflect the scientific richness of ancient India. The understanding of numbers, geometry, calculation, planetary movement and time measurement suggest that Indian knowledge traditions had analytical aspects (University Grants Commission, 2023).

Language, literature and grammar is another important field. Sanskrit or other Indian languages have a wealth of literature, philosophy and science in their language. Indian grammar traditions, like Panini's, reveal the advanced level of linguistic analysis in India. Arts, crafts, architecture, agriculture, and environmental knowledge are among other aspects of the IKS. The examples of traditional architecture, local crafts, water management systems, organic farming, and ecological practices illustrate how the Indian community has learned to live sustainably.

Hence, IKS is a comprehensive and holistic knowledge tradition. It can help to enrich school and higher education by linking traditional knowledge and current learning, values, sustainability and interdisciplinary research.

III. Indian Knowledge Systems in the context of Education

Indian Knowledge Systems (IKS) are of great significance in the domain of education as it brings a link between learning and culture, ethics, practical life, social responsibility etc. In present education, children are involved in learning subjects in a disorganized manner, while in the IKS they learn in an integrated and meaningful manner. It assists the students to appreciate the intellectual heritage of India, such as philosophy, Ayurveda, Yoga, mathematics, literature, arts, agriculture and environmental practices. The National Education Policy 2020 (NEP 2020) also states that the education must include Indian knowledge systems which will help in developing pride in Indian heritage and provide holistic learning (Ministry of Education, 2020).

Cultural awareness is a key component of the work of IKS. Students learn about the traditions through study which enables them to understand the Indian history, languages, values and community practices. It is not limiting to the past, but rather a way to help students link tradition with modernity. For instance, Yoga lessons can foster wellness, and traditional ecological knowledge can contribute to developing environmental responsibility.

Value Education is also being encouraged in IKS. It values truth, discipline, compassion, respect, self-control, duty and social harmony. These values are crucial to moral and social growth. The University Grants Commission report that incorporating the study of IKS into higher education will foster students' awareness of the knowledge systems of India and its significance today (University Grants Commission, 2023). Hence, IKS could be a useful element in the morals, social and spiritual development of learners.

An additional key aspect of IKS is its linkage to experiential learning. In traditional education, Indian education focus was on observing, practicing, talking and learning by doing. The knowledge of Ayurveda, agriculture, crafts, music, architecture etc. was acquired by actual experience and through the community. This method can enhance education practice and student centeredness.

IKS also has strong connections with sustainable living. In the traditional way, Indians are in favor of harmony with nature, responsible use of resources, healthy lifestyle and ecological balance. IKS can help to develop cultural identity and basic values at the school level. It may be used at higher education level to facilitate interdisciplinary research, invention and sustainable development. Therefore, IKS is applicable in the education system in both school and higher education.

IV. The policy background and curriculum framework

The National Education Policy 2020 is strongly related with the policy background of integrating Indian

Knowledge Systems (IKS) in education. The focus of NEP 2020 is the need to incorporate the Indian knowledge system in the education system in schools and higher education institutions to create a holistic, grounded and relevant learning environment. It particularly emphasizes the importance of exposure of students to the knowledge heritage of India in various fields like mathematics, astronomy, philosophy, yoga, medicine, agriculture, literature, arts, and environmental practices. NEP 2020 also proposes to introduce an interesting course on Indian Knowledge System as an elective course for secondary school students (Ministry of Education, 2020).

There are important roles to be played by different educational entities in this curriculum framework. It is the responsibility of NCERT to prepare school-level textbooks and learning materials, which allows for the incorporation of age appropriate IKS content in subjects like history, science, health education, environmental studies, language and moral education. For Higher Education, the University Grants Commission (UGC) has laid down guidelines on incorporating Indian knowledge into Higher Education Curriculum. The guidelines promote integrating IKS in foundation courses, elective courses, multi-disciplinary courses and research-based learning (University Grants Commission, 2023).

Another important role is played by All India Council for Technical Education (AICTE) under the Ministry of Education through the IKS Division. The IKS Division focuses on fostering interdisciplinary Indian knowledge research, preservation and dissemination in arts, agriculture, basic sciences, engineering, architecture, management and economics (Indian Knowledge Systems Division, n.d.). This indicates that IKS can be associated with science, technology, engineering and professional education.

Books, courses and academic curricula need to be multidisciplinary and flexible to include IKS. IKS should not be imposed as an extra load but incorporated in subjects in a meaningful way. For instance, Vedic maths can be connected to Mathematics, Ayurveda to Health education, traditional water management to Environmental education, and Indian logic to Philosophy or Computer science etc. A flexible curriculum can facilitate students to grasp the link between past wisdom and contemporary knowledge and inspire them to think critically, be culturally aware, and to innovate.

V. The opportunities for integration of IKS into Curriculum are as follows:

The incorporation of Indian Knowledge Systems (IKS) into curriculum offers a plethora of possibilities for rendering education meaningful, indigenous and socially useful. An important opportunity is that IKS is a promoter of cultural identity and national heritage. Students acquire respect for India's intellectual and cultural heritage when they are introduced to Indian

philosophy, Ayurveda, Yoga, mathematics, astronomy, arts, architecture, agriculture and environment. The Ministry of Education says that the concept of IKS, which had developed through experience, observation, experimentation and rigorous analysis, is comprised of three elements: Jnan, Vignan and Jeevan Darshan (Ministry of Education, 2023).

IKS also promotes the all-round development of the learners. All too frequently, contemporary education has limited its interests to academic performance and job preparation, while IKS has placed emphasis on physical, mental, moral, social, and spiritual growth. For instance, Yoga can instill discipline, concentration and emotional balance into students, and Ayurveda can raise awareness on preventive health and lifestyle. NEP 2020 emphasizes on holistic and multidisciplinary education, and the significance of India's knowledge traditions in the learning process (Ministry of Education, 2020).

One of the other great opportunities is interdisciplinary learning. IKS organically links different subjects. For example, Vedic mathematics is related to mathematics, traditional architecture to engineering and design, Ayurveda to health sciences, and Indian logic to philosophy and computer science. UGC guidelines urge higher education institutions to have IKS in two ways: firstly, multidisciplinary courses and secondly, electives and research-based learning (University Grants Commission, 2023).

IKS can link traditional knowledge to science. This is not to take everything on faith that is normally believed. Instead, it promotes the critical examination, research and scientific verification of traditional practices. For instance, modern environmental science, pharmacology and agriculture research can be used to study traditional water harvesting, herbal medicine, and sustainable farming.

Besides ethical education and value education, IKS also provides support for it. It inculcates values like truth, discipline, compassion, and respect towards nature, social responsibility and self-control. These values are significant in the formation of responsible citizens. Further, IKS enhances sustainability and environmental consciousness as numerous traditions are in practice in India that encourage harmony with nature, conservation of resources and simple living.

Finally, IKS values local knowledge and community learning. Students can get to know local artisans, farmers, healers, artists and community elders. This will provide new space for research, innovation, entrepreneurship and social development. Therefore, using the IKS in the curriculum can make education more inclusive, practice and future oriented.

VI. Difficulties in incorporating IKS into the Curriculum

While the introduction of Indian Knowledge Systems (IKS) into the school curricula to a greater extent and

in the higher education system is beneficial, it also comes with certain practical and academic challenges. A key problem is the shortage of academic and skilled teachers. IKS covers a lot of fields including Ayurveda, Yoga, Philosophy, Mathematics, Astronomy, and Literature, Arts, Agriculture and Environmental knowledge. Accordingly, teachers should be appropriately trained to help impart knowledge in these subjects in an accurate and modern educational setting. However, with unqualified teachers, IKS can be shallowly or incorrectly taught.

One of the difficulties is that there is little standardization of teaching materials. There is a need for schools and universities to have reliable textbooks, modules, digital resources, and reference materials at different levels of learners. University Grants Commission has mandated for the integration of IKS into the higher learning institutions curricula but adequate implementation of IKS requires careful preparation of academic material (University Grants Commission, 2023). In the absence of standardization in teaching materials, IKS may be presented in different ways in different institutions.

Another difficulty is the tension between tradition and modern scientific techniques. The inclusion of IKS as cultural pride is not enough, it must also be studied critically and academically. Traditional knowledge should be presented in a manner that is explained correctly, evidenced and interpreted. The National Education Policy 2020 advocates the integration of Indian knowledge traditions and emphasizes on critical thinking, multi-disciplinary approach towards learning and scientific temper (Ministry of Education, 2020). Thus, curriculum designers need to consider ancient wisdom as well as modern knowledge, without imposing their own prejudices on either one or the other.

There is also the potential for superficial or symbolic inclusion. IKS sometimes does not have any significant learning, but is only a small chapter, slogan or decorative topic. This may decrease its instructional worth. The other key difficulty is the language barrier. A large number of the original IKS texts are not in English, but in Sanskrit or regional languages, and may not be readily available. Explanation and translation must be correct and simplified.

Furthermore, the interpretation of IKS needs to be done through proper research and evidence. Interdisciplinary approach should be adopted to study the topics like Ayurveda, traditional agriculture, architecture and astronomy. Another problem is curriculum overload, particularly at the school level because pupils are already studying a lot of subjects. Finally, the process of effective implementation can be slowed by the lack of institutional support, funding, trained faculty and research infrastructure. Therefore, planning, resources, teacher training and academic seriousness are required for successful integration of IKS.

VII. Strategies for Effective Integration

Indian Knowledge Systems (IKS) must be carefully planned, trained teachers, authentic resources, and balanced academic approach to integrate effectively in school and higher education. The first key strategy is teacher training and capacity building. Teachers should be provided training to understand the meaning, scope and relevance of IKS for the purpose of accurate explanation. If not properly trained, IKS can be taught superficially. The National Education Policy (2020) highlights teacher preparation, interdisciplinary learning, and the integration of India's knowledge traditions into learning.

The second strategy is to create the proper and appropriate study materials. School students require simple explanations and stories, activities and examples, and higher education student's research-based modules, original texts, translations, critical discussions. The University Grants Commission has suggested that IKS be integrated into higher education through structured courses, electives and research-oriented learning (University Grants Commission, 2023).

Interdisciplinary curriculum planning is also an important strategy. The choice of subjects should not be restricted to one subject only for IKS. It can be linked to science, health, math, literature, philosophy, environmental studies, agriculture, arts and technology. For instance, Yoga can be associated with health education, Ayurveda with biology and wellness, traditional water conservation with environmental science, and Indian logic with philosophy and computer science.

Classical texts also need to be translated and simplified as many of the important texts on IKS are written in Sanskrit or regional languages. These texts can be accessible to the student and teacher through clear translations. Simplification should not, however, change the meaning of the original.

IKS is also included via research-based interpretation. The study of traditional knowledge should be approached critically, with evidence, and academic rigor. Digital tools and open educational resources can be used to help distribute IKS materials. The Indian Knowledge Systems Division facilitates the research, education and dissemination of Indian Knowledge traditions in interdisciplinary approaches (Indian Knowledge Systems Division, n.d.).

Last, but not least, it is important for there to be a partnership between traditional scholars and modern scholars. Practical and meaningful examples of IKS can be achieved through local examples, field visits, community interaction, craft demonstration, visits to the herbal gardens and project-based learning. These approaches can help make integration with IKS a strong, culturally relevant, and practical educational experience for today's learners.

VIII. Discussion

Indian Knowledge systems can add value to the modern education by making it Holistic, Value oriented, culturally grounded and socially relevant. While examinations, employment and technical skills are emphasized in modern education, IKS also brings a layer of ethics, self-discipline, wellness, sustainability and respect of cultural heritage. The study of Yoga, Ayurveda, Indian philosophy, mathematics, literature, arts, architecture, agriculture and environmental knowledge can show the learners the relationship between classroom learning and real life. India's knowledge traditions have been emphasised in the National Education Policy 2020 to produce holistic and multidisciplinary education (Ministry of Education, 2020).

The integration of IKS should, however, strike a balance between the traditional knowledge and the mainstream academic knowledge. Traditional knowledge for the sake of traditional knowledge is not acceptable, it must be studied using critical thinking, research and evidence-based interpretation. For instance, Ayurveda, traditional agriculture and architecture can be taught along with the modern biology, environmental science, and engineering. This can be a way for students to learn wisdom and contemporary scientific procedures.

An important point to emphasize is a critical, scientific and inclusive approach. The presentation of IKS should be tailored to stimulate enquiry, analysis and open debate. It should also have knowledge traditions from different parts of India in the regional aspect where it would not be narrow or unbalanced in its curriculum. The University Grants Commission (2023) suggests that IKS can be integrated into universities from a multidisciplinary and research perspective.

The role of institutions is one of the important ones for successful implementation. The need of the hour is that the schools, colleges, universities, NCERT, UGC, AICTE and teacher training institutions should collaborate to develop textbooks, train teachers, encourage research, and develop appropriate evaluation systems. At the long-term level, IKS can assist students in developing cultural awareness, ethical responsibility, environmental awareness and global competency.

IX. Recommendations

The introduction of IKS should be done phasing by phasing at different levels of education. At the school level, simple stories, activities, local examples and project-based learning can be utilized. At the higher education level, IKS may be integrated as a part of elective courses, foundation courses, research projects, and interdisciplinary courses. Teachers need to be

trained prior to the implementation, to ensure they can explain IKS accurately and meaningfully.

Textbooks, modules and digital resources should be created for various age groups. Research on IKS should be encouraged at the universities and courses should be designed interdisciplinary in nature to connect Indian knowledge with science, technology, humanities, health, environment and social sciences. It is also important to take account of regional knowledge traditions to make the curriculum diverse and inclusive. Assessment needs to assess understanding, application, reflection and project work, not just memorisation.

X. Conclusion

To wrap up, Indian Knowledge Systems are a significant source of holistic knowledge which can be used to bolster the existing education system. There are opportunities to foster cultural awareness, ethical values, interdisciplinary thinking, environmental responsibility and national development using IKS. Its integration, however, needs to be both thoughtful and substantive and academically appropriate. The barriers of unqualified instruction, inadequate materials, language difficulties, and curriculum overload, among others, will have to be overcome by planning, training, research, and institutional support. With proper execution, IKS can provide an education system based on the Indian heritage and in service of all global needs.

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