Library and information science (LIS) curriculum and AI Competencies: Bangladesh perspective

Md. Saiful Alam
Department of Information Studies, East West University

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Abstract

Purpose: This study examines the extent to which Library and Information Science (LIS) curricula in Bangladesh address digital and Artificial Intelligence (AI) competencies required for contemporary information environments and identifies gaps in relation to international standards.

Methodology: Using a mixed-methods approach, undergraduate, master's, and postgraduate diploma LIS curricula from four leading Bangladeshi universities were analyzed and categorized into traditional, digital/ICT, and AI-related competencies. The curricula were benchmarked against AI competency frameworks developed by IFLA, UNESCO, ALA, and CILIP. Informal interviews with ten LIS faculty members were conducted to explore curriculum implementation and institutional challenges.

Findings: The findings reveal that LIS curricula remain predominantly oriented toward traditional librarianship. While digital and ICT components have expanded, AI-related competencies are limited and unevenly integrated. Alignment with international frameworks is partial, with notable gaps in applied AI skills, data stewardship, and strategic leadership, compounded by infrastructural, pedagogical, and policy constraints.

Originality: This is one of the first initiatives in Bangladesh to investigate the appropriateness of the existing LIS curriculum in modern era and AI competencies required for Bangladeshi information professionals.

Practical implications: The study underscores the need for an integrated, competency-based LIS curriculum that embeds AI literacy across different degrees to prepare professionals for AI-enabled information services.

Keywords: LIS, curriculum, AI, information professionals, AI competencies, Bangladesh.

1. Introduction

The rapid advancement of Artificial Intelligence (AI) is reshaping education, research, and professional practices across disciplines, with library and information science (LIS) being no exception. Libraries are increasingly adopting AI-driven tools for information retrieval, knowledge discovery, metadata generation, and personalized user services. Consequently, the demand for professionals equipped with AI and digital competencies has grown significantly. However, to what extent LIS education in Bangladesh is ready to meet the professional challenges of adopting AI and digital technologies. This paper is an attempt to explore these issues in terms of course content and the teaching-learning process.

2. Literature review

2.1 LIS education in Bangladesh

Library and Information Science (LIS) education in Bangladesh has grown from early certificate courses at the University of Dhaka to a multi-level system offering diplomas, undergraduate (honors), professional master's, MPhil, and PhD programs across public and private universities (Islam & Chowdhury, 2006). Historically grounded in classical librarianship- cataloguing, classification, reference, and archives- the curricula have gradually incorporated ICT and digital library topics such as database design, automation, metadata, and institutional repositories. Empirical studies indicate steady progress in institutional digitization and repository development; yet digital preservation capacity and metadata practices remain uneven across universities (Islam, et al., 2020).

Recent scholarship highlights an emerging but limited attention to data-related and AI-relevant competencies. Analyses of program syllabi show digital topics moving from optional to more central positions, while explicit AI modules are rare and fragmented (Chen et al., 2024). Researchers attribute these gaps to constrained ICT infrastructure, uneven faculty expertise in advanced technologies, limited continuous professional development, and modest research capacity in LIS departments (Islam, et al., 2020). International guidance- from bodies such as IFLA- urges libraries and LIS programs to adopt strategic responses to AI, emphasizing ethical literacy, algorithmic awareness, and practical engagement with AI tools (IFLA, 2023).

Collectively, the literature argues that Bangladesh's LIS education has strong traditional foundations and is increasingly incorporating digital content but insufficiently prepares graduates for AI-infused information environments. Authors recommend comprehensive curriculum reform: mainstreaming data management and AI literacy, investing in shared digital infrastructure, expanding hands-on training (labs, internships), and strengthening faculty development and research capacity to align national programs with global competency frameworks (Islam & Chowdhury, 2006).

2.2 LIS curriculum in AI landscape

Recent research highlights a growing recognition that Library and Information Science (LIS) education must evolve to include digital and artificial intelligence (AI) competencies alongside traditional knowledge organization and management skills. Studies exploring AI literacy in LIS contexts show that students are only moderately familiar with AI tools, primarily using them for information searching, summarizing text, and idea generation. Yet, they express concerns about ethical use and academic integrity, indicating gaps in formal curriculum coverage of AI and ethical frameworks (Hossain, et al., 2025). A similar qualitative study of LIS professionals in Bangladesh reveals varying levels of awareness and preparedness for AI integration into library services, underscoring differences between public and private institutional environments (Akand, 2005).

Inclusive discussions around LIS curriculum reform advocate the need for structured frameworks that build AI literacy progressively, emphasizing ethical decision-making, critical evaluation of AI systems, and practical engagement with AI applications (Hossain, 2025). In the Bangladeshi context, while traditional IL (information literacy) and digital library courses are increasingly part of degree structures, research demonstrates that explicit AI competency development is limited, fragmented, and emerging, necessitating curriculum restructuring to prepare graduates for dynamic, AI-enabled information environments (Chen et al., 2024).

Global discourse increasingly foregrounds the need to integrate artificial intelligence (AI) and advanced digital competencies into Library and Information Science (LIS) education. International professional bodies argue that core LIS curricula must expand beyond traditional knowledge organization to include AI literacy, data stewardship, algorithmic awareness, and ethical governance (IFLA, 2023; UNESCO, 2024). IFLA's working guidance calls on libraries and LIS programs to develop strategic responses to AI adoption-emphasizing transparency, risk assessment, and practitioner capacity-building-while UNESCO's AI competency frameworks for education stress human-centered competencies, ethics, foundational AI knowledge, and pedagogy for professional development (IFLA, 2023; UNESCO, 2024). Similarly, recent ALA/ACRL work has formalized AI competencies specifically for academic library workers, identifying domains such as ethical considerations, knowledge & understanding, analysis & evaluation, and applied use of AI tools (ACRL & ALA, 2025). Professional standards frameworks such as CILIP's PKSB further underscore data, digital and professional skills as foundational for contemporary practice (CILIP, 2021).

Regionally and nationally, scholars examining Bangladesh's LIS education document both progress and persistent gaps. Historically strong in traditional areas (cataloguing, classification, reference, archives), Bangladeshi curricula have incorporated ICT and digital library modules over the past two decades; institutional repositories, digitization projects, and automation courses now appear in many programs However empirical

analyses reveal uneven implementation and capacity: digital preservation practices and metadata quality vary significantly across university libraries, and advanced data-science or AI-focused coursework is sparse or elective rather than core (Islam, et al., 2020).

Scholarly recommendations converge on several curriculum responses. Authors advocate embedding AI literacy and data stewardship across core courses (rather than isolating them as electives), introducing project-based labs that use open-source tools, and developing modular professional certificates for in-service librarians (IFLA, 2023); (ACRL & ALA, 2025). They also recommend strengthening faculty development through targeted CPD, fostering industry–academic partnerships to provide practical placements, and creating shared national infrastructure or consortia (e.g., shared cloud labs, repository networks) to overcome institutional resource gaps (Islam, et al., 2020; UNESCO, 2024).

3. Objective of the study

The objectives of this study are to:

- identify the LIS curriculum coverage in terms of AI and digital competency with some international frameworks like IFLA, UNESCO, ALA, CILIP.
- explore the gap between existing curricula and emerging skill demands.
- recommend a revised curriculum framework and strategic guidelines for incorporating AI and digital skills into information education in Bangladesh.

4. Methodology

The study is a mixed-methods research project that combines documentary analysis and interviews in separate phases. In the first phase, all documentary materials including LIS curriculums of undergraduate and master's programs of four reputed universities have been analyzed. The course content of the curricula has been systematically analyzed into triangle views: traditional LIS skills; ICT and digital literacy skills and AI skills. The course contents were compared according to some international digital and AI skill based curriculum framework guidelines provided by IFLA, UNESCO, ALA, and CILIP. Besides, study has also looked into the curriculums of post-graduate diploma in Library and Information Science that are being provided by different LIS departments/institutes of public and private universities.

To explore the teaching-learning methods, curriculum design and implementation constraints/challenges informal interviews were conducted with the faculty members of the departments of these four universities as well as the instructors of some diploma institutes. They have contributed a lot in exploring the teaching-learning process and professional challenges. Some faculties expressed their deep concern about the future of the LIS profession in the digital age and put forward some recommendations for improvements. The conversations have been captured as audio clips. 10 faculty members

having close attachment with ICT related courses of LIS departments have been interviewed to understand perceptions of the existing curriculum and emerging skill requirements. The audios have been converted manually into spreadsheet for presentation. Required AI Competencies to be adopted in LIS curriculum, existing gaps, and implementation level have been presented in the findings.

1. Findings

5.1 LIS education in Bangladesh

LIS education Bangladesh dates to 1950s with introduction of certificate course by Dhaka University. However, at present, different types of LIS education programs of different durations are offered by different institutions. More than 20 institutes including National University and some other public universities are providing one year post-graduate diploma on LIS. Three public universities (Dhaka University, Rahshahi University, Noakhali Science and Technology University and The East West University (private) are providing quality education at the undergraduate level. The graduates having integrated honors in LIS followed by master's program basically meet the professional challenges of the country of LIS sector. Besides, National University of Bangladesh, Khwaja Younus Ali University (KYAU), Lalmatia Girls College offer undergraduate honors program in LIS. These universities having honors program also offer master's program. Besides, Royal University, Dhaka; North Bengal International University, Rajshahi have introduced master's program. (Begum & Elahi, 2019) A good number of universities affiliated colleges under National University teach LIS as individual course in a three years (pass course) program. Only the Department of Information Science and Library Management, Dhaka University offers MPhil and PhD program for the information professionals in the country. Recently the National University has initiated to introduce MPhil and PhD programs.

5.2 LIS curriculum frameworks

The Library and Information Science (LIS) curriculum frameworks in Bangladesh at both undergraduate and master's levels reflect a layered, progression-based structure, combining traditional disciplinary foundations with increasing digital and emerging technology components. Analysis of recent curricula from four renowned universities reveals both continuity and gradual transformation in curricular design.

5.2.1 Undergraduate-level LIS curriculum

At the undergraduate level, LIS curricula are generally structured to provide foundational knowledge, disciplinary orientation, and basic professional skills. The framework typically begins with introductory and contextual courses, such as Introduction to Information Science/Studies, Information and Society, Bangladesh Studies, language and communication skills, and general ICT fundamentals. These

courses aim to situate LIS within its social, cultural, and technological contexts while building essential academic competencies.

The core disciplinary segment dominates the undergraduate framework and emphasizes traditional librarianship. Courses on organization of knowledge (classification and cataloguing theory and practice), information sources and services, bibliography and documentation, indexing and abstracting, archives and records management, and library administration form the backbone of the curriculum. Practical components attached to these courses ensure familiarity with standard professional tools and techniques.

In parallel, undergraduate curricula increasingly integrate digital librarianship components, including library automation, database design, digital library systems, web technologies, information retrieval techniques, and information literacy. These courses signal a transition from print-centered librarianship to technology-mediated information services. However, AI-related content at this level is largely introductory or implicit, appearing through courses such as emerging technologies, data science fundamentals, or information systems analysis rather than as standalone AI modules. The undergraduate framework usually concludes with research methodology, internships or fieldwork, comprehensive examinations, and project or monograph work, ensuring exposure to applied professional environments.

5.2.2 Master's-level LIS curriculum

At the master's level, LIS curricula adopt a specialized, practice-oriented, and research-enriched framework. The foundational courses at this stage focus less on disciplinary introduction and more on advanced conceptual and managerial perspectives, such as knowledge management, service quality management, information policy, leadership, and strategic information services. A defining feature of the master's curriculum is the advanced digital and systems-oriented focus. Courses such as advanced digital library systems, library systems and services, information systems analysis and design, database-driven applications, metadata management, research data management, and electronic resource management are prominent. Compared to undergraduate programs, master's curricula show greater coherence in digital skill development, emphasizing system customization, interoperability, and service optimization.

Notably, master's programs demonstrate the most visible entry point of AI and data-driven competencies. Courses explicitly address artificial intelligence in information institutions, digital humanities, data analytics and visualization, bibliometrics/webometrics, and advanced information retrieval increasingly appear as core or elective offerings. These courses align with international competency frameworks but remain limited in number relative to traditional and digital components. The master's framework strongly emphasizes research and professional synthesis,

culminating in research monographs/theses, seminars, and advanced internships. This structure prepares graduates for leadership roles, academic careers, and specialized digital information services.

5.2.3 Comparative perspective

Overall, the undergraduate framework prioritizes breadth and professional grounding, while the master's framework emphasizes depth, specialization, and emerging competencies. Despite positive shifts toward digitalization and AI awareness, the curricula remain imbalanced, with traditional courses still dominating and AI competencies not yet fully mainstreamed across both levels.

5.3 Course content in LIS education

For the sake of our discussion, the curriculum of Library and Information Science (LIS) education in Bangladesh can be broadly categorized into traditional librarianship, digital/ICT related, and AI related Skills. Figure 1: Percentage distribution of courses by type of skills shows that the major portion (57.4%) of the curricula are still dominated by the core professional courses focusing on collection development, cataloguing, classification, indexing, bibliography, archives, and library management etc. ICT/Digital librarianship related courses (30.6%) reflect the growing impact of technology, covering information literacy, database design, library automation, metadata management, and digital library systems. These prepare students to engage with technology-enabled library services and digital information environments.

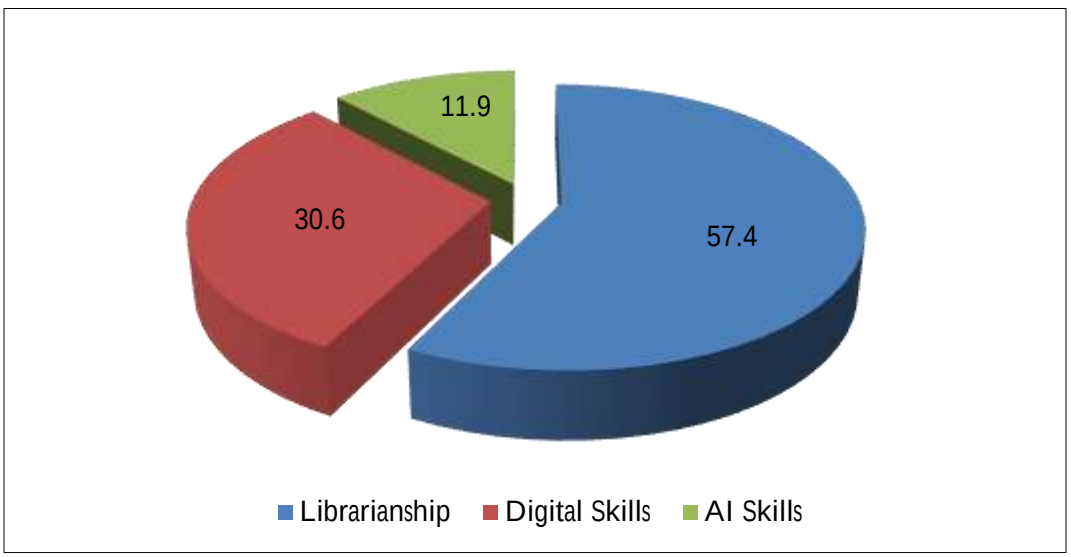

Figure 1: Percentage distribution of courses by type of skills

AI and data-driven courses (12%). A smaller but emerging share of AI and data-driven courses include digital humanities, data science, research data management, analytics, and artificial intelligence in library services. While this reflects initial progress, AI-focused competencies remain limited compared to international benchmarks. A restructured curriculum with a balanced integration of traditional, digital, and AI segments is essential to equip graduates for the future information landscape.

The percentage distribution of these skill driven courses is found in some sort of different ways as analyzed in figure 2. The percentage in descending order are Department of Information Science and Library Management of Dhaka University (15.2%), Department of Information Studies of East West University (12.7), Institute of Information Sciences of Noakhali Science and Technology University (11.6) and Department of Information Science and Library Management of Rajshahi University (9%). It is to mention that only Rajshahi University has introduced a full course on AI titled "ISLM526: Artificial Intelligence in Information Institution" at the master's level. Other universities include AI related course content are included in different IT related courses or in different names. As a whole it is to say that LIS curriculum framework is still dominated by the traditional courses. Following also highlights that if we aggregated percentage of ICT and AI related courses are not equivalent to the traditional librarianship.

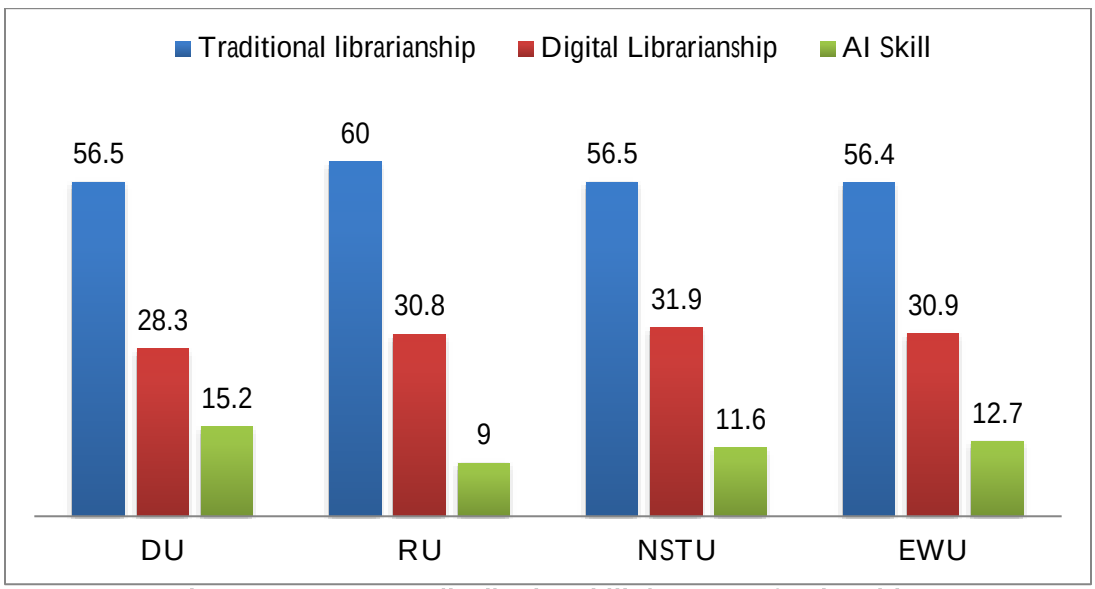

Figure 2: Percentage distribution skills by types of universities

5.4 Required skills and competencies

In response to the increasing dependence on digital and AI platforms, professional organizations like IFLA, UNESCO, ALA, and CILIP have developed AI literacy and competency frameworks that are compiled in table 1. Each framework highlights essential skills—AI literacy, ethical awareness, data management, and lifelong learning—ensuring information professionals can critically evaluate, integrate, and lead AI-driven services.

Table 1: Required skills and competencies to adopt AI related courses

Skill / Competency	Description
Foundational AI Literacy	Basic understanding of AI/ML concepts, applications, benefits, and limitations. Includes ability to explain AI in accessible terms.
Ethical Awareness & Responsibility	Ability to address issues of bias, transparency, accountability, privacy, copyright, and equity in AI use. Promotes human-centred, responsible AI.
Critical Evaluation of AI Tools	Assessing AI systems for accuracy, reliability, inclusivity, and ethical impact. Identifying risks such as misinformation or bias.
Data Literacy & Data Management	Understanding how AI uses data; ability to curate, manage, analyze, and protect datasets. Awareness of FAIR data principles (Findable, Accessible, Interoperable, Reusable).
Integration of AI in Information Services	Applying AI tools in cataloguing, metadata creation, search & discovery, user services, digital preservation, and automation of routine tasks.
Human-Centered Service Orientation	Designing AI-enabled services that respect human values, user rights, inclusivity, and accessibility. Focus on user empowerment rather than replacement.
Lifelong Learning & Adaptability	Continuous professional development to keep up with evolving AI tools and practices. Promote adaptability, curiosity, and willingness to experiment.
Technical Skills & Application	Competence in using AI platforms, APIs, and software tools in library workflows; ability to customize or support digital/AI systems.

Information & Media Literacy Instruction	Teaching users about AI, digital literacy, misinformation, algorithmic bias, and ethical digital practices. Enabling informed use of AI in society.
Strategic Planning & Leadership	Ability to forecast AI's impact on the profession, develop policies, plan infrastructure, and lead institutional adoption responsibly.
Collaboration & Community Engagement	Working with educators, technologists, and policymakers to ensure ethical and effective AI adoption. Advocating equity in access to AI tools.
Professional & Legal Awareness	Knowledge of global/local regulations, copyright law, data protection acts (e.g., GDPR), and standards guiding AI use in libraries.

5.5 Mapping AI competencies with LIS courses

The current LIS curriculum frameworks in Bangladesh demonstrate evolution rather than transformation (Begum & Elahi, 2019). While digital librarianship has gained institutional acceptance, AI competencies are still peripheral (Hossain et al., 2025). A vertically integrated framework introducing AI literacy at undergraduate level and deepening it at the master's level- is essential to align LIS education with the demands of the AI-driven information landscape. Table 2 and 3 is the systematic mapping of AI competencies to specific LIS courses, based on the recent undergraduate and master's curricula of Bangladeshi universities aligned with IFLA, ALA, CILIP, UNESCO competency themes.

Table 2: Mapping AI competencies to LIS courses

AI Competencies	Competency Focus	Mapped Courses
AI Literacy and Conceptual Understanding	Understanding AI concepts, algorithms, limitations, and applications in information environments.	Emerging Technologies in Information Science. Artificial Intelligence in Information Institutions. New Technologies and Current Trends in Information Science. Technological Trends in Information Systems.
Data Management and Analytics	Data handling, cleaning, analysis, visualization, and decision support.	Introduction to Data Science. Data Analytics and Visualization. Research Data Management. Applied Statistics.

AI Competencies	Competency Focus	Mapped Courses
AI-Enhanced Information Retrieval	Intelligent search, recommender systems, NLP-based retrieval.	Bibliometrics, Informetrics and Webometrics. Information Retrieval Techniques. Information Retrieval and Web Search. Information Systems Analysis and Design. Digital Library Systems / Advanced Digital Library Systems.
Automation and Intelligent Systems	Automated workflows, system customization, AI-supported library operations.	Library Automation. Automation of Library and Information Institutions. Integrated Library System Development. Configuration and Customization of Library Management Software.
Metadata, Knowledge Organization, and AI	Automated classification, metadata generation, semantic organization.	Metadata for Information Management. Advanced Cataloguing and Classification. Organization of Knowledge (Theory & Practical) Information Architecture.
Digital Humanities and Knowledge Discovery	AI-assisted analysis of cultural, textual, and historical data.	Digital Humanities. Digital Humanities and Data Science. Knowledge Management. Knowledge Management Strategies and Policies.
Ethical, Legal, and Social Implications of AI	AI ethics, bias, transparency, privacy, governance.	Information Ethics. Ethical and Legal Issues in Information. Leadership and Ethics of Information Professionals. Information Policy.
Human–AI Interaction and User-Centered Services	Designing AI-enhanced services responsive to user needs.	Introduction to Human–Computer Interaction. Information Behavior and Practices. Service Quality Management. Community Information Services.

Note: This mapping shows that AI competencies already exist implicitly across many LIS courses, but they are not explicitly articulated or vertically integrated. Strengthening learning outcomes, lab components, and assessment strategies around AI within these courses would enable a cost-effective curriculum transformation, particularly suitable for the Bangladesh context.

Table 3: Required AI competencies to be adopted in LIS curriculum

Course Name	Existing name	Content/Focus	Level	Value
Foundations of Artificial Intelligence and Machine Learning for LIS	Emerging technologies (but lack structured AI theory)	Machine learning concepts; NLP basics for text-based information; AI lifecycle and limitations; Search algorithms and ranking logic; Recommender systems; Bias in algorithmic discovery.	Undergrad/ Master's	Builds essential AI literacy for future librarians and manage AI-driven discovery platforms
Metadata Engineering and Automated Knowledge Organization	Knowledge management/ Cataloging	AI-based metadata extraction; Ontologies, taxonomies and knowledge graphs; Linked data automation.	Master's	Enables scalable knowledge organization in digital libraries
AI Ethics, Policy, and Information Governance		Responsible AI principles Data protection, surveillance, and intellectual freedom UNESCO & IFLA AI governance guidelines	Undergrad / Master's	Ensures ethical leadership in AI adoption
Digital Preservation and AI for Cultural Heritage	Archives/ Preservation/ Record Management	AI in manuscript digitization OCR, handwriting recognition, and image restoration Long-term digital preservation strategies	Undergrad / Master's	Enable information worker in digitization, conversion, promotion and maintaining cultural heritage
Human–AI Interaction and User Experience in Libraries	Human computer Interaction	Trust, transparency, and explainable AI User behavior in AI systems Accessibility and inclusivity Responsive design	Undergrad/ Master's	Aligns LIS services with human-centered AI.
AI-Driven Research Analytics and Scholarly Communication	Research methods/ Bibliometrics	AI-assisted bibliometrics and altmetrics Research impact prediction AI in academic publishing/presentation	Master's	Supports research evaluation and policy decisions.
Applied AI Lab for Libraries and Information Institutions	Emerging Technologies/ Digital Librarianship/ Internet Studies	Chatbots, OCR tools, recommender prototypes Open-source AI tools for LIS Case-based projects	Undergrad / Master's (Practical)	Bridges theory–practice gap under resource constraints

Note: These courses particularly the content ensures alignment with IFLA, UNESCO, ALA, and CILIP AI frameworks. However, it not always necessary to implement these as new courses rather professionals may include the course content in the existing courses.

5.6 Curriculum implementation strategy

Based on the reviewed curricula and discussions with the faculties our observation is that most institutions still rely on traditional classroom-based teaching. Most theoretical courses (classification, cataloguing, management, ethics) rely on face-to-face lectures and slide-based delivery. This method provides conceptual grounding but limits critical thinking and exposure to applied AI. Practical exposure to library automation, database design, web design, digital library systems, and AI tools is often constrained due to insufficient ICT facilities, outdated software, and inadequate internet connectivity. Faculty expertise in advanced digital and AI applications also varies, limiting the depth of instruction in emerging areas. Students typically gain hands-on skills through their own ICT lab, internships and fieldwork, but these opportunities are uneven across institutions. Evaluation is largely exam-oriented, emphasizing memorization over problem-solving, data analysis, or ethical reasoning related to AI systems.

A phased, resource-sensitive approach allows LIS institutions in Bangladesh to transition from traditional pedagogy to AI-augmented education, ensuring equity, sustainability, and professional relevance without overwhelming existing systems. A three steps implementation strategy may be followed to implement the curriculum and address the constraints pragmatically:

Step1: Awareness and readiness: Begum and Elahi (2025) identified three dimensions of readiness (i.e., mental readiness, skill readiness and environmental readiness). It is the initial process that will develop conceptual AI readiness without heavy infrastructure. It may include:

- Introduce AI literacy modules within existing courses.
- Faculty development through short-term training and MOOCs.
- Establish partnerships with ICT departments and national IT bodies.
- Use open-source tools (e.g., ChatGPT, Koha plugins, OCR tools).

Step 2- Curriculum integration and practice: This will be the stage of skill development. This stage is for hands-on competencies and applied learning of the information professionals. It focuses on:

- Introduce new AI-focused elective courses.
- Establish AI-enabled LIS labs using cloud platforms.
- Introduce tool-based projects.
- Have pilot programs on AI-based library services at the local level.

Step 3- Institutionalization and innovation: This includes full-fledged implementation of AI-based courses at the institutional level. It also focuses on the adoption of innovative technologies and maintenance. It includes:

- Make AI courses core at the Master's level.
- Develop interdisciplinary AI–LIS programs.
- Encourage AI-focused research, theses, and publications.
- Align curriculum with IFLA–UNESCO AI competency frameworks.

2. Challenges

The integration of Artificial Intelligence (AI) competency based LIS curriculum in Bangladesh faces a range of structural, pedagogical and institutional challenges. These impediments collectively impact on the development and implementation of an AI based LIS curriculum. These are:

- Inadequate technological infrastructure: Most of the LIS institutions lack adequate ICT facilities in terms of high performance computer, reliable internet connectivity and access to advanced AI software and digital repositories. Additionally they have several constraints in regular upgrade and maintenance.
- Curriculum gap: The absence of interdisciplinary courses that combines information science with computing and data science restricts student's exposer to AI driven applications in libraries and information services. Moreover, slow curriculum revision processes in the global competency frameworks often widen the gap between evolving demand and academic training.
- Lack of faculty expertise and limited scope of professional development: With the fast changes of ICT and Ai tools, it is often not possible for all faculty members to update themselves with these tools and technologies. Many LIS educators have limited formal training in AI, data science and emerging digital technologies. Financial and technical constraint imped the professional opportunities for refresher courses or specialized training.
- Ineffective industry-academia collaboration: Low levels of industry-academia collaboration is one of the significant challenges toward developing AI competency-based curriculum in Bangladesh. Consequently, the LIS graduates often lack practical skills aligned with industry needs.
- Financial constraints: It is the most common impediment in development of all sectors. Many universities face limited budget for establishing/upgrading ICT infrastructure, subscribing AI tools, cloud services, acquiring licensed software, maintaining ICT labs, even access to digital resources. These economic limitation often slow down innovative projects.
- Psychological barrier: Due to unfamiliarity with AI technologies, skill requirement, institutional inertia, lengthy approval process and some other psychological issues further slowdown the curriculum reform.

- Policy and strategic issues: The absence/uniformed national guidelines, accreditation standard or strategic framework for AI integration in higher education forms inconsistencies in curriculum transformation.

3. Recommendations

To address the challenges associated with development and implementation of AI competency-based Library and Information Science (LIS) curriculum in Bangladesh, a set of strategic, academic and policy-oriented recommendations are essential. These recommendations are drawn on the basis of informal discussion with some of the faculties of different universities and practicing librarians in Bangladesh. We believe that a co-ordinated and combined approach (librarianship, ICT and AI related courses), LIS education in Bangladesh can better equip future professionals to meet the demands of the evolving digital information environment.

- Curriculum review and update: Systematic review and update of LIS curriculum at regularly intervals are essential for incorporating emerging AI, digital preservation and ICT related tools and equipment beside core librarianship principles. Aligning the curriculum with international competency frameworks and national development goal can enhance relevance.
- Enhanced faculty training and professional development: Participation of faculties in professional development programs is essential for successful implementation of the updated LIS curriculum. The programs may be special training, fresher and refreshers training, workshop, short courses on AI and other emerging technologies. Collaborative training initiatives with IT departments and industry experts will enable faculties to deliver updated and practice-oriented education.
- Promoting open access and low-cost tools: Educational institutes in Bangladesh should promote and ensure access to open-source AI systems, free learning platforms, open educational resources (OED), free datasets to reduce financial barriers. Utilizing tools such as open-source data analysis platforms, digital libraries and AI frameworks enables hands-on learning without heavy investment.
- Collaboration with National, International and Industry Partners: Strengthen collaboration with national institutions, international organizations and industry partners may implement Ai and digital competency-based curriculum more effectively. The partners may be international organizations such as UNESCO, IFLA, ALA etc. local technology firms, libraries, or government agencies. Note that very recently UNESCO in collaboration with the Department of Information Studies, East West University has developed a Media and Information Literacy (MIL) Network with 17 public and private universities in Bangladesh to work with information professionals.

- Certification program on AI for LIS professionals: A modular certification program may be developed and offered for the practicing librarians in collaboration with university(s) and international bodies. Topic may include AI applications in libraries; data analytics, digital preservation and curation, web-based information storage, searching and retrieval and so on.
- Research and innovation hubs: Establishing dedicated research and innovation hub within LIS institutions can significantly support by engaging faculties, students, industry experts in interdisciplinary research, excrement with AI tools, AI driven library solutions etc.

4. Conclusion

The findings of the study clearly indicates that Library and Information Science Education in Bangladesh is still at a transitional stage. Traditional librarianship courses still dominate LIS programs and AI related courses; AI and data driven courses constitute a small portion of the curriculum. Benchmarking against international frameworks from IFLA, UNESCO, ALA and CILIP shows partial alignment in the areas such as digital and AI literacy, ethical use of information, and user cantered services, but remarkable gaps persist in operational AI skills, data stewardship, algorithmic awareness or strategic leadership for AI enabled information environments. Limited ICT infrastructure inconsistent internet connectivity, insufficient access to AI tools, uneven faculty expertise etc. impedes the way toward healthy professional growth. Pedagogical practices remain largely lecture-written examinations oriented. These structural and capacity related constraints restrict the translation of curriculum intention into professional readiness.

Despite a lot of limitations, LIS curriculum in Bangladesh is in a dynamic evolutionary process. Digital librarianship has been broadly accepted; AI competencies remain peripheral rather than mainstream. To bridge the gap, the study underscores the needs of an integrated curriculum framework to introduce foundational training for digital and AI literacy at the undergraduate level as well as deep and strategic AI competencies at the master's level. Long-term planning and steady implementation, faculty development, collaboration with international organizations, sustainable financial supports are essential not only to ensure awareness among LIS graduates but also to build adaptable AI enabled information services and a knowledge-based society in Bangladesh.

References

1. ACRL, & ALA. (2025). *AI Competencies for Academic Library Workers (Draft).* Association of College and Research Libraries and American Library Association.

2. Akand, A. E. (2005). Investigating Artificial Intelligent Literacy Awareness and Competencies of LIS Professionals in Bangladesh. *European Journal of Communication and Media Studies, 4*(4), 32-41.

3. Begum, D., & Elahi, M. H. (2019, 08 14). *Road to Meet 21st Century Challenges: A scenario on LIS education in*. Retrieved from IFLA WLIC: http://creativecommons.org/licenses/by/4.0

4. Begum, D. & Elahi, M. H. (2025). Readiness to adopt artificial intelligence (AI) in libraries: a study from the lens of information professionals of Bangladesh, *Digital Library Perspectives*, *41*(4), 666-682, doi: https://doi.org/10.1108/DLP-10-2024-0150

5. Chen, J., Taylor, N., & Rorissa, A. (2024). Emerging Topics, Challenges, and Strategies for Library and Information Science Education. *Proceedings of the ALISE Annual Conference.*

6. CILIP. (2021). *The impact of AI, machine learning, automation and robotics on the information professions.* The Library ans Information Accociateion.

7. Hossain, Z. (2025). *AI citizenship framework*. Retrieved from Artificial Intelligence Special Interest Group: https://repository.ifla.org/items/36166a2a-2be4-4ce4-ba25-2521c5a2a6e6/full?utm_source=chatgpt.com

8. Hossain, Z., Biswas, M. S., & Khan, G. (2025). AI literacy of library and information science students: A study of Bangladesh, India and Pakistan. *Journal of Librarianship and Information Science*.

9. IFLA. (2023). *Developing a library strategic response to Artificial Intelligence (Working document).* International Federation of Library Associations and Institutions. .

10. Islam, M. M., Munshi, M. N., Islam, M. N., & Hossain, M. A. (2020). Digital Preservation Activities of Institutional Repositories in Some Selected Public University Libraries in Bangladesh: an Analytical Study. *The Eastern Librarian, 25*(1), 24-40.

11. Islam, M. S., & Chowdhury, M. (2006). Library and Information Science Education System in Bangladesh: an overall situation . *Asia Pacific Conference on Library and Information Education and Practice*, (pp. 358-63).

12. UNESCO. (2024). *AI Competency Framework for Teachers.* New York: United Nations Educational, Scientific and Cultural Organization.

Author biography

Dr. Md. Saiful Alam is a Professor in the Department of Information Studies (DIS) at East West University, Dhaka Bangladesh. He started his career as a lecturer of the Department of Information Science and Library Management, University of Dhaka in 1995 for last 29 years (21/10-1995-02-02-2025). Before joining as professor, he was serving as an adjunct faculty of DIS, EWU since 2019. He was also a part-time faculty of the School of Business and Economics, North South University, Bangladesh during the period 25/05/2019 to 30/06/2022. He was awarded PhD from University of Dhaka for his thesis "MIS on Health and Population Sector program in Bangladesh". He obtained first class both in B.A. (Honors) and M.A. in Information Science and Library Management, from the University of Dhaka. Dr. Alam has published sixteen peer-reviewed research articles in reputed journals and two books chapters in the field of Library and Information Science (LIS). His research interest includes AI driven information systems, web development, database management systems, digital and virtual library systems etc.

Corresponding author

Dr. Md. Saiful Alam can be contacted at: saiful.alam@ewubd.edu