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INDIAN KNOWLEDGE SYSTEM IN TEACHER EDUCATION: BRIDGING TRADITION AND MODERNITY

20th January, 2026

Institute of Vocational Studies

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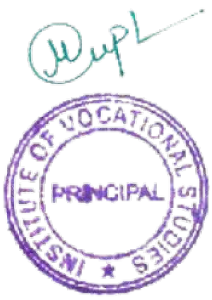
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Principal's Message

It gives me immense pleasure to present this volume of conference proceedings based on the theme **"Indian Knowledge System in Teacher Education: Bridging Tradition and Modernity."** The theme is both timely and significant, as teacher education today stands at a critical intersection of rich indigenous wisdom and rapidly evolving contemporary pedagogies.

The Indian Knowledge System embodies centuries of educational thought rooted in values, ethics, experiential learning, and holistic development. When meaningfully integrated with modern scientific approaches, technology, and global perspectives, it has the potential to enrich teacher education in profound ways. This conference has provided a valuable platform for scholars, teacher educators, researchers, and practitioners to critically engage with this integration, explore innovative practices, and reimagine teacher preparation for the 21st century.

The papers compiled in these proceedings reflect deep scholarly inquiry, thoughtful reflection, and practical insights into how tradition and modernity can coexist, complement, and strengthen each other in teacher education. I am confident that this compilation will serve as a useful academic resource and inspire further research, dialogue, and innovation in the field.

I extend my sincere appreciation to the contributors, reviewers, organizing committee, and all participants whose collective efforts have made this academic endeavour meaningful and successful. May these proceedings contribute to nurturing reflective teachers who are grounded in India's intellectual heritage while being fully prepared to meet contemporary educational challenges.

Wishing you all a successful and insightful conference!

Dr. Mandira Gupta
Principal
Institute of Vocational Studies



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DIGITAL MEDIATION OF INDIAN KNOWLEDGE SYSTEMS: EXPLORING MOOCS AND AI-ENABLED PLATFORMS FOR TEACHER EDUCATION

Dr. Mohd Zainul Abedin Shamsi*

ABSTRACT

In today's world, digitalization has transformed and revolutionised the whole world of education and teacher education is no exception. The Indian Knowledge System (IKS) offers a rich heritage of knowledge systems which underpins cultural, philosophical, and pedagogical paradigms. If we want to incorporate IKS into teacher education then digital mediation presents both, opportunities and challenges. This paper studies how Massive Open Online Courses (MOOCs) **and** Artificial Intelligence (AI)-enabled learning platforms can assist in incorporating IKS into contemporary teacher education effectively. It also examines the theoretical foundations of IKS, the benefits of digital platforms for knowledge dissemination and the potential of AI-mediated personalized learning to preserve, contextualize, and democratize indigenous knowledge for future educators.

This paper synthesizes/integrates the literature on digital pedagogy, online teacher preparation and indigenous knowledge by taking help of constructivist and socio-cultural learning theories. MOOCS and AI both, helps in a way that MOOCs offer scalable access and diverse content while AI-enabled platforms offer adaptivity, real-time feedback, and learner analytics tailored to meet their individual needs. This paper also critically evaluates how existing MOOC courses are related to IKS (e.g., courses offered by SWAYAM and partner institutions) and also explores emerging AI applications—such as intelligent tutoring systems and language processing tools—to support culturally relevant pedagogy.

Finally, the findings suggest that digital mediation can increase the visibility and relevance of IKS within teacher education by providing contextualized learning pathways, cross-disciplinary interactions and reflective practices. However, infrastructural constraints, digital divides, and epistemological gaps, between traditional knowledge forms and technology design, remain significant barriers. The paper provides recommendations for policy makers, curriculum designers



and future researchers to ensure that digital ecosystems not only transmit IKS but also takes care of the pedagogical needs and cultural sensibilities of teacher educators.

Keywords: Indian Knowledge Systems, MOOCs, AI-enabled platforms, teacher education, digital pedagogy, personalized learning.

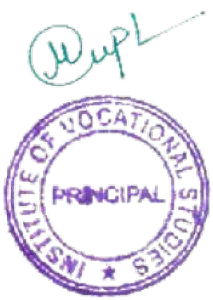
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INTRODUCTION

India's traditional education was never about rote learning. It was comprised of Holistic worldviews i.e taking the bigger picture; Moral reasoning i.e. not just teaching what but 'why' and Experiential learning i.e. learning by doing. Indian Knowledge Systems (IKS) integrate ethics, cognition, spirituality, and social responsibility; offering a value-based framework for education (Bhanot, 2021). The National Education Policy (NEP) 2020 wants to restore these characteristics of traditional India into modern education (National Education Policy [NEP], 2020). Simultaneously, digital technologies such as Massive Open Online Courses (MOOCs) and Artificial Intelligence (AI) are reshaping 21st-century education by enhancing access, flexibility, and personalization (Weller, 2020).

In order to accomplish integration of IKS into Teacher Education, we have to work on how we train the teachers, because unless and until teacher knows about our traditional education or IKS, how can we expect that they will teach it to their students. Without going into the debate of 'ancient' and 'modern' education, this paper focuses on how we should use 21st century technology to spread the old wisdom. So the digital tools which come to our rescue are Massive Open Online Courses (MOOCs) and Artificial Intelligence (AI). MOOCS make available various lessons based on IKS to millions of students at the comfort of their home. While AI help to integrate the values of IKS into specific subject, by providing smart platforms that can help teachers to learn and integrate. (Siemens, 2013; Daniel, 2018),

This paper explores how we can mainstream the traditional education i.e. IKS with teacher education though the use of MOOCs and AI.



Hence the research questions are:

1. How can MOOCs be designed to effectively represent IKS concepts for teacher trainees?
2. What are the roles of AI platforms in personalizing and enhancing IKS learning?
3. What challenges and prospects lie in the digital mediation of indigenous knowledge for teacher education?

CONCEPTUAL FRAMEWORK

This section explains "why" and "how" behind the study. The theory answers the "why". The conceptual backbone of this study is rooted in constructivist and socio-cultural theories of learning (Vygotsky, 1978), whose main idea was that people learn through social interaction, context and by making sense of the world by themselves. Now IKS fits perfectly in today's scenario because it does not focuses on rote memorization but on real world wisdom and reflecting on values. So IKS aligns with these theoretical positions (Bhanot, 2021).

The tools used, answers the "how" part of the study. The study uses digital mediation which is split into two categories:

MOOCS – Make learning open and accessible to all. (Daniel, 2018; Siemens, 2013)

AI- makes learning personalized to fit the specific needs. (Ng, 2019; Conrad & Sandeen, 2019)

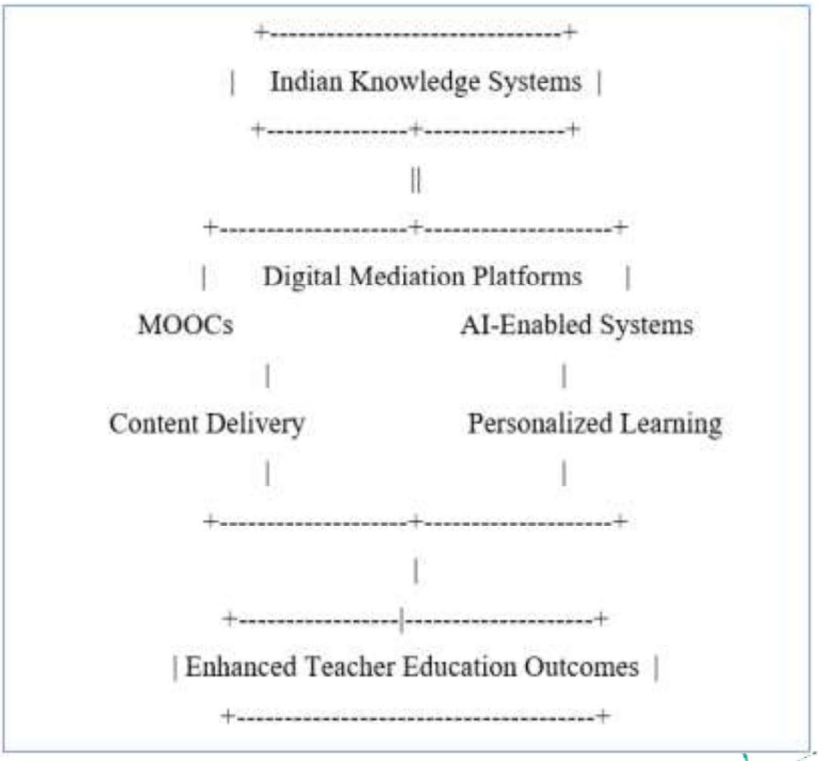


Figure 1.1 Conceptual Model of Digital Mediation for IKS

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Summary Table: The Framework at a Glance

Component	Role in the Study
Learning Theory	Ensures learning is social and meaningful (not just robotic).
IKS Values	Provides the "soul" of the content (ethics, reflection, and wisdom).
MOOCs	Acts as the "classroom" that can hold millions of teachers.
AI	Acts as a "private tutor" within that classroom to adapt to each teacher.

INDIAN KNOWLEDGE SYSTEMS IN TEACHER EDUCATION

We can define Indian Knowledge System (IKS) as a collection of ancient Indian ways of knowing, including Vedic thought, Buddhist logic, sciences, arts, and ethics. It's a collection of knowledge originating from Ancient Indian Text, unlike modern education, which often separates subjects. IKS emphasize interconnectedness between knowledge, morality, and life skills, offering a holistic vision of education (Kumar & Nanda, 2022). IKS views knowledge, morality, and daily life as one connected system. This paper highlights the value of incorporating IKS into teacher education. The benefits derived by doing this are:

- Cultural Connection: IKS will make trainee teachers' learning more relevant to the Indian culture & context.
- Character Building: IKS will help in developing teacher's morals and ethics.
- Inter Disciplinary Learning: IKS will help teachers see how different subjects (like science and philosophy) are in relation with each other.
- Deep Thinking: IKS will encourage "reflective pedagogy"—thinking deeply about *how* and *why* they teach.

But the biggest hurdle is that IKS isn't just residing in a modern textbook. It is found in ancient texts which are often hard to interpret. It resides in oral tradition i.e. the knowledge is passed down by word of mouth and lastly IKS resides in specific practices which are hard to explain without being there. So all these things make digital translation a challenge in incorporating to today's education. (Kumar & Nanda, 2022).



MOOCS AND THEIR RELEVANCE TO IKS

MOOCs have democratized access to quality instructional content by offering open and flexible learning opportunities at scale (Daniel, 2018). Massive Open Online Courses (MOOCs) serve as the perfect delivery medium for Indian Knowledge Systems (IKS), specifically through platforms like SWAYAM and NPTEL and partnerships with global MOOC providers like Coursera & edX. IKS would have been locked away in specific Ashram or Gurukuls had these platforms like MOOCS were not here. With these platforms, the learners in India can access the best experts from anywhere. Hence MOOCs solved the problem of "access."

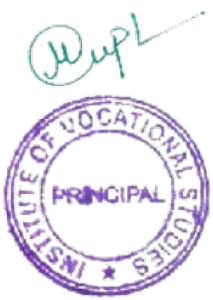
Table 1.2 MOOC Features Relevant to IKS Integration

Feature	**Relevance to IKS**
Open Access	MOOCs allow broad dissemination of IKS content
Modular Structure	MOOCs allow to structure vast IKS into manageable thematic units
Multimedia Resources	MOOCs provide audio, video, and text for contextual richness that textbook cannot provide
Peer Interaction	MOOCs replicate community learning through digital discussions forums.
Assessment Tools	MOOCs require trainees to perform 'Knowledge checks' and write reflections.

COURSE DESIGN PRINCIPLES FOR IKS MOOCS

In order to make MOOCs effective for teacher education in spreading the IKS, certain principles needs to be adhered to. They are:

- Contextualization: We should use stories, real world case studies and cultural narratives to show that IKS lied in past is still alive in today's world.
- Multilingual Content: The courses must not be taught only in English, instead they should reflect India's linguistic diversity.



- Interactivity: The courses must include discussion forums and peer reviews to resemble the traditional ‘community of learners’ (Satsang Samvad).
- Reflective Tasks: The courses should ask teachers to take an ancient concept (like Dharma) and reflect on how to apply it in modern teaching scenarios. (Weller, 2020)

With all the above principles in place, we can make teacher education more effective.

AI-ENABLED PLATFORMS FOR PERSONALIZED IKS LEARNING

Through MOOCs, we can provide the content, but an AI i.e., Artificial Intelligence enabled platforms can acts as a personal tutor for the learner, which can adjust the lessons to fit the specific individual needs, speed, and background of each teacher trainee (Ng, 2019; Conrad & Sandeen, 2019). Thus. Artificial Intelligence (AI) moves beyond the "one-size-fits-all" approach of traditional online courses to provide a customized experience, to every teacher learning IKS. Key AI functions include:

- Adaptive Sequencing: If a learner struggles with a concept (like *Buddhist Logic*), AI can automatically adjust the "flow" of the course to provide more foundational material before moving on. So, content can be adjusted according to learner’s progress.

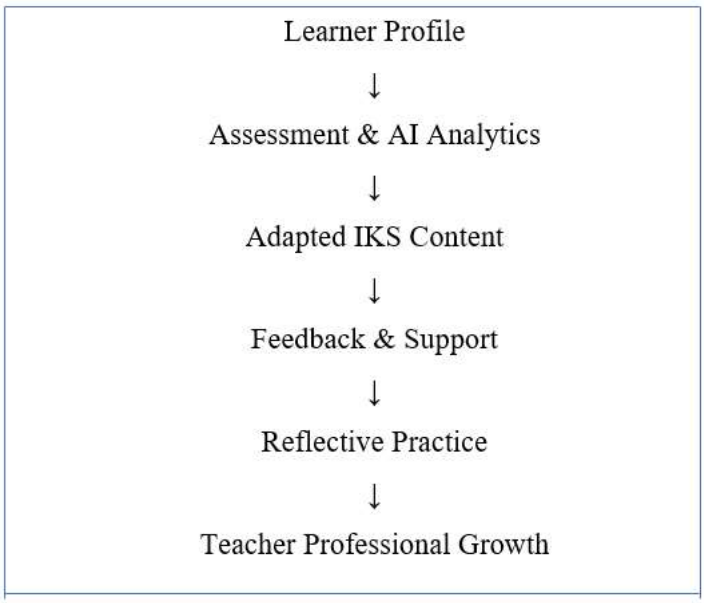


Figure 2.1: AI-Enabled Learning Pathway

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- Intelligent Tutoring: Learner can get real-time feedback/help. AI Chabot provides immediate answers to questions.
- Natural Language Processing (NLP): AI can act as translator also. It takes complex, ancient Sanskrit or Prakrit texts and simplifies or translates them into modern, regional languages that the learner understands better.
- Predictive Analytics: AI "looks ahead" by analysing how a learner interacts with the platform, and based on interaction, AI can predict what learner might find difficult or what topics they are most interested in, suggesting relevant IKS resources before the learner even asks.

BENEFITS OF DIGITAL MEDIATION FOR TEACHER EDUCATION

1. Accessibility and Equity

The first and foremost benefit provided by MOOCs and AI systems is the reach. The geographical barriers is no more a constrain now. A teacher trainee, sitting in rural part of India can get the same content as teacher trainee sitting in the urban area. Hence equity is also established as same knowledge is available to every teacher trainee. (Daniel, 2018)

2. Personalization and Engagement

AI provides customization according to personal needs of the learner and it enhances their engagement by adjusting the pace, difficulty and content as per relevance, for the learner. (Ng, 2019).

3. Knowledge Preservation and Revitalization

The technology stores the indigenous content through digital archives etc. and hence the can be accessed at later time, hence providing knowledge preservation. (Bhanot, 2021)

CHALLENGES AND LIMITATIONS

Despite benefits being offered by technology, there are also significant challenges. They are discussed below:

- Digital Divide: Many trainee teachers, especially in rural areas, still lack the high-speed internet and modern devices needed to run complex AI or stream MOOC videos.

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- Language Barriers: AI still struggles with the huge variety of India's regional languages and the complex nuances of ancient Sanskrit or Prakrit. So there is limited multilingual support.
- Epistemological Misalignment: since IKS knowledge was originated in oral form and translating oral and contextual traditions into digital formats still poses a challenge.
- Quality Assurance: IKS content can lose its scientific rigor when its produced-on mass scale. (National Education Policy 2020, 2020; Kumar & Nanda, 2022)

Hence these are the challenges act as a barrier between IKS and Teacher Education.

Table 2.2 Challenges in Digital Mediation of IKS

Challenge	Description
Infrastructure	Lack of reliable internet & devices
Content Adaptation	Difficulty translating oral knowledge to digital
Cultural Sensitivity	Risk of decontextualizing indigenous wisdom
AI Bias	Algorithms may misinterpret linguistic nuances

CASE STUDIES AND EXAMPLES

In this section the real-world proof is provided in order to suggest that the ideas discussed in this paper have been already put into practice. We are highlighting three specific examples of how technology is currently being used to teach IKS:

- SWAYAM (National Level): Swayam is Government of India's MOOCs platform which hosts specialized courses in many fields, including Indian philosophy and pedagogy. Swayam's MOOCs are thus already being made part of the official credit system in various universities for awarding degrees to students.
- AI for Language (Sanskrit): We know that language is the "key" to IKS. AI chatbots are being used to help people, to learn Sanskrit in a conversational way, thus making a difficult ancient language, feel more modern and accessible.



- Storytelling (Interactive Tools): Nowadays, digital tools are using interactive storytelling method to preserve indigenous folk tales and narratives, keeping the cultural context alive through visuals and audio.

Hence, all these comprehensive empirical studies are emerging and illustrating the potentiality of digital mediation in implementing IKS. (NEP, 2020).

POLICY AND CURRICULUM IMPLICATIONS

This section of our paper outlines the action plan which is needed at the governmental and individual level to the make the vision highlighted in this paper, into a reality. The suggestions are as under:

- Policy Support: The Governments and educational boards should provide incentives in terms of providing funding, official recognition, and professional credits to teachers and institutions that develop or complete IKS digital courses.
- Teacher Education Curricula overhaul: The Digital IKS modules must be formally embedded into the standard Teacher Education curriculum (like B.Ed. and M.Ed. programs) rather than providing it as an optional subject.
- Collaborations between educators, technologists, and cultural experts should be there. The team work, with Educators, will ensure teaching methods are fine; with Technologist, will ensure that MOOCs and AI are in place and with Cultural expert, will ensure ancient knowledge remains authentic and accurate. (NEP, 2020; Bhanot, 2021).

RECOMMENDATIONS

The paper suggests following recommendations for the successful integration of IKS into Teacher Education:

- Multilingual MOOCs – It is recommended to develop MOOCs in various Indian languages and not just limit to 1 or 2 languages so that learners from all regions can access the content in their mother tongue.
- Embrace AI Customization – It is recommended to use AI for personalise growth and not just for the sake of technology. There are tools that can translate difficult ancient texts and there are systems which adjust according to the learner's ability.

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- Community platforms – Since IKS was originally taught orally, it is recommended that digital platforms must include social spaces (forums and communities) where learners can discuss, reflect, and practice what they've learned together.
- Invest in infrastructure – It is highly recommended to bridge the digital divide. There should be a heavy investment in digital infrastructure (internet and devices) to ensure that the "Digital Divide" doesn't turn IKS into a privilege for only the wealthy or urban-based teachers. (Daniel, 2018; Ng, 2019)

CONCLUSION

We can therefore easily conclude that Digital mediation, through MOOCs and AI-enabled platforms, offers promising pathways for integrating Indian Knowledge Systems into teacher education.

Through thoughtful design, culturally informed pedagogy, and equitable access, these technologies can enhance teacher preparation while honoring India's indigenous wisdom traditions.

However, realizing this vision requires overcoming infrastructural, epistemological, and pedagogical challenges through concerted policy, practice, and research efforts.

(Bhanot, 2021; National Education Policy 2020, 2020).

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