INDIAN KNOWLEDGE SYSTEMS IN DIGITAL LEARNING ENVIRONMENTS: A CONCEPTUAL FRAMEWORK FOR INTEGRATING IKS INTO LIBRARY AND INFORMATION SCIENCE EDUCATION

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Abstract :

*Indian Knowledge Systems (IKS) encompass diverse traditional knowledge in areas such as science, medicine, agriculture, ecology, arts, linguistics, and education. Their increasing integration into Indian higher education creates new opportunities and challenges for libraries and Library and Information Science (LIS) education, particularly in documentation, organization, preservation, retrieval, dissemination, and ethical use. This conceptual paper develops an **IKS–Digital Learning–LIS Integration Framework** through a critical synthesis of literature, policy documents, professional standards, and digital-learning resources, with SWAYAM considered as a contextual platform. The framework identifies eight dimensions: knowledge identification, documentation, organization, metadata, digital preservation, dissemination, ethics and intellectual property, and LIS curriculum integration. It highlights the role of LIS education in developing competencies for culturally sensitive knowledge organization, digital preservation, community engagement, intellectual-property awareness, and emerging technologies. The study contributes a conceptual foundation for integrating IKS into LIS education and provides guidance for educators, libraries, policymakers, digital repositories, and online learning platforms.*

Keywords : Indian Knowledge Systems; IKS; Digital Learning; SWAYAM; Library and Information Science; LIS Education; Indigenous Knowledge; Traditional Knowledge; Digital Preservation; Knowledge Organization; Digital Libraries; Curriculum Development

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Introduction :

Knowledge is not produced, transmitted, and preserved through a single universal model. Different societies have developed distinct ways of understanding nature, society, human existence, health, language, technology, ethics, education, and the relationship between individuals and communities. India possesses a particularly extensive intellectual heritage consisting of textual, oral, practical, artistic, scientific, philosophical, and community-based knowledge traditions.

The contemporary concept of **Indian Knowledge Systems (IKS)** seeks to recognize this diversity and examine its relevance in contemporary education, research, innovation, and society. The Ministry of Education's IKS framework describes Indian Knowledge Systems as

encompassing *jñāna, vijñāna* and *jivanadarśana*, arising through experience, observation, experimentation and analysis and transmitted through textual, oral and artistic traditions. (Education Government of India)

The policy environment has also changed significantly. The National Education Policy (NEP) 2020 emphasizes Indian languages, arts, culture, heritage, and the integration of Indian knowledge traditions into education. UGC guidance similarly emphasizes the incorporation of IKS into curricula and faculty development. (UGC)

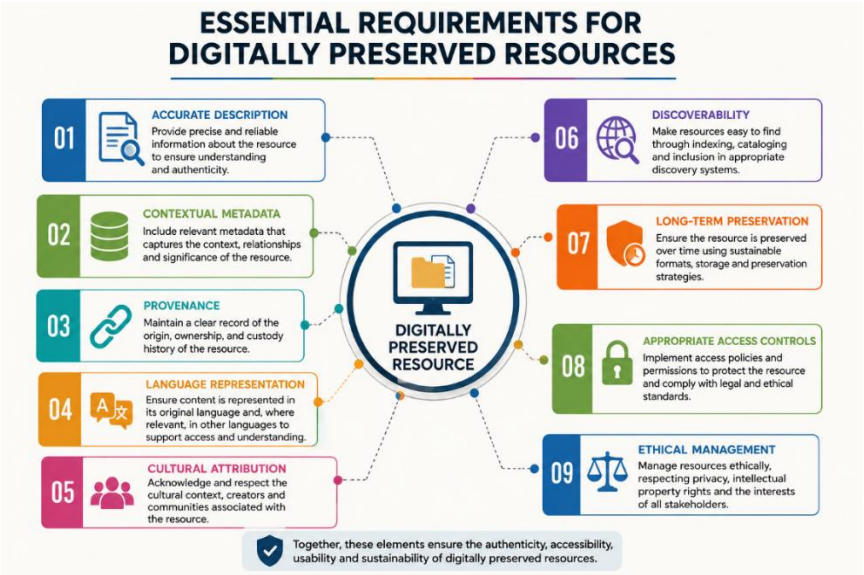
This development creates a significant opportunity for Library and Information Science (LIS).

Libraries and information institutions have traditionally been responsible for collecting, organizing, preserving, retrieving, and disseminating knowledge. In the digital environment, these responsibilities have expanded to include metadata creation, digitization, digital preservation, repository management, linked data, knowledge graphs, digital humanities, and data management.

IKS presents a particularly complex information-management problem because its resources may exist in manuscripts, rare books, oral histories, folk traditions, audiovisual materials, community practices, local ecological knowledge, performing arts, and multilingual textual traditions.

Consequently, simply digitizing an IKS resource does not necessarily ensure its meaningful preservation.

A digitally preserved resource also requires:



(AI generated)

Recent research on librarians and indigenous knowledge similarly emphasizes that preservation must be combined with cultural protocols and community participation. (Sage Journals)

Digital learning environments provide a complementary opportunity. SWAYAM is India's national online learning platform and provides courses through a National Coordinator structure covering multiple educational sectors. The current official portal lists AICTE, CEC, IGNOU, IIMB, INI, NCERT, NIOS, NITTTR, NPTEL and UGC as National Coordinator categories and reports 205 partnering institutes and 16,941 completed courses. (Swayam)

The intersection of these developments leads to the central research problem of this paper:

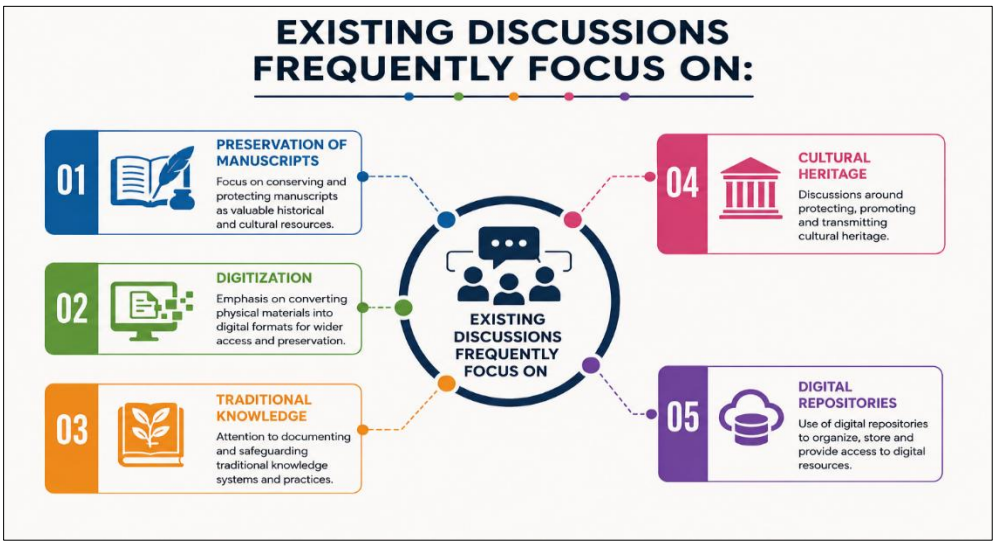
How can Indian Knowledge Systems be systematically integrated into Library and Information Science education through digital learning environments while maintaining appropriate principles of documentation, knowledge organization, preservation, accessibility, and cultural ethics?

This paper addresses this question by developing a conceptual framework linking IKS, digital learning and LIS education.

Problem Statement :

Although IKS is increasingly recognized within Indian higher education, its integration with LIS education remains conceptually underdeveloped.

Existing discussions frequently focus on:



However, these areas are often studied separately.

There is comparatively less conceptual integration between:

IKS + knowledge organization + metadata + digital preservation + digital learning + LIS curriculum. This fragmentation creates a need for an integrated theoretical framework.

Research Gap :

The study identifies four major gaps.

- **Conceptual Gap :** Limited theoretical work connects IKS directly with LIS education.
- **Knowledge Organization Gap :** Traditional knowledge often contains culturally specific concepts, terminology, and relationships that may not be adequately represented by conventional information-organization approaches.
- **Digital Preservation Gap :** Digitization is frequently treated as preservation, although long-term preservation also requires authenticity, provenance, metadata, integrity, sustainability, and access management.
- **Educational Gap :** Limited attention has been given to developing a structured IKS-oriented competency framework for LIS students.

Research Questions :

- What is the conceptual relationship between Indian Knowledge Systems and Library and Information Science education?
- What LIS competencies are required for the documentation, organization, preservation and dissemination of IKS?
- How can digital learning environments such as SWAYAM support IKS-oriented LIS education?
- What conceptual framework can integrate IKS, digital learning and LIS education?

Objectives :

The study aims:

- To conceptualize the relationship between Indian Knowledge Systems and LIS education.
- To examine the role of digital learning environments in IKS dissemination.
- To identify major LIS competencies required for IKS management.
- To develop an IKS–Digital Learning–LIS conceptual framework.
- To propose an IKS-oriented curriculum model for LIS education.

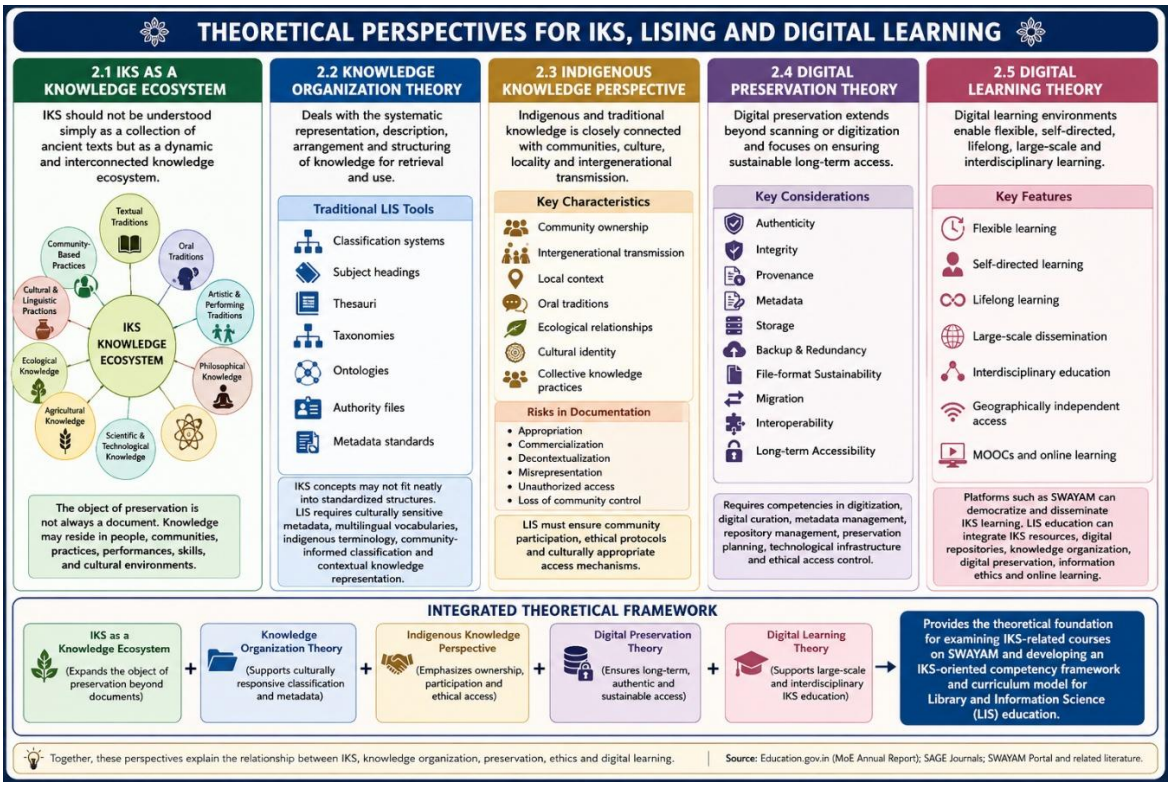
Significance of the Study :

The study is significant for five groups:

- **LIS educators :** curriculum development and competency formation.
- **Libraries :** IKS documentation and preservation.
- **Digital repositories :** culturally appropriate metadata and access.
- **Policy makers :** integration of IKS into higher education.
- **Researchers :** development of an interdisciplinary research agenda.

2. Theoretical Background

Theoretical Perspective	Core Concept	Key Components	Implications for LIS and IKS
IKS as a Knowledge Ecosystem	IKS should not be understood simply as a collection of ancient texts but as a dynamic and interconnected knowledge ecosystem.	Textual traditions; oral traditions; artistic and performing traditions; philosophical knowledge; scientific knowledge; traditional medicine; agricultural knowledge; ecological knowledge; crafts; cultural and linguistic traditions; community-based practices.	The object of preservation is **not always a document**. LIS must preserve knowledge embodied in people, communities, practices, performances, skills, and cultural environments.
Knowledge Organization Theory	Systematic representation, description, arrangement, and structuring of knowledge for retrieval and use.	Classification systems; subject headings; thesauri; taxonomies; ontologies; authority files; metadata standards.	Culturally specific IKS concepts may not fit standardized knowledge structures. LIS requires culturally sensitive metadata, multilingual vocabularies, indigenous terminology, community-informed classification, and contextual knowledge representation.
Indigenous Knowledge Perspective	Indigenous and traditional knowledge is closely connected with communities, culture, locality, and intergenerational transmission.	Community ownership; intergenerational transmission; local context; oral traditions; ecological relationships; cultural identity; collective knowledge practices.	Documentation and digitization may support preservation but can also lead to appropriation, commercialization, decontextualization, misrepresentation, and unauthorized access. LIS must ensure community participation, ethical protocols, and culturally appropriate access mechanisms.
Digital Preservation Theory	Digital preservation extends beyond scanning or digitization and focuses on ensuring sustainable long-term access.	Authenticity; integrity; provenance; metadata; storage; backup; redundancy; file-format sustainability; migration; interoperability; long-term accessibility.	LIS professionals require competencies in digitization, digital curation, metadata management, repository management, preservation planning, technological infrastructure, and ethical access control.
Digital Learning Theory	Digital learning environments enable flexible, self-directed, lifelong, large-scale, and interdisciplinary learning.	Flexible learning; self-directed learning; lifelong learning; large-scale dissemination; interdisciplinary education; geographically independent access; MOOCs.	Platforms such as SWAYAM can democratize and disseminate IKS learning. LIS education can integrate IKS resources, digital repositories, knowledge organization, digital preservation, information ethics, and online learning.
Integrated Theoretical Framework	The five perspectives collectively explain the relationship between IKS, knowledge organization, preservation, ethics, and digital learning.	**Knowledge Ecosystem + Knowledge Organization + Indigenous Knowledge Ethics + Digital Preservation + Digital Learning**	Provides the theoretical foundation for examining IKS-related courses on SWAYAM and developing an **IKS-oriented competency framework and curriculum model for Library and Information Science (LIS) education**.



Literature Review :

(Gupta, 2024) This article aims to examine the practices that, were prevalent in ancient Indian time, whether encouraged or hindered the development of a scientific mindset. A review is conducted of the contributions made during the ancient and medieval periods in the fields of astronomy, mathematics, medicine, physics, and technology. The term "Indian knowledge tradition" refers to the vast and diverse body of information that has been acquired, preserved, and transmitted throughout thousands of years throughout the Indian subcontinent through various indigenous learning and inquiry methods. The Indian Knowledge System (IKS) is a systematic method of passing down knowledge from one generation to the next. The NEP, 2020 acknowledges this great heritage of ageless Indian philosophy and knowledge as a guiding principle. The knowledge systems of Jnan, Vignan, and Jeevan Darshan in India have evolved via experimentation, observation, experience, and in-depth study. The Indian knowledge tradition has a long history of scientific investigation and discoveries dating back thousands of years. Many disciplines fall under the umbrella of science in the Indian knowledge system, including biology, physics, chemistry, medicine, astronomy, and mathematics. Overall, an integrated methodology, integration with philosophy and spirituality, and real-world applications targeted at enhancing human well-being are what define science in the Indian knowledge tradition. Although the scientific contributions made by ancient Indians have been recognized, research is still being done to fully comprehend the breadth and depth of their achievements in relation to the history of science worldwide. The present article presents a deep analysis of science as being an integral part of IKS.

(Timane & Wandhe, 2024) The Indian Knowledge System is a rich and diverse collection of knowledge, beliefs, and practices developed over thousands of years in the Indian subcontinent. It is rooted in the ancient texts of Vedas, Upanishads, and Puranas, and has evolved through the contributions of various civilizations and cultures. This knowledge system encompasses a wide range

of subjects including philosophy, religion, science, mathematics, medicine, astrology, and literature. It is based on a holistic approach that integrates different aspects of human life, such as mind, body, and spirit. One of the key characteristics of the Indian Knowledge System is its emphasis on the interconnectedness and interdependence of all beings and the universe.

(Laxmi & Kalluraya, 2023) Indian ancient traditional knowledge system is unique and has many roots of learning relevant to any time. It has evolved, and different chapters of ancient Indian Knowledge are classified into various sections. It has its history. Recently, interest in diagnosing such Knowledge to find out the most relevant forever is increasing and is necessary for sustainability. That would help us to improve our efforts to enhance human welfare. Therefore, there is a need to analyze the nature and history of those Knowledge, philosophy and values related to human welfare. Such an attempt to analyze the history of the ancient Indian knowledge system is made in this paper. The primary purpose of this paper is to analyze the evolution of the ancient Indian knowledge system and related philosophy relevant to human welfare. The paper reviews different sections of the ancient Indian knowledge system, the associated philosophy, and how they evolved. Indian ancient Knowledge and education system was strongly built by philosophy for human welfare. In fact, it was more concerned with seven Janmas (Births) rather than the current living in the world. The Indian knowledge system had two critical concepts, "Jnana" and "Ajnana" which may be referred to as concurrent with Vedanta and Vyavahara (Business). All these issues are discussed in the paper.

(Thakkar, 2024) The Indian Knowledge System has impacted numerous different cultures and geographical areas in addition to making a substantial contribution to the advancement of human civilization. However, the IKS has suffered greatly from marginalization and neglect in India's contemporary educational system, which is mostly based on the Western conception of knowledge. This article makes the case that the IKS can be extremely important to India's educational and skill-building efforts, particularly in light of Vision 2047, which seeks to establish India as a developed, inclusive, and sustainable country. A few suggestions and best practices for using the IKS for education and skill development in India are included in the article's conclusion.

(Achari, 2024) Indian knowledge system aims to support and facilitate further research to solve contemporary societal issues. Indian knowledge systems is based on Vedic literature, the Vedas and the Upanishads. Indian knowledge comprise of Jan,Vignan and Jeevan darshan that have evolved out of experience,observation,experimentation and rigorous analysis. The tradition of validating and putting into practice has impacted our education, arts, administration, law, justice, health, manufacturing and commerce. Spiritualism can learn with IKS as meditation, gratitude, serve others, see the good in others, get out in nature, look after your body, connect with likeminded people .It is the ideology of reality. It includes dissemination and imparting of knowledge of various dimensions of learning in the spheres of universal human values ,vedic math,yoga ,Ayurveda,Sanskrit,Indian languages,sacrosanct religious regions located in the Indian subcontinent ,Archaeological sites and monuments ,heritage of India.

(Khan & Sharma, 2024) The Indian knowledge system (IKS) seeks to actively support, and advance research aimed at addressing contemporary societal challenges. Rooted in the rich tradition of Vedic literature, including the Vedas and the Upanishads, IKS is poised for integration into digital learning platforms. To enhance the quality of classroom instruction on IKS courses, tailored modules for educator training and orientation are under consideration. Specialized teacher training centers will be established, focusing on specific topics within the Indian Knowledge Systems. Innovation within IKS

will be fostered through initiatives like Grand National Challenges, National Competitions, and Hackathons, with incentives provided for groundbreaking ideas. Collaboration with global institutions, facilitated by entities like the Indian Council of Historical Research (ICHR), will enable the conduct of India-centric research. To catalyze the founding of Indian knowledge System in numerous Higher Education Institutions (HEIs), initial seed financing will be provided. Outreach efforts targeting the public will employ diverse mechanisms to spread and promote genuine IKS. Public involvement will be encouraged via Jan Bhagidari programs, akin to citizen science initiatives. Youth will find job prospects through skill-based programs, and IKS will actively foster tradition knowledge by leveraging technological keys to platform Indian inheritance globally. The overarching goal is to capture 10% of world tourism, thereby generating substantial employment opportunities for the youth.

(Naik & Tari, 2023) Indian Knowledge has widely contributed to the field of medicine, art, literature, science and social sciences. The Indian Knowledge System (IKS) is a system introduced via the National Education Policy (NEP) 2020 as a part of the curriculum of higher education. The objective of reviving traditional knowledge is not only being emphasized on the national level but also internationally through United Nations Permanent Forum on Indigenous Issues in the 2019 session. This Forum is aimed at identifying and sharing successful practices and lessons learned in the advancement of indigenous people's rights, as well as formulating policy.

Methodology :

This study adopts a conceptual and descriptive approach. The framework is developed through a critical review of literature, policy documents, professional guidance and digital-learning resources relevant to Indian Knowledge Systems, knowledge organization, digital preservation and Library and Information Science education. SWAYAM is examined as a contextual digital-learning platform. No primary survey or interview data are claimed in this paper; the proposed framework and competency model are intended for validation through future empirical research.

SWAYAM Context :

1. SWAYAM :

SWAYAM stands for **Study Webs of Active-Learning for Young Aspiring Minds** and is an initiative of the Ministry of Education, Government of India.

The platform currently reports:

- 205 partnering institutes;
- 16,941 completed courses;
- 59,870,952 student enrolments;
- 9,827,866 examination registrations;
- 6,282,410 successful certifications. (Swayam)

These figures demonstrate the scale of the platform as a national digital-learning

ecosystem.

2. National Coordinator Structure :

The official portal currently identifies :

Sr.No.	**National Coordinator**	**Broad Area**
1.	AICTE	Technical/self-paced and international courses
2.	CEC	Undergraduate education
3.	IGNOU	Out-of-school learners
4.	IIMB	Management
5.	INI	Institutes of National Importance
6.	NCERT	School education
7.	NIOS	Open schooling
8.	NITTTR	Teacher training
9.	NPTEL	Engineering and related areas
10.	UGC	Non-technical postgraduate education

(Swayam)

The current portal's wording states that nine National Coordinators were originally appointed while the platform now displays ten coordinator categories, including INI. This distinction should be preserved in research reporting rather than treating the current category list as historically static. (Swayam)

3. Relevance to LIS :

SWAYAM can potentially support LIS education through courses related to:

- IKS;
- manuscripts;
- cultural heritage;
- digital libraries;
- knowledge organization;
- preservation;
- information ethics;
- traditional knowledge.

However, the existence of IKS courses on SWAYAM does not automatically mean that they are integrated with LIS curricula. This distinction is central to the proposed framework.

Conceptual Framework :

1. IKS–Digital Learning–LIS Integration Framework :

The proposed framework is based on the assumption that IKS management can be understood as an information life-cycle.

Figure 1. Proposed Conceptual Framework

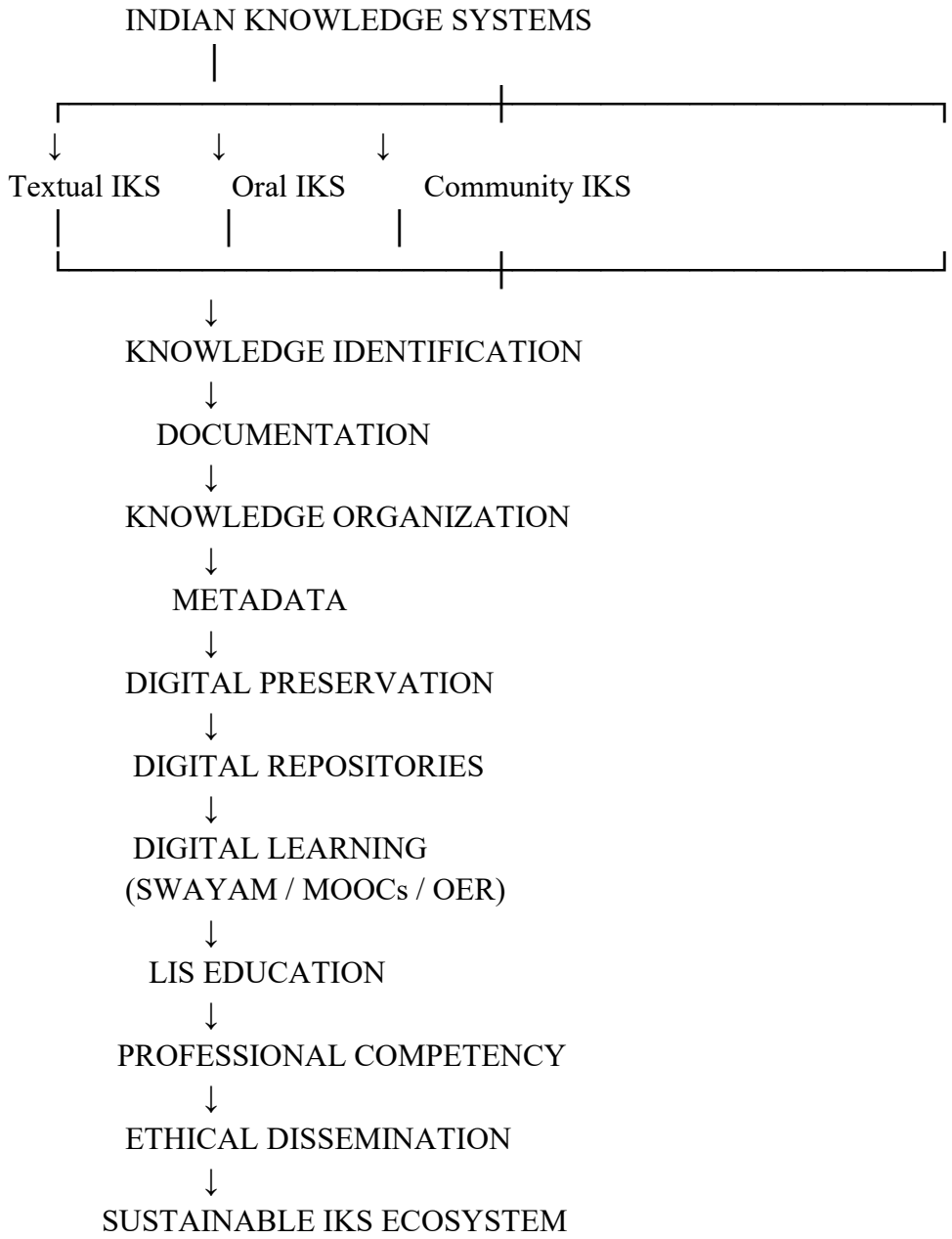


Table: Integrated IKS Knowledge Management and LIS Curriculum Framework

Dimension	Major Components / Activities	Expected LIS Competencies / Outcomes
1. Knowledge Identification	Manuscripts; rare books; oral traditions; folk practices; traditional medicine; ecological knowledge; agricultural practices; cultural practices; linguistic resources	Ability to identify, assess, and select diverse IKS resources

Dimension	Major Components / Activities	Expected LIS Competencies / Outcomes
2. Documentation	Digitization; transcription; translation; interviews; oral-history recording; audiovisual recording; field documentation	Skills in systematic documentation and digital capture of IKS
3. Knowledge Organization	Cataloguing; classification; indexing; taxonomy; thesauri; ontology; semantic relationships	Competence in organizing, representing, and retrieving IKS resources
4. Metadata	Title; creator/knowledge holder; community; location; language; script; subject; historical period; cultural context; provenance; access conditions	Ability to create culturally sensitive and context-rich metadata
5. Digital Preservation	Authenticity; integrity; provenance; file formats; storage; migration; backup; preservation metadata	Competence in long-term digital preservation and digital curation
6. Digital Dissemination	Digital libraries; institutional repositories; national repositories; MOOCs; SWAYAM; Open Educational Resources (OER); mobile learning	Ability to provide digital access and disseminate IKS through multiple platforms
7. Ethics & Intellectual Property	Informed consent; community participation; attribution; cultural sensitivity; access restrictions; intellectual property; benefit sharing	Ethical, legal, and culturally responsible management of IKS
8. LIS Curriculum Integration	Conceptual; technical; organizational; ethical; digital; research competencies	Development of IKS-oriented LIS professionals and integration of IKS into LIS education
Overall Framework	**Identification → Documentation → Organization → Metadata → Preservation → Dissemination → Ethics/IP → Curriculum Integration**	**IKS-enabled LIS competency development, preservation, access, dissemination, and sustainability**

IKS–LIS Competency Framework

Table 1. IKS–LIS Competency Framework

Competency Area	Knowledge	Skill	Application
IKS awareness	IKS concepts	Identification	Resource selection
Documentation	Documentation principles	Recording	Field documentation
Knowledge organization	Classification	Subject analysis	Retrieval

Competency Area	Knowledge	Skill	Application
Metadata	Metadata standards	Metadata creation	Digital repositories
Digital preservation	Preservation principles	Repository management	Long-term access
Technology	AI/OCR/Linked Data	Digital tools	Automated processing
Ethics	IPR/community rights	Ethical decision-making	Responsible access
Digital learning	MOOCs/SWAYAM	Online learning	Curriculum integration
Research	Research methods	Data analysis	IKS research

1. Cognitive Competencies :

Students should understand:

- IKS concepts;
- knowledge traditions;
- epistemological diversity;
- cultural context.

2. Technical Competencies :

Students should be able to:

- digitize resources;
- create metadata;
- manage repositories;
- perform OCR;
- support digital preservation.

3. Knowledge-Organization Competencies :

Students should be able to:

- classify IKS resources;
- develop subject terms;
- create taxonomies;
- construct semantic relationships.

4. Ethical Competencies :

Students should understand:

- intellectual property;
- cultural ownership;
- consent;

- community rights;
- access restrictions.

Curriculum Model :

1. Proposed Curriculum :

Table 2. IKS-Oriented LIS Curriculum

Module	Major Content	Core Competency
I	Foundations of IKS	Conceptual understanding
II	IKS Resources	Identification
III	Traditional Knowledge Documentation	Documentation
IV	Knowledge Organization	Classification/indexing
V	Metadata for IKS	Metadata
VI	Digital Preservation	Preservation
VII	Digital Libraries and Repositories	Repository management
VIII	IKS, Ethics and IPR	Responsible access
IX	SWAYAM and Digital Learning	Digital pedagogy
X	AI, Linked Data and Knowledge Graphs	Emerging technologies

2. Curriculum Delivery Model :

The curriculum can combine:

Lectures

-

SWAYAM/MOOCs

-

Field documentation

-

Digital laboratory

-

Repository project

-

Community engagement

This would transform IKS education from theoretical learning into professional practice.

Theoretical Propositions :

The framework generates six propositions for future empirical testing.

- IKS-oriented LIS education positively contributes to students' awareness and understanding of Indian traditional and indigenous knowledge resources.

- Integration of IKS documentation practices into LIS curricula positively influences students' ability to document textual, oral and community-based knowledge.
- Culturally sensitive knowledge-organization and metadata practices enhance the discoverability and contextual representation of IKS resources.
- Digital preservation competencies positively influence the long-term accessibility and sustainability of digitized IKS resources.
- Digital learning platforms such as SWAYAM enhance the scalability and accessibility of IKS-oriented LIS education.
- Ethics and intellectual-property education strengthens the relationship between IKS digitization and responsible knowledge dissemination.

Discussion :

The conceptual analysis indicates that IKS and LIS share a fundamental concern: **the preservation and transmission of knowledge**.

However, IKS requires LIS to move beyond traditional documentary models.

A conventional bibliographic resource often has:

- identifiable authorship;
- standardized format;
- publication information;
- stable subject terminology.

An IKS resource may instead have:

- multiple knowledge holders;
- oral transmission;
- community ownership;
- local terminology;
- geographical specificity;
- cultural restrictions.

Consequently, IKS requires more contextual information.

The proposed framework addresses this problem by placing knowledge context at the centre of LIS practice.

1. IKS as an Information Resource :

The framework proposes that IKS should be treated as a legitimate information-resource category requiring systematic management.

2. LIS as a Knowledge-Management Profession :

LIS professionals can act as:

- knowledge organizers;
- digital archivists;
- metadata specialists;
- repository managers;
- cultural heritage information professionals.

3. SWAYAM as an Educational Mediator :

SWAYAM can connect:

IKS knowledge

with

learners

and subsequently with

professional LIS competencies.

The current SWAYAM catalogue's inclusion of an IKS course under INI demonstrates the practical relevance of this digital-learning pathway. (Swayam)

4. From Preservation to Knowledge Activation :

The objective should not be preservation alone.

A more comprehensive model is:

Preserve → Organize → Discover → Learn → Apply → Reproduce → Sustain

This converts IKS from a static heritage collection into a living knowledge ecosystem.

Theoretical Implications :

The framework contributes to LIS theory in four ways.

1. Extension of Knowledge Organization Theory :

It argues for culturally contextualized knowledge organization.

2. Extension of Digital Preservation Theory :

It conceptualizes preservation as:

technical continuity + cultural continuity.

3. Extension of Digital Learning Theory :

It positions MOOCs not merely as delivery mechanisms but as mechanisms for knowledge dissemination and professional competency development.

4. Interdisciplinary Theoretical Integration

The framework connects:

IKS
↓
Knowledge Organization
↓
Digital Preservation
↓
Digital Learning
↓
LIS Education

This interdisciplinary connection constitutes the principal theoretical contribution.

Practical Implications :

1. LIS Departments :

LIS departments can introduce:

- IKS electives;
- certificate courses;
- practical documentation projects;
- IKS repository assignments.

2. Libraries :

Libraries can develop:

- IKS collections;
- oral-history archives;
- manuscript repositories;
- community archives.

3. Digital Repositories :

Repositories should incorporate:

- culturally sensitive metadata;
- multilingual support;
- provenance;
- access restrictions.

4. SWAYAM :

SWAYAM can support:

- IKS-oriented LIS courses;
- digital preservation courses;
- traditional knowledge documentation courses;
- interdisciplinary IKS modules.

5. Policymakers :

Policy makers can promote:

- IKS digital infrastructure;
- professional training;
- community participation;
- multilingual repositories.

Challenges :

1. Fragmented Knowledge Resources :

IKS resources are distributed across libraries, archives, communities, temples, institutions, private collections and oral traditions.

2. Multilingualism :

Different languages and scripts complicate:

- metadata;
- OCR;
- search;
- translation;
- interoperability.

3. Cultural Sensitivity :

Some knowledge may be:

- sacred;
- restricted;
- community-owned;
- unsuitable for unrestricted public dissemination.

4. Intellectual Property :

Digital documentation may increase the risk of:

- unauthorized reuse;
- commercialization;
- appropriation.

5. Lack of Trained Professionals :

There is a need for professionals combining:

IKS knowledge + LIS + digital technologies + ethics.

6. Technological Challenges :

AI and automated tools may generate:

- transcription errors;
- translation errors;
- metadata bias;
- decontextualized representations.

Human validation therefore remains essential.

Future Research :

The framework provides several directions for empirical research.

1. SWAYAM Course Mapping :

Future research can map:

- number of IKS courses;
- National Coordinator;
- domain;
- duration;
- credits;
- language;
- certification;

- LIS relevance.

2. LIS Student Survey :

A survey can measure:

- IKS awareness;
- digital competencies;
- preservation knowledge;
- ethical awareness.

3. Delphi Study :

LIS and IKS experts can validate the proposed competency framework.

4. Curriculum Analysis :

Existing LIS curricula can be compared against the proposed framework.

5. Repository Case Studies :

Studies can examine:

- metadata;
- preservation;
- usability;
- access;
- community participation.

6. Structural Equation Modelling :

The theoretical propositions can be converted into measurable constructs and tested statistically.

Limitations :

This study has several limitations.

- First, it is conceptual and does not empirically validate the proposed framework.
- Second, the framework is primarily designed for the Indian LIS and higher-education context and may require modification for other cultural environments.
- Third, the SWAYAM platform is dynamic. Course offerings, National Coordinator portfolios and semester information can change over time. Therefore, future empirical SWAYAM studies should specify the exact observation date and search protocol.
- Fourth, the proposed competencies and curriculum modules require validation

through expert consultation, learner studies and institutional implementation.

Conclusion :

Indian Knowledge Systems constitute a multidimensional knowledge heritage encompassing textual, oral, experiential, artistic, scientific, philosophical and community-based traditions. Their contemporary integration into higher education creates both opportunities and responsibilities for Library and Information Science.

This paper has argued that LIS should not view IKS merely as a collection-development issue. Rather, IKS should be understood as a complex knowledge ecosystem requiring identification, documentation, organization, metadata creation, preservation, dissemination and ethical management.

The proposed **IKS–Digital Learning–LIS Integration Framework** provides a theoretical structure for connecting these processes. It integrates eight dimensions: knowledge identification, documentation, knowledge organization, metadata, digital preservation, digital dissemination, ethics and intellectual property, and LIS curriculum integration.

The framework further proposes that LIS education should develop competencies extending beyond conventional cataloguing and classification. Future LIS professionals should understand traditional knowledge documentation, culturally sensitive metadata, digital preservation, community engagement, intellectual property, digital repositories, artificial intelligence, linked data and knowledge graphs.

SWAYAM provides a significant digital-learning context for this transformation. The official platform currently operates across multiple National Coordinators and has a large national course and learner ecosystem. Its current catalogue also includes IKS-related courses, demonstrating that IKS is beginning to enter mainstream digital learning. (Swayam)

The central theoretical proposition of this paper is therefore:

The effective integration of Indian Knowledge Systems into LIS education requires the simultaneous integration of knowledge context, documentation, organization, metadata, digital preservation, digital learning, ethical access and professional competency development.

The framework provides a foundation for future empirical research, curriculum innovation and digital-library development. It also repositions LIS professionals as active participants in the preservation, organization and responsible dissemination of India's diverse knowledge heritage.

References :

- Achari, S. (2024, Aug. 8). An Eye On Spiritualism And Indian Knowledge Systems.

International Journal of Creative Research Thoughts, 12(8), 256-262. Retrieved Sep. 30, 2024, from www.ijcrt.org

- Borgman, C. L. (2007). *Scholarship in the digital age: Information, infrastructure, and the Internet*. MIT Press.
- Chigwada, J., & Ngulube, P. (2024). Librarians' role in the preservation and dissemination of indigenous knowledge. *IFLA Journal, 50*(1). (Sage Journals)
- Dangi, R. K., & Saraf, S. (2017). Role of libraries in preservation of traditional knowledge: With special reference to India. *Qualitative and Quantitative Methods in Libraries, 6*(1). (QQML Journal)
- Dey, R. (2026). From tradition to modernity: Pedagogical strategies for integrating Indian Knowledge Systems in higher education. *Research Review International Journal of Multidisciplinary, 11*(5). (RR Journals)
- Government of India, Ministry of Education. (2020). *National Education Policy 2020*. Ministry of Education.
- Government of India, Ministry of Education. (2026). *Annual report: Indian Knowledge Systems Division*. Ministry of Education. (Education Government of India)
- International Federation of Library Associations and Institutions. (2010). *The IFLA policy statement on indigenous traditional knowledge*. IFLA.
- International Organization for Standardization. (2012). *Information and documentation—Digital records conversion and migration process (ISO 13008:2012)*. ISO.
- International Organization for Standardization. (2017). *Information and documentation—Records management processes—Metadata for records (ISO 23081)*. ISO.
- Kumar, M. J. (2024). Forging connections: Integrating Indian Knowledge Systems in higher education. *IETE Technical Review, 41*(3), 271–273. https://doi.org/10.1080/02564602.2024.2342625 (Taylor & Francis Online)
- Mal, D. (2022). Indian Knowledge System, Library and Information Science, and the role of academic libraries in West Bengal: A systematic review. *ShodhKosh: Journal of Visual and Performing Arts, 3*(1). https://doi.org/10.29121/shodhkosh.v3.i1.2022.9062 (Granthaalayah Publication)
- Ministry of Education, Government of India. (2026). *SWAYAM: Study Webs of Active-Learning for Young Aspiring Minds*. (Swayam)
- Ministry of Education, Government of India. (2026). *SWAYAM National Coordinators*. (Swayam)
- Ministry of Education, Government of India. (2026). *SWAYAM course catalogue*. (Swayam)
- Sarkar, S. (2026). Preserving roots in a digital world: Contemporary relevance of Indian Knowledge Systems for LIS professionals. *Archives*. (Archives Publishing)
- Thomas, P. N. (2010). Traditional knowledge and the Traditional Knowledge Digital Library: Digital quandaries and other concerns. *Communication, Culture & Critique,*

3(4), 659–673. https://doi.org/10.1177/1748048510380799 (Sage Journals)

- UNESCO. (2003). *Charter on the preservation of digital heritage*. UNESCO.
- UNESCO. (2019). *Recommendation concerning the preservation of, and access to, documentary heritage including in digital form*. UNESCO.
- University Grants Commission. (2023). *Guidelines for training/orientation of faculty on Indian Knowledge Systems*. UGC. (UGC)
- World Intellectual Property Organization. (2017). *Intellectual property and traditional knowledge*. WIPO.