

**INTEGRATING INDIAN KNOWLEDGE SYSTEMS (IKS) IN
EDUCATION: ENHANCING PROBLEM-SOLVING ABILITIES
THROUGH INNOVATIVE PEDAGOGIES
ALIGNED WITH NEP 2020**

MR. TARUN PRATAP SINGH

*Junior Research Fellow
Dayalbagh Educational Institute, Agra*

INTRODUCTION

The **Indian Knowledge System (IKS)** is a comprehensive and interdisciplinary framework that reflects the intellectual, cultural, and spiritual traditions of India. Rooted in ancient texts, IKS covers a wide range of fields including philosophy, linguistics, mathematics, science, medicine, arts, and ecology. It is characterized by a holistic worldview that sees knowledge as interconnected and integral to personal and societal well-being.

Key Components of the Indian Knowledge System

- Indian philosophy, through its six classical schools (Nyaya, Vaisheshika, Samkhya, Yoga, Mimamsa, Vedanta), explores metaphysics and ethics. Texts like the Vedas and Bhagavad Gita address self-realization, dharma, and moksha, with Vedanta having global spiritual influence.
- Sanskrit, central to Indian knowledge, significantly influenced linguistics. Panini's *Ashtadhyayi* established foundational linguistic rules, impacting global linguistic studies.
- Indian mathematicians like Aryabhata and Brahmagupta contributed key concepts in math and astronomy, such as zero and the Earth's rotation (*Aryabhatiya*).
- Ayurveda emphasizes balance in body, mind, and spirit. Texts like *Charaka Samhita* form its basis, while yoga, as per *Yoga Sutras*, integrates holistic practices now globally popular.
- Indian classical arts, deeply symbolic, are influenced by the *Natya Shastra*, which introduces the theory of Rasa, essential to Indian aesthetics.
- Texts like *Manusmriti* laid early ethical frameworks, addressing justice and social duties. The caste system, rooted in these texts, was originally linked to social roles and duties.
- Indian philosophy, as seen in the Vedas, advocates environmental harmony and respect for nature, with concepts like *Prithvi* (Earth) forming the basis for sustainability and ethical treatment of nature.

INTEGRATION AND ROLE OF IKS IN NATIONAL EDUCATION POLICY (NEP 2020)

The National Education Policy (NEP) 2020 underscores the importance of incorporating India's vast heritage of knowledge systems, particularly the Indian Knowledge System (IKS), within contemporary educational structures. It seeks to foster holistic, interdisciplinary learning while ensuring that students remain connected to the nation's cultural and intellectual legacy.

The National Education Policy (NEP) 2020 highlights the role of the Indian Knowledge System (IKS) in revitalizing education by incorporating traditional wisdom and practices into the modern framework. Key aspects include:

Inclusion of Traditional Knowledge

NEP 2020 promotes the integration of subjects such as Ayurveda, Yoga, agriculture, and indigenous health practices into both school and higher education. This initiative aims to reconnect learners with India's intellectual traditions, enhancing the cultural relevance of education (Ministry of Education, 2020).

Interdisciplinary Learning

The policy advocates for a multidisciplinary approach, incorporating IKS in fields like philosophy, science, mathematics, and linguistics. For example, Vedic mathematics and classical Indian logic (Nyaya) are encouraged to strengthen analytical and problem-solving abilities among students (Ministry of Education, 2020).

Research and Development in IKS

NEP 2020 emphasizes the creation of research centres dedicated to the study of IKS. These centers are expected to collaborate with modern scientific institutions to validate and adapt traditional knowledge for contemporary applications (Ministry of Education, 2020).

Language and Linguistics

The policy underscores the importance of promoting Indian languages, particularly Sanskrit, as a gateway to accessing ancient texts. By fostering multilingualism and encouraging the study of classical languages, NEP 2020 aims to preserve linguistic heritage and enhance engagement with IKS (Ministry of Education, 2020).

Global Relevance of IKS

NEP 2020 recognizes the global significance of IKS, particularly in areas like wellness, sustainable living, and holistic health. It advocates for integrating IKS into international educational discourse, highlighting India's contributions to global knowledge systems (Ministry of Education, 2020).

Value-Based Education

The policy emphasizes ethics, values, and life skills education rooted in traditional Indian thought. Concepts such as Dharma, Rta (cosmic order), and environmental sustainability from ancient texts are highlighted to in still social responsibility and moral values in students (Ministry of Education, 2020).

21ST CENTURY SKILLS

21st-century skills refer to the key abilities needed to succeed in today’s fast-changing, technology-driven world. These skills focus on being adaptable, creative, and able to work well with others. The main skills include:

1. **Critical Thinking & Problem Solving:** Being able to analyze complicated issues and find effective solutions.
2. **Creativity & Innovation:** Coming up with new ideas and thinking in unconventional ways to solve problems.
3. **Collaboration:** Working well in teams, using the strengths of diverse people to achieve shared goals.
4. **Communication:** Clearly expressing ideas through speaking, writing, and digital platforms.
5. **Information Literacy:** Knowing how to find, assess, and use information from various sources in a responsible way.
6. **Digital Literacy:** Being skilled with technology, online tools, and adapting to new digital environments (World Economic Forum, 2015)

PROBLEM SOLVING

Problem-solving involve the ability to identify, analyze, and resolve issues in both personal and professional contexts. There are various models of problem-solving developed by different psychologist have been presented in the table no. 1

| POLYA (1945) | ALAN SCHOENFELD (1985) | JOHN MASON (1985) |
|---|--|---|
| 1. Understanding the problem 2. Devising a Plan 3. Carrying out the plan 4. Looking back | 1. Reading 2. Analysis 3. Exploration 4. Planning 5. Implementation 6. Verification | 1. Getting Start 2. Getting Involved 3. Mulling Keeping 4. Going Insight 5. Being Skeptical 6. Contemplating |

Table No.1

Polya (1945), Scholefield (1985), and Mason (1985) proposed their model for problem-solving and used various words and situations for problem-solving based on these models there are a process for problem solving.

Identification: Recognizing and understanding the problem.

Analysis: Breaking down the problem and understanding its components.

Ideation: Brainstorming potential solutions and evaluating them.

Implementation: Applying the chosen solution effectively.

Evaluation: Reviewing the outcomes and making necessary adjustments for future problems

INNOVATIVE PEDAGOGIES IN NEP 2020

The National Education Policy (NEP) 2020 of India emphasizes innovative pedagogies to enhance the quality of education and align it with global standards. Here are some of the key innovative pedagogies outlined in the policy:

- Experiential Learning
- Multidisciplinary and Holistic Education
- Project-Based Learning (PBL)
- Blended Learning and Use of Technology
- Critical Thinking and Inquiry-Based Learning
- Competency-Based Learning
- Play-Based Learning for Early Childhood Education
- Peer Tutoring and Collaborative Learning
- Flipped Classrooms
- Outcome-Based Learning
- Inclusive and Special Needs Pedagogy

These all are the innovative teaching pedagogies that are given in NEP 2020. In the present study the researcher focuses on Experiential Learning.

EXPERIENTIAL LEARNING

Experiential learning is a teaching method that focuses on gaining knowledge, skills, values, and attitudes through hands-on, real-world experiences. It encourages students to cultivate a love for learning and a desire for knowledge by participating in meaningful, practical activities that help them grasp essential concepts.

EXPERIENTIAL LEARNING IN CONTEXT OF NEP 2020

Experiential learning, including hands-on activities, arts and sports integration, and story-telling-based teaching methods, will be implemented at all stages as standard pedagogy in each subject, exploring the interconnections among different disciplines. To address gaps in learning outcomes, classroom interactions will move towards competency-based education. Assessment tools, encompassing assessment "as," "of," and "for" learning, will be aligned with the specified learning outcomes, skills, and dispositions for each subject and class. (p. 13 para 4.6)

The National Education Policy of 2020 in many ways aligns with the principles and significance of experiential learning. This visionary policy for India recognizes the need for a holistic and transformative approach to education, and experiential learning plays a crucial role in achieving the objectives outlined in the NEP. (Lone, S. A. & Kour, S. J., 2024)

THEORY OF EXPERIENTIAL LEARNING

ELT integrates the academic contributions of educators like John Dewey, Kurt Lewin, and Jean Piaget, as highlighted by Kolb (D.A., 1984). Within the ELT framework, learning is understood as the process of gaining knowledge through direct experience (Kolb, A.Y., 2005). Kolb's ELT models outline two modes of engaging with learning: Concrete Experience (CE) and Abstract Conceptualization (AC). These are paired with two methods for transforming experience into knowledge: Reflective Observation (RO) and Active Experimentation (AE). The former is known as the perception continuum, while the latter is referred to as the processing continuum.

EXPERIENTIAL LEARNING MODEL

Kolb's Experiential Learning Model is a cyclical framework that highlights the importance of experience in the learning process. It includes four stages that learners navigate to convert their experiences into knowledge. These 4 stages are:

- Concrete Experiences
- Reflective Observation
- Abstract Conceptualization
- Active experimentation

KOLB EXPERIENTIAL LEARNING MODEL

NEP 2020 places a strong emphasis on experiential learning, which is the core of Kolb's model. This approach is designed to make education more engaging and effective by encouraging practical, hands-on activities in the curriculum. Additionally, it promotes internships, vocational training, and real-world problem solving (p. 3-4, 16, 20-21).

David Kolb Experiential Learning Model (1984) posits that learning is a sequential process that generates knowledge through the transformation of experiences. According to Kolb, experiential learning is characterized by six fundamental traits:

- a) Learning is centered on the process rather than the outcome.
- b) It is an ongoing process that originates from experiences.
- c) The learning process seeks to resolve contradictions between dialectically opposed models of adaptation to the world.
- d) Learning is a holistic process of adapting to the environment.
- e) It involves interaction between individuals and their surroundings.
- f) Learning is an activity that results in the creation of knowledge.

For learning to be considered experiential, it must meet four major characteristics based on Kolb experiential learning principles.

INITIATIVES OF CBSE TO SHIFT THE PARADIGM FROM ROTE LEARNING TO EXPERIENTIAL LEARNING

CBSE shifted the learning paradigm from rote learning to Experiential learning in upcoming academic years. As needed, schools plan curricular activities in such a way that students can connect the content of their learning areas and subjects to their own lives and the world in which they live. Experiential learning is a new method of learning. In recent years, CBSE has made several efforts toward implementing it. Experiential learning is a system in which students undertake projects and activities, go to the field, develop sensitivity, and learn to face challenges. Parents and teachers play an important role in providing students with an Experiential learning environment. CBSE has presented Experiential Learning from the 2019-20 session onward. As needed, the schools plan curricular activities in such a way that it empowers the students to associate the content of their learning areas and subjects with their own lives and the world they live in. With the new method of learning, experiential learning, there will be certain changes in the study plan.

EXPERIENTIAL LEARNING AND ROLE OF TEACHER

Experiential learning offers multiple roles to the teacher. Indeed, it has been suggested that the ideal classroom would include each of the four processes in the Kolb model (Hartman, 1995; McCarthy, 1986). That is, full comprehension requires learning activities fitting each stage of learning (Jensen and Wood, 2000). Bernice McCarthy (McCarthy, 1986) has identified four roles for the teacher based on the Kolb model—evaluating, motivating, teaching, and coaching,

respectively. Likewise, the four stages of Experiential learning described above simply have at least four different roles for the teacher.

1. Allegorizing: The teacher is a storyteller
2. Integration: Guide and motivator.
3. Analysis: Source of information.
4. Synthesis: The teacher is a coach.

In the stages of allegorizing and analysis, the role of the instructor is one of active leadership, while in the stages of integration and synthesis, the instructor must allow and even motivate students to play a greater and more active role than the teacher.

ALIGNMENT OF EXPERIENTIAL LEARNING, PROBLEM-SOLVING ABILITY

Experiential learning is a creative and activity-based endeavor in the field of education, wherein children learn through hands-on experiences. This type of learning experience is capable of developing self-belief, positive attitude, decision-making, and problem-solving skills. Problem-solving about experiential learning is to compare with blooms taxonomy and Kolb cycle of experiential learning. Problem solving is a higher-order thinking skill that needs analysis, synthesis, and then creating the solution.

REVIEW OF THE STUDY

This section outlines the data collection process, which involved searching various databases and a metasearch engine by inputting relevant keywords and variables to locate the necessary information. The majority of the research materials were sourced from the field of education. Databases such as ERIC (Educational Resources Information Centre), Google Scholar, Shodhganga (Indian Theses Repository), and ResearchGate were utilized due to their reputation for hosting high-quality scientific, academic, and technical articles, many of which offer open access to studies.

Here is the some study of Experiential learning the findings.

| Author and Year | Title | Findings |
|--|--|--|
| Kularatne, W., Dissawa, L. H., Ekanayake, T., & Ekanayake, J. B. (2022). | Developing and Delivering a Remote Experiment based on the Experiential Learning | Students' performance was compared before and after the online mode of delivery, and it was found that students' performance was improved when the |

| | | |
|---|---|--|
| | framework during COVID-19 Pandemic | laboratory activity was conducted as described in this paper. |
| Tong, D. T., Loc, N. P., Uyen, B. P., & Cuong, P. H. (2020). | Applying Experiential Learning to Teaching the Equation of a Circle: A Case Study | The findings indicated that the experimental group outperformed the control group in terms of mathematical outcomes, and also demonstrated a favorable attitude towards learning, displaying keen interest in the subject matter. |
| Hulaikah, M., Degeng, I. N. S., Sulton, & Murwani, F. D. (2020) | The Effect of Experiential Learning and Adversity Quotient on Problem-Solving Ability | The experiential learning improved the student's problem-solving ability on both of the students with high and low adversity quotients. |
| SuvannaTrongtorsak, Kobkiat Saraubon, Prachyanun Nilsook (2021) | Collaborative Experiential Learning Process for Enhancing Digital Entrepreneurship | The collaborative experiential learning process aimed at bolstering digital entrepreneurship consists of five stages encompassing 15 distinct processes, namely: 1) inspiration, 2) exploration, 3) engagement, 4) presentation, and 5) utilization. The evaluation of the suitability of this process by experts yielded an overall assessment at the highest level of effectiveness. |
| Uzun, C. & Uygun, K. (2022). | The Effect of Simulation-Based Experiential Learning Applications on Problem-Solving Skills in Social Studies Education | In the findings of the study, it has been reached that simulation-based experiential learning applications enhance students' problem-solving skills |
| Lee, J., Kobia, C., & Son, J. (2023) | Improving global competence in classroom-based experiential learning activities | This research is significant in terms of providing an empirical example of how to increase global competence in classroom-based courses. |

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|--------------------|--|---|
| | | Additionally, scholars and teaching practitioners can gain insights from this study on how to improve global competence for the future workforce in a global economy. |
| Falloon, G. (2019) | Using simulations to teach young students science concepts: An Experiential Learning theoretical analysis | In summary, the study suggests that with adequate teacher guidance and meticulous selection and evaluation, simulations can effectively introduce elementary students to basic physical science principles and enable them to participate in more advanced cognitive processes. |

Table No. 2

CONCLUSION

After reviewing the studies, the researcher concluded that Indian Knowledge system in education is transform the whole education system. Inclusion of IKS in education is the initiative of NEP 2020 that reflect the cultural, spiritual, and intellectual tradition of India. The roots of IKS are ancient and it focus holistic nature of education. In NEP 2020 focuses on multiple Innovative teaching method, in all these teaching pedagogies Experiential learning is the suitable for the 21st century learners. Experiential Learning pedagogy offers numerous benefits for students worldwide. This approach emphasizes the interaction between students and the subject matter. The current review reveals that experiential learning has been examined with various variables, and in most cases, it produced significant results. Consequently, the researcher concludes that experiential learning enhances multiple aspects or domains of the learner—cognitive, affective, and psychomotor—and boosts active participation in classroom activities. Experiential learning is considered the most effective approach for 21st-century education, as it aligns with the era’s emphasis on learner-centered education, where the teacher’s role is secondary in the educational process.

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