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LIS111

INTRODUCTION TO LIBRARY AND INFORMATION SCIENCE

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Course Code: LIS 111
Course Title: Introduction to Library and Information Science
Course Unit: 3 Units

Series 1: Foundations of Library and Information Science
Series 2: Philosophical Roots and Theoretical Perspectives
Series 3: Origin, Growth, and Scholarly Contributions
Series 4: Education and Practice of LIS in Nigeria
Series 5: Interdisciplinary Relations and Future Directions

Series 1: Foundations of Library and Information Science

Series outline

Part 1.1: Definition of Core Concepts

- 1.1.1 Library
- 1.1.2 Information
- 1.1.3 Library Science
- 1.1.4 Information Science

Part 1.2: Scope and Functions of Library and Information Science

- 1.2.1 Purpose and Roles of Libraries
- 1.2.2 Functions of Information Science
- 1.2.3 Integration of Library and Information Science

Part 1.3: Importance of Studying Library and Information Science

- 1.3.1 Academic Relevance
- 1.3.2 Professional Relevance
- 1.3.3 Societal Impact

Part 1.4: Contemporary Challenges and Opportunities

- 1.4.1 Technological Developments
- 1.4.2 Globalization and Knowledge Access
- 1.4.3 Future Prospects

Introduction

Libraries and information systems have always played a central role in human civilization, serving as repositories of knowledge and gateways to learning. From ancient collections of manuscripts to modern digital databases, the organization and dissemination of information have shaped education, research, and societal progress. As learners embarking on this course, it is important to first grasp the foundations of Library and Information Science, since they provide the essential building blocks for understanding the discipline as a whole.

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The aim of this Series is to introduce you to the fundamental concepts of Library and Information Science, to clarify its scope and functions, and to highlight the importance of studying and practising the field in today's world.
We shall commence this Series by defining the core concepts such as library, information, library science, and information science. Next, we will examine the scope and functions of Library and Information Science, considering how libraries and information systems operate and integrate. Following that, we will explore the importance of studying Library and Information Science, focusing on its academic, professional, and societal relevance. Finally, we will conclude by discussing contemporary challenges and opportunities, including technological developments and future prospects for the discipline.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **1.1** define the concept of a **library** and explain its essential characteristics,
- **1.2** define the concept of **information** and describe its role in knowledge creation,
- **1.3** distinguish between **library science** and **information science**,
- **1.4** explain the scope and functions of Library and Information Science as a discipline,
- **1.5** analyse the roles and purposes of libraries in supporting education, research, and community development,
- **1.6** evaluate the functions of information science in organizing, retrieving, and disseminating knowledge,
- **1.7** assess the academic, professional, and societal importance of studying Library and Information Science, and
- **1.8** appraise contemporary challenges and opportunities in the field, including technological developments, globalization, and future prospects.

1.1 Definition of Core Concepts

1.1.1 Library

A **library** is an organized collection of books, journals, digital resources, and other materials, arranged to provide access to knowledge for study, research, and leisure. Libraries serve as gateways to information, offering services such as lending, reference assistance, and digital access. They are often seen as the heart of educational institutions, supporting both teaching and learning.
Libraries are not only physical spaces but also virtual platforms where information is stored and retrieved. They embody the principle of preserving knowledge for future generations.
Fill in the blank: A _____ is an organized collection of resources designed to provide access to knowledge.

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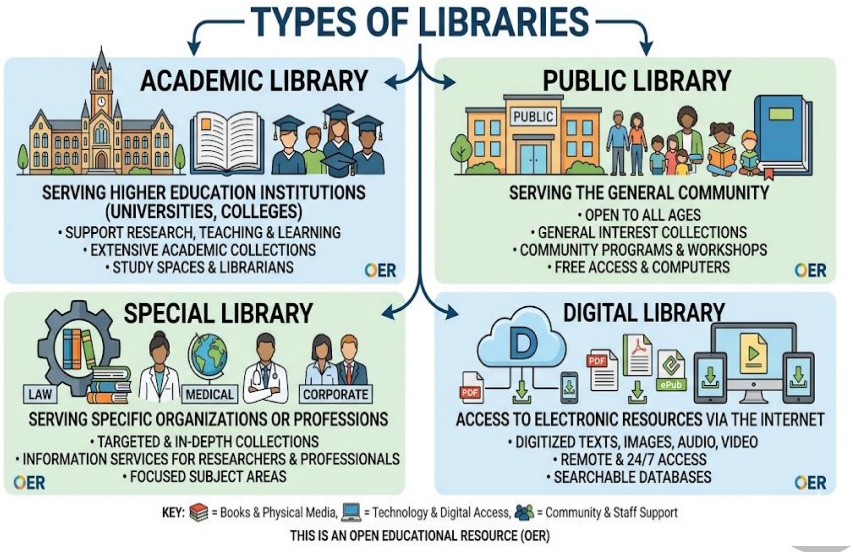

Figure 1.1 Types of libraries

1.1.2 Information

Information refers to processed data that is meaningful and useful for decision-making, communication, and knowledge creation. Unlike raw data, information has context, relevance, and purpose. For example, a list of numbers becomes information when interpreted as exam scores or financial records.

Information is dynamic, constantly evolving with new discoveries and technologies. It is the foundation upon which knowledge is built.

Fill in the blank: _____ is processed data that carries meaning and relevance.

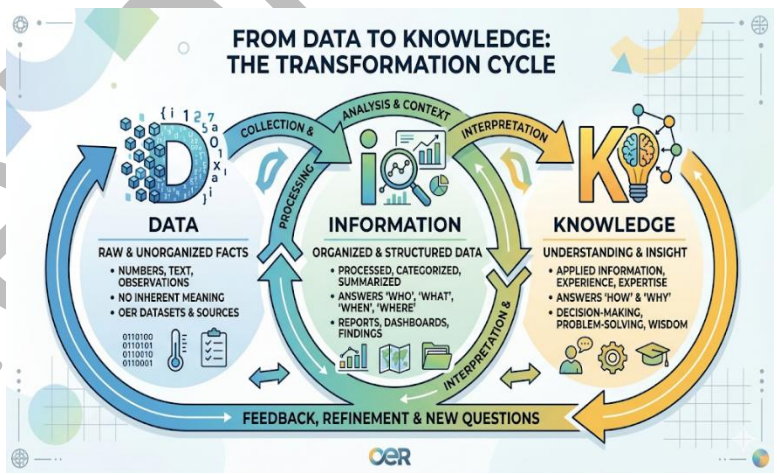

Plate 1.2 Data, information, and knowledge flow

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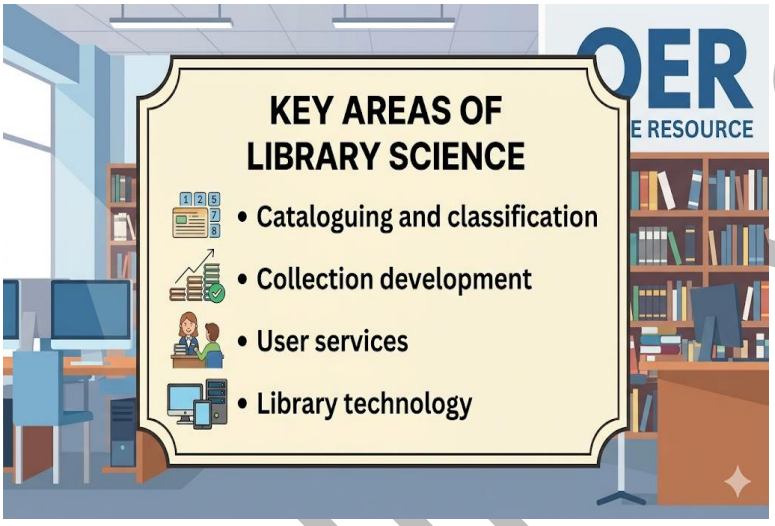
1.1.3 Library science

Library science is the systematic study of the principles and practices involved in managing libraries. It covers cataloguing, classification, collection development, user services, and the application of technology in library operations.

Library science equips professionals with skills to organize resources, facilitate access, and support users in their search for knowledge. It is both a theoretical and practical discipline.

Fill in the blank: _____ science is the systematic study of managing libraries and their services.



Box 1.1 Key areas of library science

1.1.4 Information science

Information science is the study of how information is collected, organized, stored, retrieved, and disseminated. It focuses on the use of technology, systems, and processes to manage information effectively.

Information science extends beyond libraries, encompassing fields such as computer science, communication studies, and knowledge management. It is essential in today's digital age where information is abundant and must be managed efficiently.

Fill in the blank: _____ science studies the processes of collecting, organizing, storing, and disseminating information.

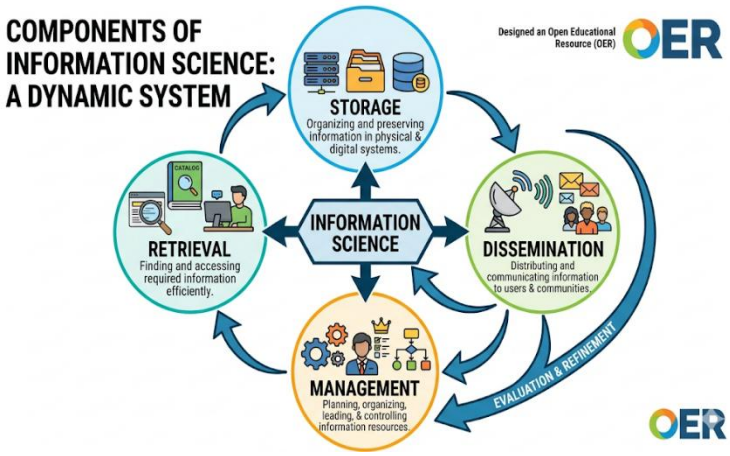


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Figure 1.3 Components of information science

Pilot questions 1.1

1. Which term refers to an organized collection of resources designed to provide access to knowledge?
2. What is the difference between data and information?
3. Identify two key areas of library science.
4. Which discipline studies the processes of collecting, organizing, storing, and disseminating information?
5. Why are libraries considered gateways to knowledge?

1.2 Scope and Functions of Library and Information Science

1.2.1 Purpose and roles of libraries

A **library** serves as a centre for learning, research, and leisure by providing access to organized collections of resources. Its primary purpose is to preserve knowledge and make it available to users in a structured manner. Libraries play roles such as supporting education, promoting literacy, preserving cultural heritage, and offering recreational reading.

Libraries also act as community hubs, providing spaces for collaboration, study, and access to digital technologies. They bridge the gap between information and users, ensuring equitable access regardless of social or economic background.

Fill in the blank: The primary purpose of a _____ is to preserve knowledge and make it accessible to users.

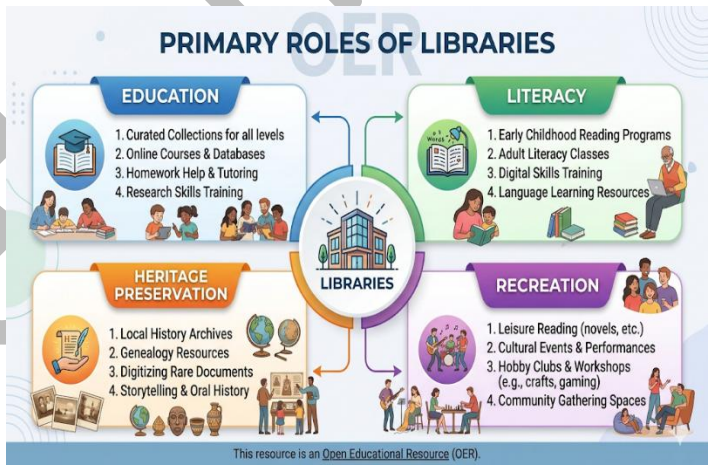


Figure 1.4 Roles of libraries

1.2.2 Functions of information science

Information science focuses on the processes of collecting, organizing, storing, retrieving, and disseminating information. Its functions include designing information systems, managing databases, developing retrieval tools, and ensuring effective communication of knowledge.

Information science is vital in today's digital age, where vast amounts of data must be transformed into meaningful information. It supports decision-making, research, and innovation by ensuring that information is accurate, timely, and accessible.
Fill in the blank: _____ science involves collecting, organizing, storing, retrieving, and disseminating information.

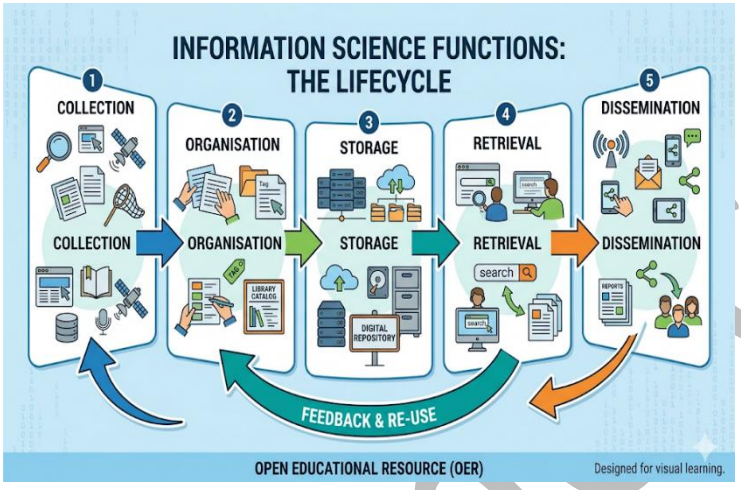
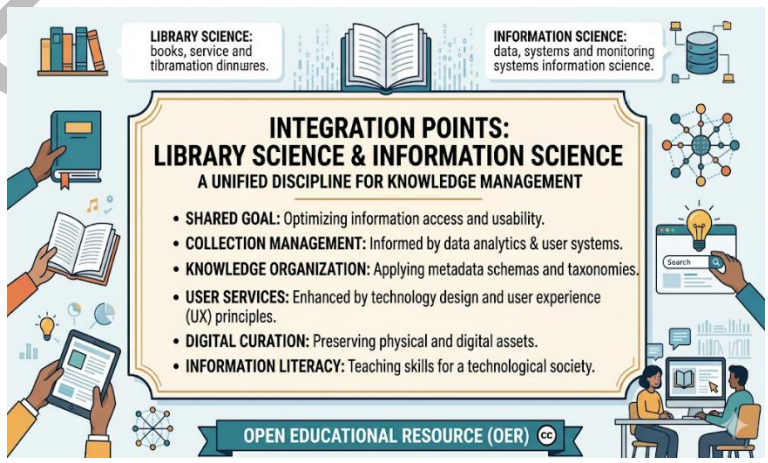


Plate 1.5 Information science functions

1.2.3 Integration of library and information science

The integration of **library science** and **information science** creates a unified discipline that addresses both traditional and modern information needs. While library science focuses on managing physical and digital collections, information science extends to designing systems and technologies that enhance access and retrieval.
Together, they form Library and Information Science (LIS), a discipline that combines theory and practice to ensure efficient knowledge management. This integration is essential for adapting to technological changes and meeting the diverse needs of users.
Fill in the blank: The integration of library science and _____ science creates a unified discipline known as LIS.



Box 1.2 Integration of library and information science

Pilot questions 1.2

1. What is the primary purpose of a library?
2. Identify two roles libraries play in society.
3. Which discipline focuses on collecting, organizing, storing, retrieving, and disseminating information?
4. What are two functions of information science?
5. How does the integration of library science and information science benefit knowledge management?

1.3 Importance of Studying Library and Information Science

1.3.1 Academic relevance

Library and Information Science (LIS) is academically relevant because it provides the theoretical and practical foundation for organizing, preserving, and disseminating knowledge. Students and researchers rely on LIS principles to access reliable information sources, conduct literature reviews, and manage references. Without LIS, the academic community would struggle to maintain structured access to knowledge.

Fill in the blank: _____ provides the theoretical and practical foundation for organizing, preserving, and disseminating knowledge.

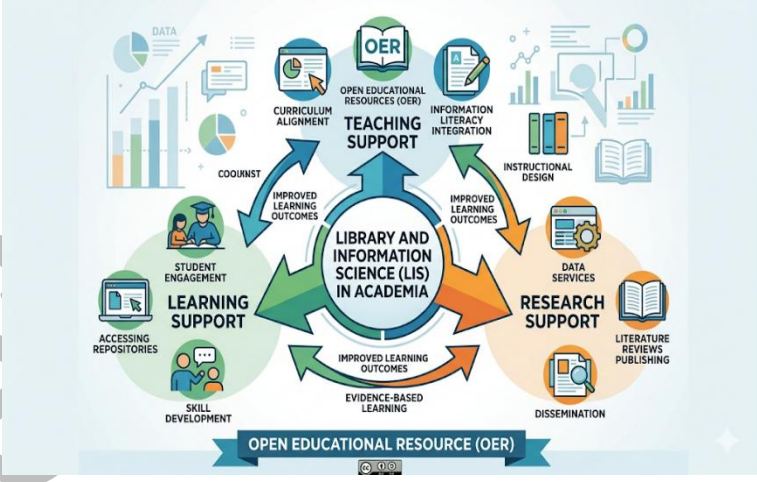


Figure 1.6 Academic relevance of LIS

1.3.2 Professional relevance

The professional relevance of LIS lies in its ability to prepare individuals for careers in libraries, archives, information centres, and knowledge management organizations. Professionals trained in LIS acquire skills in cataloguing, classification, digital resource management, and user services. These skills are essential for ensuring that information is accessible, accurate, and well-organized.

LIS also equips professionals to adapt to technological changes, such as digital libraries and online databases, making them valuable in both traditional and modern information environments.
Fill in the blank: Professionals trained in _____ acquire skills in cataloguing, classification, and digital resource management.

Category	Specific Competencies & Skills
Information Governance	**Cataloguing & Classification:** Mastering metadata schemas (MARC, Dublin Core, RDA) and taxonomy development to ensure data discoverability.
Digital Stewardship	**Digital Resource Management:** Overseeing the lifecycle of e-resources, including licensing, digital preservation, and institutional repository management.
Human-Centric Design	**User Services:** Conducting professional reference interviews, designing UX-centered library portals, and providing personalized research consultations.
Strategic Organization	**Knowledge Organisation:** Implementing advanced indexing, abstracting, and information architecture to structure complex data environments.
Emerging Tech Literacy	**AI & Data Analytics:** Utilizing AI-driven retrieval tools, managing research data (RDM), and performing evidence-based assessment of library services.
Professional Ethics	**Information Ethics:** Navigating copyright law, ensuring user privacy/confidentiality, and promoting equitable access to information.

Box 1.3 Professional skills gained through LIS

1.3.3 Societal impact

The societal impact of LIS is evident in its role in promoting literacy, lifelong learning, and informed citizenship. Libraries and information centres provide equitable access to knowledge, bridging gaps between social classes and empowering communities.
By preserving cultural heritage and supporting public education, LIS contributes to national development. It also plays a role in fostering democratic participation by ensuring that citizens have access to accurate and unbiased information.
Fill in the blank: LIS promotes literacy, lifelong learning, and informed _____.

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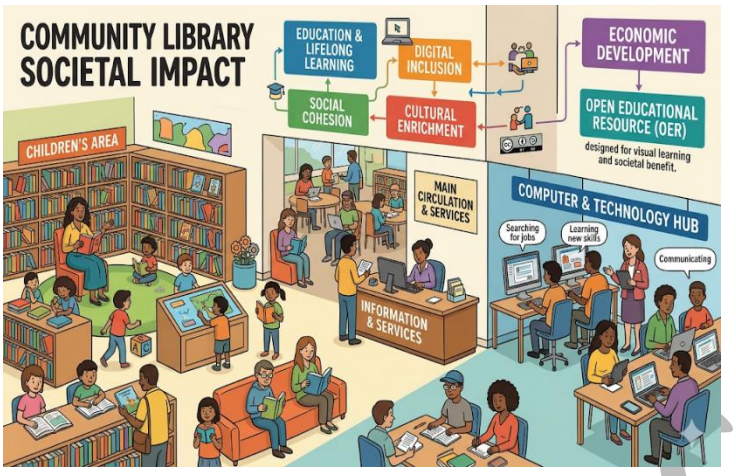

Plate 1.7 Societal impact of LIS

Pilot questions 1.3

1. What is the academic relevance of Library and Information Science?
2. Identify two professional skills gained through LIS training.
3. How does LIS contribute to national development?
4. Which aspect of LIS supports democratic participation?
5. Why is LIS important for bridging social gaps in society?

1.4 Contemporary Challenges and Opportunities

1.4.1 Technological developments

Technological developments refer to innovations in digital tools, systems, and platforms that transform how information is stored, accessed, and shared. Libraries now incorporate digital catalogues, e-books, online databases, and automated systems to meet the needs of modern users. These developments have expanded access to knowledge beyond physical boundaries, allowing learners and researchers to retrieve information from anywhere in the world.

However, technology also presents challenges such as the need for continuous training, high costs of digital infrastructure, and concerns about information security.

Fill in the blank: _____ developments have transformed how information is stored, accessed, and shared.

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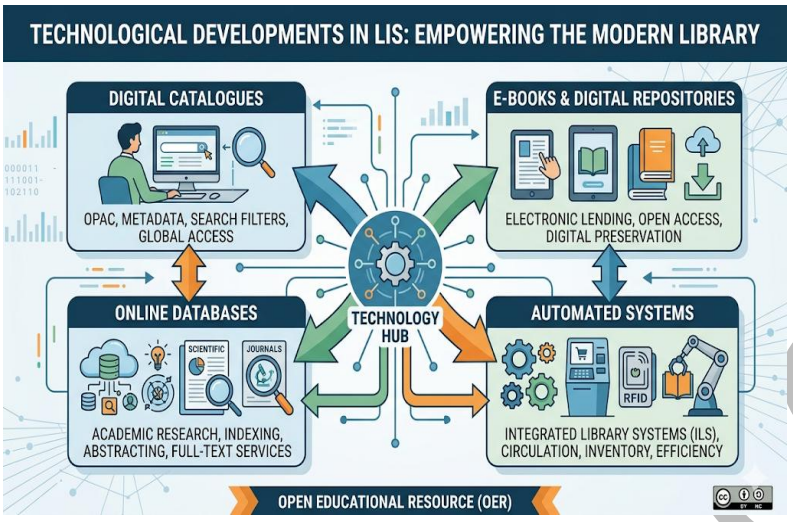

Figure 1.8 Technological developments in LIS

1.4.2 Globalization and knowledge access

Globalization is the process of increasing interconnections among countries, cultures, and economies. In the context of LIS, globalization has enhanced knowledge access by enabling international collaboration, resource sharing, and cross-border information exchange. Libraries and information centres now participate in global networks, making resources available to diverse audiences.

At the same time, globalization raises challenges such as cultural homogenisation, unequal access to technology, and the dominance of information from developed nations.

Fill in the blank: _____ has enhanced knowledge access by enabling international collaboration and resource sharing.

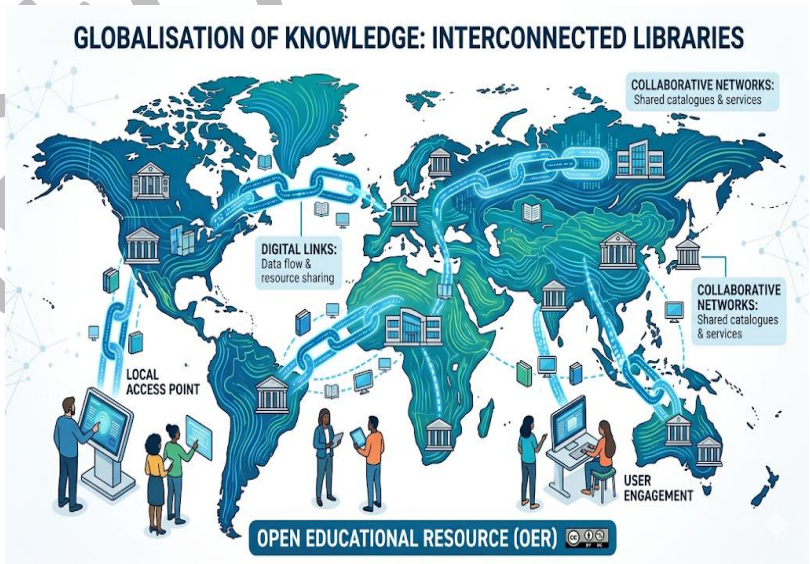

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Plate 1.9 Globalization and knowledge access

1.4.3 Future prospects

The **future prospects** of LIS lie in its ability to adapt to emerging technologies and evolving user needs. Artificial intelligence, big data, and cloud computing are expected to play significant roles in shaping how information is organized and retrieved. Libraries will increasingly serve as digital learning hubs, offering personalized services and interactive platforms.

Nevertheless, the future also demands that LIS professionals address ethical issues such as privacy, intellectual property rights, and equitable access. The discipline must balance innovation with responsibility to remain relevant and impactful.

Fill in the blank: The future prospects of LIS involve adapting to emerging technologies such as _____ intelligence and big data.

Trend	Impact and Future Application
Artificial Intelligence (AI)	Transitioning from keyword searches to **semantic and cognitive retrieval**. AI will power "Ask-a-Librarian" chatbots, automated metadata generation, and predictive user behavior modeling to personalize collections.
Big Data Analytics	Enhancing **Evidence-Based Librarianship**. Libraries will leverage massive datasets to identify research trends, optimize space utilization, and demonstrate societal impact through sophisticated data visualization.
Cloud Computing	Moving toward **Universal Accessibility**. Cloud-native Integrated Library Systems (ILS) will allow for seamless resource sharing across global networks, reducing local hardware costs and ensuring high-availability digital archives.
Information Ethics	Focusing on **Algorithmic Transparency and Digital Equity**. As AI grows, LIS professionals will lead the fight against algorithmic bias, advocate for data privacy, and ensure that the "Digital Divide" does not widen.
Immersive Tech	**VR/AR Integration.** Libraries will host virtual learning environments and "extended reality" (XR) archives, allowing users to interact with 3D historical artifacts or immersive data sets.

Box 1.4 Future prospects of LIS

Pilot questions 1.4

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1. Identify two technological developments that have transformed LIS.
2. How has globalization enhanced knowledge access?
3. What challenges does globalization pose to LIS?
4. Which emerging technologies are expected to shape the future of LIS?
5. Why must LIS professionals address ethical issues in the future?

Series summary

This Series has introduced you to the foundations of Library and Information Science, highlighting its purpose and relevance as the bedrock of the discipline. We began by defining the core concepts of library, information, library science, and information science, then moved on to examine the scope and functions of the field. Following that, we explored the importance of studying Library and Information Science in academic, professional, and societal contexts. Finally, we considered contemporary challenges and opportunities, including technological developments, globalisation, and future prospects.

By engaging with these topics, you should now be able to define the essential concepts, explain the scope and functions of the discipline, analyse its academic, professional, and societal importance, and evaluate both current challenges and future opportunities. These abilities directly align with the Series Learning Outcomes, ensuring that you have acquired the foundational knowledge and skills necessary to progress confidently into the next Series.

Glossary of terms

- **Globalization**: The process of increasing interconnectedness among countries, cultures, and economies, which in Library and Information Science enhances knowledge access through international collaboration and resource sharing.
- **Information**: Processed data that carries meaning, relevance, and context, making it useful for communication, decision-making, and knowledge creation.
- **Information science**: The study of how information is collected, organized, stored, retrieved, and disseminated, often using technology and systems to manage knowledge effectively.
- **Library**: An organized collection of books, journals, digital resources, and other materials, designed to provide access to knowledge for study, research, and leisure.
- **Library science**: The systematic study of the principles and practices involved in managing libraries, including cataloging, classification, collection development, and user services.
- **Library and Information Science (LIS)**: A unified discipline that integrates library science and information science to manage knowledge efficiently, combining theory and practice to meet diverse user needs.
- **Technological developments**: Innovations in digital tools, systems, and platforms, such as e-books, online databases, and automated catalogues, which transform how information is stored, accessed, and shared.

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- **Future prospects**: The anticipated directions of LIS, including the adoption of artificial intelligence, big data, and cloud computing, alongside addressing ethical issues such as privacy and equitable access.

Concept check questions Series 1: Foundations of Library and Information Science

Objective questions

1. Which term refers to an organized collection of resources designed to provide access to knowledge? (Linked to SLO 1.1)
   a) Information
   b) Library
   c) Database
   d) Archive
2. Information is best described as: (Linked to SLO 1.2)
   a) Raw data
   b) Processed data with meaning
   c) Numbers without context
   d) Unorganized facts
3. Which of the following is a function of information science? (Linked to SLO 1.4)
   a) Preserving cultural heritage
   b) Designing retrieval tools
   c) Promoting literacy
   d) Recreational reading

Short-answer questions

1. Explain one academic relevance of studying Library and Information Science. (Linked to SLO 1.5)
2. Identify two professional skills gained through LIS training. (Linked to SLO 1.5)
3. State one way globalization has enhanced knowledge access in LIS. (Linked to SLO 1.6)

Long-answer questions

1. Analyse the roles and purposes of libraries in supporting education, research, and community development. (Linked to SLO 1.3)
2. Evaluate the contemporary challenges and opportunities facing LIS, with reference to technological developments and globalization. (Linked to SLO 1.6, SLO 1.8)

Answers to Concept Check Questions Series 1: Foundations of Library and Information Science

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Objective questions

1. b) Library
2. b) Processed data with meaning
3. b) Designing retrieval tools

Short-answer questions

1. LIS supports teaching and research by providing structured access to reliable information sources.
2. Cataloguing and classification; digital resource management.
3. By enabling international collaboration and resource sharing across libraries and information centres.

Long-answer questions

1. **Basic response**: Libraries support education by providing textbooks and reference materials, assist research through access to journals and databases, and foster community development by promoting literacy and offering recreational reading.
   Value-added response: Beyond these roles, libraries also act as cultural centres preserving heritage, provide digital access to bridge technological divides, and serve as inclusive spaces for lifelong learning and civic engagement.
2. **Basic response**: LIS faces challenges such as high costs of digital infrastructure and unequal access to technology, while opportunities include improved access through online databases and global networks.
   Value-added response: In addition, LIS must address ethical concerns such as privacy and intellectual property rights, while embracing innovations like artificial intelligence, big data, and cloud computing to remain relevant in a rapidly changing information landscape.

Answers to Pilot Questions [Series 1: Foundations of Library and Information Science]

Part 1.1: Definition of Core Concepts

1. Library
2. Information is processed data that carries meaning and relevance.
3. Cataloguing and classification; user services.
4. Information science
5. Because they preserve knowledge and provide structured access to information.

Part 1.2: Scope and Functions of Library and Information Science

1. To preserve knowledge and make it accessible to users.

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2. Supporting education; promoting literacy.
3. Information science
4. Designing information systems; managing databases.
5. It ensures efficient knowledge management by combining traditional and modern approaches.

Part 1.3: Importance of Studying Library and Information Science

1. It provides theoretical and practical foundations for organizing and disseminating knowledge.
2. Cataloguing and classification; digital resource management.
3. By preserving cultural heritage and supporting public education.
4. By ensuring citizens have access to accurate and unbiased information.
5. By providing equitable access to knowledge and bridging social divides.

Part 1.4: Contemporary Challenges and Opportunities

1. Digital catalogues; online databases.
2. By enabling international collaboration and resource sharing.
3. Unequal access to technology; cultural homogenization.
4. Artificial intelligence; big data.
5. To ensure privacy, protect intellectual property, and promote equitable access.

References and Attributions [Series 1: Foundations of Library and Information Science]

General references

- Concepts and definitions of library, information, library science, and information science were adapted from standard introductory texts in Library and Information Science (e.g., Rubin, R. E. *Foundations of Library and Information Science*, 4th ed.).
- Explanations of scope, functions, and importance of LIS were informed by open educational resources and institutional course outlines available through OER Commons and UNESCO publications on information literacy.

Illustrations (Figures, Plates, Boxes)

- *Figure 1.1 Types of libraries*: Suggested AI prompt “Create a labeled diagram showing academic, public, special, and digital libraries with icons.” Search string: “types of libraries diagram OER.”
- *Plate 1.2 Data, information, and knowledge flow*: Suggested AI prompt “Illustrate the transformation from data to information to knowledge using arrows and icons.” Search string: “data information knowledge cycle OER.”
- *Box 1.1 Key areas of library science*: Suggested AI prompt “Generate a text box listing key areas of library science.” Search string: “library science core areas OER.”

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- *Figure 1.3 Components of information science*: Suggested AI prompt “Create a diagram showing storage, retrieval, dissemination, and management as components of information science.” Search string: “information science components diagram OER.”
- *Figure 1.4 Roles of libraries*: Suggested AI prompt “Create a diagram showing education, literacy, heritage preservation, and recreation as roles of libraries.” Search string: “roles of libraries diagram OER.”
- *Plate 1.5 Information science functions*: Suggested AI prompt “Illustrate information science functions with arrows showing collection, organization, storage, retrieval, dissemination.” Search string: “information science functions diagram OER.”
- *Box 1.2 Integration of library and information science*: Suggested AI prompt “Generate a text box listing integration points between library science and information science.” Search string: “library and information science integration OER.”
- *Figure 1.6 Academic relevance of LIS*: Suggested AI prompt “Create a diagram showing LIS supporting teaching, learning, and research with arrows.” Search string: “academic relevance of library and information science diagram OER.”
- *Box 1.3 Professional skills gained through LIS*: Suggested AI prompt “Generate a text box listing professional skills gained through LIS.” Search string: “library and information science professional skills OER.”
- *Plate 1.7 Societal impact of LIS*: Suggested AI prompt “Illustrate a community library with diverse users reading and using computers.” Search string: “community library societal impact OER.”
- *Figure 1.8 Technological developments in LIS*: Suggested AI prompt “Create a diagram showing digital catalogues, e-books, online databases, and automated systems as technological developments in LIS.” Search string: “technological developments in library and information science diagram OER.”
- *Plate 1.9 Globalization and knowledge access*: Suggested AI prompt “Illustrate interconnected libraries across the globe with digital links and icons of books and computers.” Search string: “globalization knowledge access libraries OER.”
- *Box 1.4 Future prospects of LIS*: Suggested AI prompt “Generate a text box listing future prospects of LIS including AI, big data, cloud computing, and ethics.” Search string: “future prospects library and information science OER.”

Attribution notes

- All illustration prompts were designed for AI generation and may be created using platforms such as Microsoft Designer or similar AI-based tools.
- Suggested search strings point to open educational resources (OER) repositories for sourcing free-to-use diagrams and teaching materials.
- Where external OER materials are used, attribution should follow the Creative Commons licence specified by the source.

Course Code: LIS 111
Course Title: Introduction to Library and Information Science
Course Unit: 3 Units

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Series 5: Interdisciplinary Relations and Future Directions

Series 2: Philosophical Roots and Theoretical Perspectives

Series Outline

2.1 Historical foundations of Library and Information Science

- 2.1.1 Early philosophical traditions influencing knowledge organisation
- 2.1.2 Contributions of classical thinkers (e.g., Aristotle, Bacon)
- 2.1.3 Evolution of libraries in ancient and medieval societies

2.2 Major philosophical perspectives in LIS

- 2.2.1 Humanism and the value of knowledge
- 2.2.2 Positivism and scientific approaches to information
- 2.2.3 Pragmatism and user-centred perspectives

2.3 Theoretical frameworks in LIS

- 2.3.1 Information organisation theories
- 2.3.2 Communication and knowledge transfer theories
- 2.3.3 Systems theory and its application in LIS

2.4 Contemporary philosophical debates

- 2.4.1 Ethical considerations in information access
- 2.4.2 Intellectual freedom and censorship
- 2.4.3 Globalisation and cultural perspectives

2.5 Integration of philosophy and practice in LIS

- 2.5.1 Linking theory to professional practice
- 2.5.2 Relevance of philosophical roots to modern LIS challenges
- 2.5.3 Future directions for philosophical inquiry in LIS

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Introduction

In the last Series, we explored the foundational concepts, scope, importance, and contemporary challenges of Library and Information Science. Building on that knowledge, this Series will take

you deeper into the philosophical roots and theoretical perspectives that underpin the discipline. Understanding these perspectives is crucial, as they shape how libraries and information centres function, how knowledge is organised, and how professionals respond to societal and technological changes.

The aim of this Series is to help you appreciate the philosophical traditions and theoretical frameworks that inform Library and Information Science, and to enable you to critically connect these ideas to both professional practice and contemporary debates.

We shall commence this Series by examining the historical foundations of LIS, focusing on early traditions and classical thinkers. Next, we will explore major philosophical perspectives such as humanism, positivism, and pragmatism. Following that, we will consider theoretical frameworks including information organisation, communication, and systems theory. Moving on, we will engage with contemporary debates around ethics, intellectual freedom, and globalisation. Finally, we will conclude by integrating philosophy and practice, highlighting how these roots remain relevant to modern challenges and future directions in LIS.

Series Learning Outcomes

Upon completing this Series, you should be able to:

- **2.1** define the historical foundations of Library and Information Science, including early traditions and contributions of classical thinkers,
- **2.2** describe how philosophical traditions such as humanism, positivism, and pragmatism have influenced the development of LIS,
- **2.3** explain key theoretical frameworks in LIS, including information organisation, communication, and systems theory,
- **2.4** analyse the relevance of these theoretical perspectives to knowledge organisation and information transfer,
- **2.5** evaluate contemporary debates in LIS, focusing on ethics, intellectual freedom, censorship, and globalisation,
- **2.6** demonstrate how philosophical and theoretical perspectives can be applied to professional practice in libraries and information centres,
- **2.7** assess the continuing importance of philosophical roots in addressing modern challenges such as technological change and cultural diversity, and
- **2.8** propose ways in which future philosophical inquiry can strengthen the discipline of LIS.

2.1 Historical Foundations of Library and Information Science

2.1.1 Early philosophical traditions influencing knowledge organisation

The roots of **knowledge organisation** can be traced back to early philosophical traditions that sought to classify and systematise human thought. Ancient civilisations such as Mesopotamia and Egypt developed methods of recording information on clay tablets and papyrus, laying the groundwork for structured knowledge preservation. Philosophers emphasised the importance of categorising ideas to make them accessible and useful for learning.

Fill in the blank: Ancient civilisations such as _____ and Egypt developed early methods of recording information on clay tablets and papyrus.

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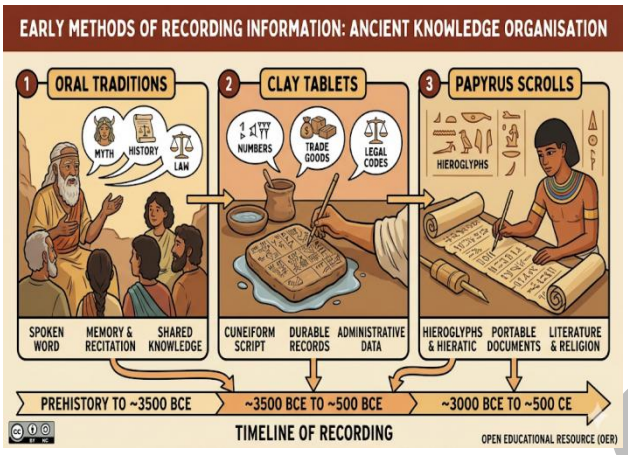

Figure 2.1 Early traditions of knowledge organisation

2.1.2 Contributions of classical thinkers

Classical philosophers such as **Aristotle** and **Francis Bacon** made significant contributions to the organisation of knowledge. Aristotle introduced systematic classification, emphasising categories and hierarchies of concepts. Bacon later advanced the scientific method, stressing observation and empirical evidence as foundations for organising information. These contributions shaped the intellectual traditions that underpin Library and Information Science today.

Fill in the blank: _____ introduced systematic classification, emphasising categories and hierarchies of concepts.

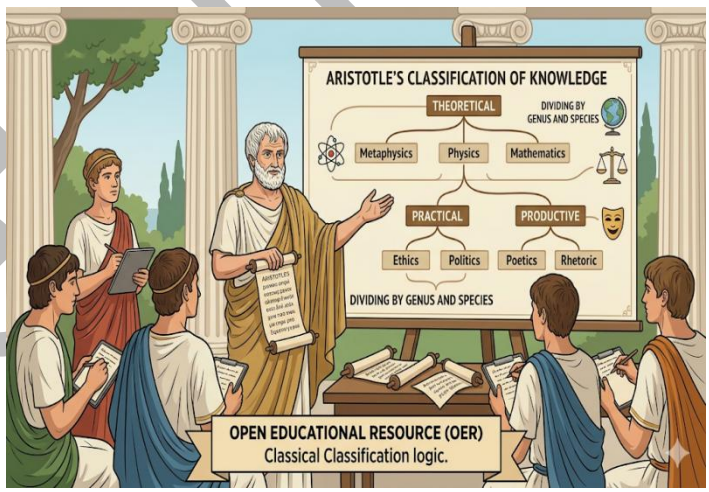

Plate 2.2 Aristotle's contribution to knowledge organisation

2.1.3 Evolution of libraries in ancient and medieval societies

The **evolution of libraries** reflects humanity's growing commitment to preserving and sharing knowledge. The Library of Alexandria in ancient Egypt symbolised the ambition to collect all

known works, while medieval monasteries safeguarded manuscripts during periods of social upheaval. These institutions not only stored texts but also served as centres of learning, influencing the development of modern libraries.
Fill in the blank: The Library of _____ symbolised the ambition to collect all known works in the ancient world.

Milestone	Significance & Contribution
The Library of Alexandria (c. 300 BCE)	Represented the first global ambition to **collect all human knowledge**. It introduced early cataloguing methods and served as the premier research institution of the Hellenistic world.
Medieval Monasteries (c. 500 – 1500 CE)	Served as the primary **custodians of Western literacy** after the fall of Rome. Monks painstakingly hand-copied manuscripts in *scriptoria*, ensuring the survival of classical and religious texts.
Islamic House of Wisdom (c. 800 – 1250 CE)	Flourishing in Baghdad and across the Islamic world, these were **centres of scholarship and translation**. They integrated Greek, Persian, and Indian knowledge, introducing paper-making to the West and advancing systematic indexing.
The Renaissance & University Libraries (c. 14th – 16th Century)	Marked the shift toward **secular knowledge and public access**. The invention of the Gutenberg press (c. 1440) revolutionized collection speed, leading to the rise of modern academic libraries.

Box 2.1 Milestones in the evolution of libraries

Pilot questions 2.1

1. Which ancient civilisations developed early methods of recording information?
2. Who introduced systematic classification of concepts?
3. What was the significance of the Library of Alexandria?
4. How did medieval monasteries contribute to the preservation of knowledge?
5. Why are classical thinkers important to the foundations of LIS?

2.2 Major Philosophical Perspectives in LIS

2.2.1 Humanism and the value of knowledge

Humanism is a philosophical perspective that emphasises the dignity, worth, and potential of human beings. In the context of Library and Information Science (LIS), humanism highlights the importance of knowledge as a means of personal growth, cultural enrichment, and social

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progress. Libraries embody humanistic values by promoting literacy, lifelong learning, and equitable access to information.
Fill in the blank: _____ emphasises the dignity, worth, and potential of human beings, and values knowledge as a means of growth.

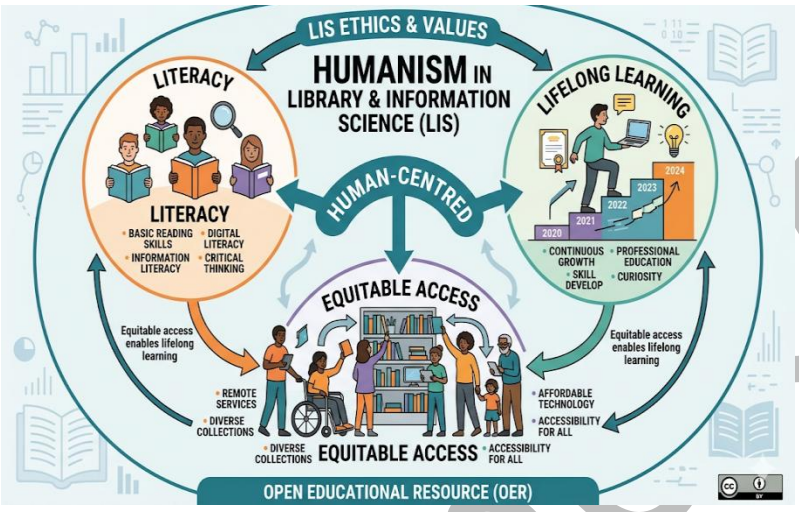

Figure 2.3 Humanism and the value of knowledge

2.2.2 Positivism and scientific approaches to information

Positivism is a philosophical approach that stresses the use of observation, measurement, and empirical evidence to understand phenomena. In LIS, positivism influences the development of classification systems, bibliometrics, and information retrieval methods. By applying scientific principles, LIS professionals aim to ensure accuracy, reliability, and objectivity in organising and accessing information.
Fill in the blank: _____ stresses the use of observation, measurement, and empirical evidence to understand phenomena.

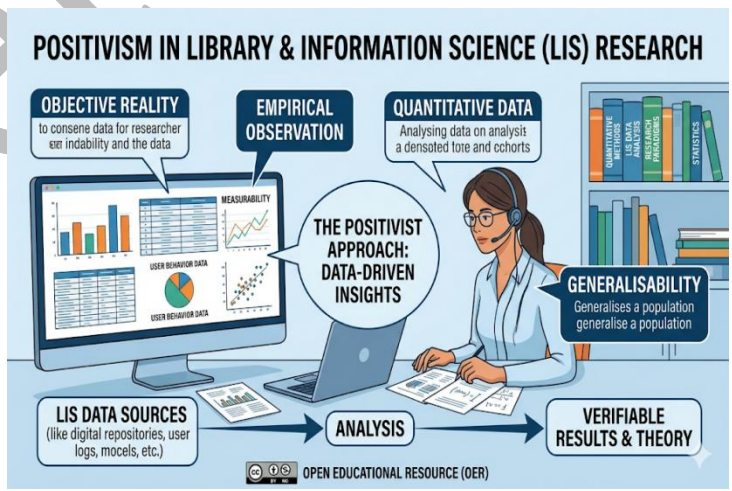

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Plate 2.4 Positivism in LIS

2.2.3 Pragmatism and user-centred perspectives

Pragmatism is a philosophy that values practical solutions and outcomes over abstract theories. In LIS, pragmatism is reflected in user-centred services, where the needs and experiences of library users guide decision-making. This perspective encourages flexibility, innovation, and responsiveness, ensuring that information services remain relevant and accessible.
Fill in the blank: _____ values practical solutions and outcomes, and in LIS it is reflected in user-centred services.

Core Aspect	Practical Application in Libraries
Focus on User Needs	Prioritizing "what works" for the specific community. Instead of rigid adherence to traditional rules, services are designed based on user behavior studies and community feedback.
Flexible Service Delivery	Moving beyond the physical desk. This includes pop-up libraries, 24/7 digital access, and adaptable spaces that can transition from quiet study zones to collaborative makerspaces.
Innovation in Access	Embracing "trial and error." Pragmatic libraries pilot new technologies—like AI search assistants or mobile-first catalogues—and refine them based on real-world utility rather than theoretical perfection.
Responsiveness to Context	Pivoting quickly during societal shifts. Whether responding to a public health crisis or rapid technological changes, a pragmatic approach ensures the library remains a functional and relevant "living laboratory."

Box 2.2 Pragmatism in LIS practice

Pilot questions 2.2

1. What does humanism emphasise in the context of LIS?
2. How does positivism influence classification and retrieval methods?
3. Which philosophical perspective values practical solutions and user-centred services?
4. Why is pragmatism important for modern information services?
5. How do these philosophical perspectives collectively shape LIS practice?

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2.3 Theoretical Frameworks in LIS

2.3.1 Information organisation theories

Information organisation theories are frameworks that explain how knowledge can be systematically arranged for easy retrieval and use. These theories underpin cataloguing, classification, and indexing practices in libraries. They ensure that information is not only stored but also structured in a way that users can locate it efficiently.

Fill in the blank: _____ organisation theories explain how knowledge can be systematically arranged for easy retrieval and use.

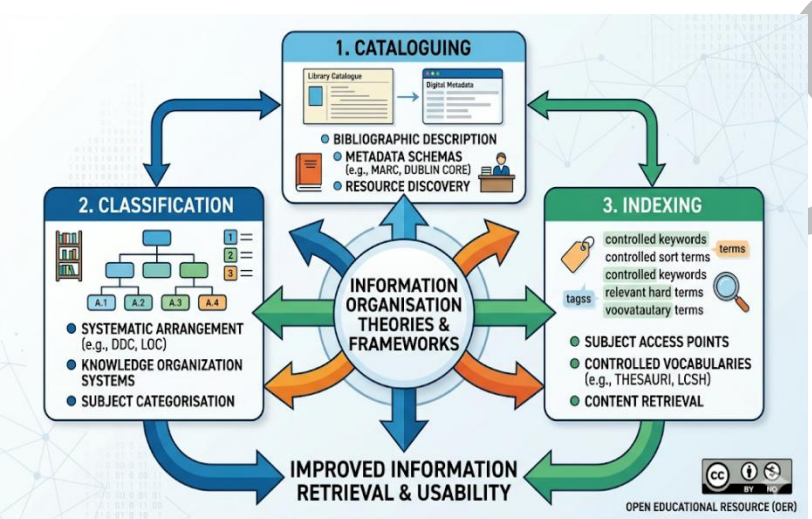

Figure 2.5 Information organisation theories in LIS

2.3.2 Communication and knowledge transfer theories

Communication theories in LIS focus on how information is transmitted between sources and users, while **knowledge transfer theories** explain how individuals and groups share and apply knowledge. These frameworks highlight the importance of clear channels, feedback mechanisms, and contextual relevance in information services. Libraries apply these theories when designing user education programmes, reference services, and digital platforms.

Fill in the blank: _____ theories in LIS focus on how information is transmitted between sources and users.

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Plate 2.6 Communication and knowledge transfer in LIS

2.3.3 Systems theory and its application in LIS

Systems theory is a framework that views organisations as interconnected parts working together to achieve common goals. In LIS, systems theory is applied to understand how cataloguing, circulation, reference, and digital services interact within the library as a whole. This perspective helps professionals design efficient workflows and integrate new technologies without disrupting existing services.

Fill in the blank: _____ theory views organisations as interconnected parts working together to achieve common goals.

Box 2.3 Application of systems theory in LIS

Pilot questions 2.3

1. What do information organisation theories explain in LIS?
2. How do communication and knowledge transfer theories support library services?
3. Which theory views organisations as interconnected parts working together?

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4. Why is systems theory important for designing efficient workflows in LIS?
5. How do theoretical frameworks collectively strengthen LIS practice?

2.4 Contemporary Philosophical Debates

2.4.1 Ethical considerations in information access

Ethics in LIS refers to the principles that guide fair and responsible behaviour in the management and use of information. Ethical considerations include protecting user privacy, ensuring equitable access, and respecting intellectual property rights. These issues are increasingly important as libraries adopt digital technologies and expand their services online.
Fill in the blank: _____ in LIS refers to the principles that guide fair and responsible behaviour in the management and use of information.

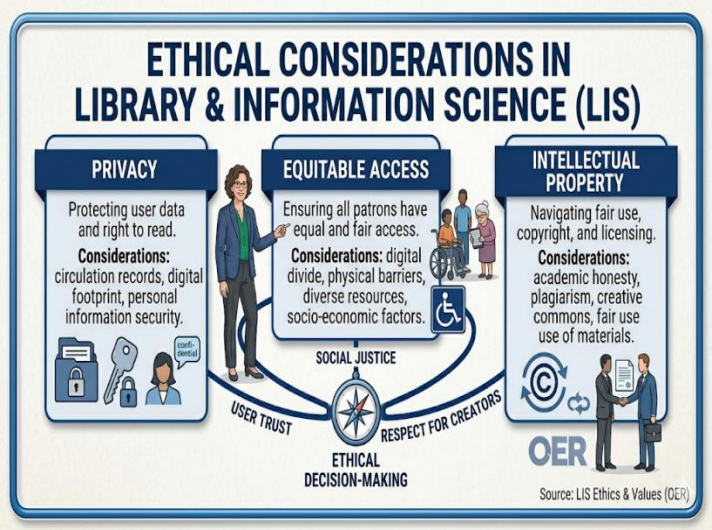

Figure 2.7 Ethical considerations in information access

2.4.2 Intellectual freedom and censorship

Intellectual freedom is the right of individuals to seek, receive, and share information without restriction. It is a cornerstone of democratic societies and a guiding principle for libraries. **Censorship**, on the other hand, involves suppressing or restricting access to information deemed objectionable by authorities or groups. Libraries often face the challenge of balancing intellectual freedom with community standards and legal requirements.
Fill in the blank: _____ freedom is the right of individuals to seek, receive, and share information without restriction.

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Plate 2.8 Intellectual freedom in practice

2.4.3 Globalisation and cultural perspectives

Globalisation in LIS refers to the increasing interconnectedness of information systems and resources across the world. While it enhances access to knowledge, it also raises concerns about cultural homogenisation and the dominance of information from certain regions. Libraries must balance global access with the preservation of local cultures and languages, ensuring diversity in collections and services.

Fill in the blank: _____ in LIS refers to the increasing interconnectedness of information systems and resources across the world.

Perspective	Description
Access	**Enhanced access to global knowledge:** Digital repositories and Open Educational Resources (OER) break down geographic barriers, allowing a researcher in a remote village to access the same scholarly data as one in a major metropolis.
Homogenisation	**Risk of cultural homogenisation:** The dominance of Western classification systems (like Dewey Decimal) and the English language can inadvertently sideline non-Western knowledge structures and worldviews.
Preservation	**Need to preserve local languages and traditions:** Libraries serve as vital archives for indigenous knowledge, oral histories, and endangered languages that are often overlooked by global digital trends.

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Perspective	Description
Diversity	**Importance of diverse collections:** True globalism in LIS requires "decolonizing the stacks"—ensuring collections reflect a multitude of voices, cultures, and historical narratives rather than a single dominant perspective.

Box 2.4 Globalisation and cultural perspectives in LIS

Pilot questions 2.4

1. What are the main ethical considerations in LIS?
2. How does censorship challenge the principle of intellectual freedom?
3. Why is globalisation both an opportunity and a challenge for LIS?
4. What strategies can libraries use to preserve cultural diversity while embracing globalisation?
5. How do contemporary debates shape the future of LIS practice?

2.5 Integration of Philosophy and Practice in LIS

2.5.1 Linking theory to professional practice

The integration of philosophy and practice in LIS involves applying abstract ideas to everyday library operations. **Philosophy** here refers to the guiding principles and perspectives that shape how information is valued and managed, while **practice** refers to the actual methods and services delivered to users. For example, humanistic values influence the design of inclusive services, while positivist approaches guide the development of precise cataloguing systems.

Fill in the blank: _____ refers to the guiding principles and perspectives that shape how information is valued and managed in LIS.

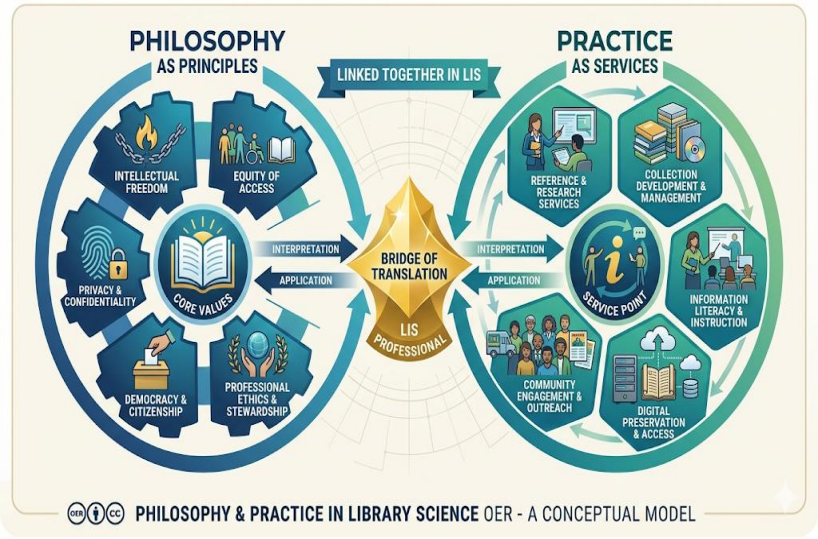

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Figure 2.9 Linking theory to professional practice

2.5.2 Relevance of philosophical roots to modern LIS challenges

Philosophical roots remain highly relevant in addressing modern challenges such as digital transformation, ethical dilemmas, and globalisation. For instance, the principle of intellectual freedom guides libraries in resisting censorship, while pragmatism ensures services adapt to user needs in a rapidly changing environment. These philosophical perspectives provide a foundation for decision-making and innovation in contemporary LIS practice.

Fill in the blank: The principle of _____ freedom guides libraries in resisting censorship and promoting open access to information.

Plate 2.10 Relevance of philosophical roots to modern LIS challenges

2.5.3 Future directions for philosophical inquiry in LIS

Looking ahead, **philosophical inquiry** in LIS will continue to explore questions about equity, cultural diversity, and the ethical use of emerging technologies such as artificial intelligence and big data. These inquiries will help professionals anticipate future challenges and design services that remain both relevant and responsible. By integrating philosophy with practice, LIS can evolve while staying true to its core values.

Fill in the blank: Future philosophical inquiry in LIS will explore questions about equity, cultural diversity, and the ethical use of _____ technologies.

Focus Area	Philosophical Inquiry & Challenge
Equity	**Redefining Universal Access:** Beyond providing physical materials, how do we ensure "cognitive justice"? This involves addressing the digital divide and ensuring that marginalized communities have the literacy and tools to navigate global information systems.

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Focus Area	Philosophical Inquiry & Challenge
Diversity	**Pluralism in Knowledge Systems:** Moving from "inclusion" to "structural diversity." Inquiry focuses on how libraries can integrate non-Western knowledge paradigms, indigenous oral traditions, and diverse linguistic frameworks into standardized metadata and collections.
Ethics	**Algorithmic Accountability:** As libraries adopt Big Data, the focus shifts to the ethics of "Information Neutrality." Can a library remain neutral when using biased algorithms, and what is the librarian's role in auditing these automated systems?
AI & Big Data	**Human-Centric AI Governance:** Examining the tension between AI-driven efficiency and user privacy. Future inquiry explores the "Right to be Forgotten," data sovereignty, and the preservation of human agency in an increasingly automated research environment.
Anticipation	**Speculative Ethics:** Developing frameworks to anticipate the impact of emerging tech (like neuro-information or immersive VR) on intellectual freedom and the "Physical vs. Digital" identity of the library.

Box 2.5 Future directions for philosophical inquiry in LIS

Pilot questions 2.5

1. How does philosophy link to professional practice in LIS?
2. Why are philosophical roots relevant to modern LIS challenges?
3. Which principle guides libraries in resisting censorship?
4. What future issues will philosophical inquiry in LIS address?
5. How does integrating philosophy and practice strengthen the discipline?

Series Summary

This Series has explored the philosophical roots and theoretical perspectives that underpin Library and Information Science. Beginning with historical foundations, we examined early traditions and classical thinkers who shaped knowledge organisation. We then considered major philosophical perspectives such as humanism, positivism, and pragmatism, before moving on to theoretical frameworks including information organisation, communication, and systems theory. The Series also addressed contemporary debates around ethics, intellectual freedom, and globalisation, and concluded with the integration of philosophy and practice, highlighting their relevance to modern challenges and future directions.

By engaging with these topics, you should now be able to define historical foundations (SLO 2.1), explain philosophical perspectives (SLO 2.2), analyse theoretical frameworks (SLO 2.3),

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evaluate contemporary debates (SLO 2.4), and apply philosophical and theoretical perspectives to professional practice (SLO 2.5). Collectively, these outcomes provide you with a strong conceptual base for understanding how philosophy and theory continue to shape the discipline of LIS today and into the future.

Glossary of Terms

- **Communication theories**: Frameworks that explain how information is transmitted between sources and users, highlighting the importance of clear channels and feedback in LIS.
- **Ethics**: Principles that guide fair and responsible behaviour in the management and use of information, including privacy, equitable access, and respect for intellectual property.
- **Globalisation**: The increasing interconnectedness of information systems and resources across the world, which enhances access to knowledge but also raises concerns about cultural homogenisation.
- **Humanism**: A philosophical perspective that emphasises the dignity, worth, and potential of human beings, valuing knowledge as a means of personal growth and social progress.
- **Information organisation theories**: Frameworks that explain how knowledge can be systematically arranged for easy retrieval and use, underpinning cataloguing, classification, and indexing.
- **Intellectual freedom**: The right of individuals to seek, receive, and share information without restriction, regarded as a cornerstone of democratic societies and library practice.
- **Knowledge transfer theories**: Frameworks that explain how individuals and groups share and apply knowledge, ensuring information is effectively communicated and used.
- **Philosophy**: Guiding principles and perspectives that shape how information is valued and managed in LIS, forming the foundation for professional practice.
- **Positivism**: A philosophical approach that stresses observation, measurement, and empirical evidence, influencing classification systems and information retrieval methods in LIS.
- **Pragmatism**: A philosophy that values practical solutions and outcomes, reflected in user-centred services and flexible approaches in LIS practice.
- **Systems theory**: A framework that views organisations as interconnected parts working together to achieve common goals, applied in LIS to design efficient workflows and integrate services.

Concept Check Questions [Series 2: Philosophical Roots and Theoretical Perspectives]

Objective questions

1. Which classical philosopher introduced systematic classification of concepts?
   a) Plato
   b) Aristotle
   c) Francis Bacon
   d) Socrates (Linked to SLO 2.1)

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2. Which philosophical perspective in LIS emphasises dignity, worth, and the potential of human beings?
   a) Positivism
   b) Pragmatism
   c) Humanism
   d) Rationalism (Linked to SLO 2.2)
3. Which theory views organisations as interconnected parts working together to achieve common goals?
   a) Systems theory
   b) Communication theory
   c) Knowledge transfer theory
   d) Organisation theory (Linked to SLO 2.3)

Short-answer questions

1. Explain one ethical consideration in information access within LIS. (Linked to SLO 2.4)
2. Identify one way globalisation has influenced LIS practice. (Linked to SLO 2.4)
3. State one reason why philosophical roots remain relevant to modern LIS challenges. (Linked to SLO 2.5)

Long-answer questions

1. Analyse how humanism, positivism, and pragmatism collectively shape LIS practice. (Linked to SLO 2.2)
2. Evaluate the importance of integrating philosophical perspectives with professional practice in addressing modern LIS challenges. (Linked to SLO 2.5)

Answers to Concept Check Questions [Series 2: Philosophical Roots and Theoretical Perspectives]

Objective questions

1. b) Aristotle
2. c) Humanism
3. a) Systems theory

Short-answer questions

1. Protecting user privacy is a key ethical consideration in information access.
2. Globalisation has enhanced access to international resources and fostered collaboration across libraries.

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3. Philosophical roots provide guiding principles for decision-making and innovation in LIS.

Long-answer questions

1. **Basic response**: Humanism promotes equitable access and literacy, positivism ensures accuracy and objectivity in organising information, and pragmatism focuses on user-centred services. Together, they shape the values and methods of LIS practice.
   Value-added response: Beyond these roles, humanism fosters inclusivity and cultural enrichment, positivism supports evidence-based decision-making and bibliometric analysis, while pragmatism drives innovation and adaptability in digital environments. Collectively, they ensure LIS remains relevant in diverse and evolving contexts.
2. **Basic response**: Integrating philosophy with practice helps libraries address challenges such as censorship, digital transformation, and ethical dilemmas by applying guiding principles to real-world situations.
   Value-added response: In addition, this integration enables LIS professionals to anticipate future issues such as artificial intelligence, big data, and cultural diversity. It strengthens the discipline by ensuring services remain both technologically advanced and ethically grounded, balancing global access with local relevance.

Answers to Pilot Questions [Series 2: Philosophical Roots and Theoretical Perspectives]

Part 2.1 Historical foundations of Library and Information Science

- Mesopotamia and Egypt
- Aristotle
- The Library of Alexandria symbolised the ambition to collect all known works.
- Medieval monasteries preserved manuscripts during periods of social upheaval.
- Classical thinkers provided systematic approaches to knowledge organisation that underpin LIS.

Part 2.2 Major philosophical perspectives in LIS

- Humanism emphasises dignity, worth, and the potential of human beings.
- Positivism influences classification systems and retrieval methods through empirical approaches.
- Pragmatism values practical solutions and user-centred services.
- Pragmatism ensures flexibility and responsiveness in modern information services.
- Collectively, these perspectives shape LIS practice by balancing values, scientific accuracy, and user needs.

Part 2.3 Theoretical frameworks in LIS

- Information organisation theories explain systematic arrangement for easy retrieval.

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- Communication and knowledge transfer theories support effective information sharing.
- Systems theory views organisations as interconnected parts working together.
- Systems theory is important for designing efficient workflows in LIS.
- Theoretical frameworks strengthen LIS practice by providing structured approaches to organisation and service delivery.

Part 2.4 Contemporary philosophical debates

- Ethical considerations include privacy, equitable access, and intellectual property.
- Censorship restricts access to information and challenges intellectual freedom.
- Globalisation enhances access but risks cultural homogenisation.
- Libraries can preserve cultural diversity by maintaining diverse collections and supporting local languages.
- Contemporary debates shape LIS by addressing ethical, social, and global challenges.

Part 2.5 Integration of philosophy and practice in LIS

- Philosophy links to practice by guiding principles that shape services and operations.
- Philosophical roots are relevant because they provide frameworks for addressing modern challenges.
- Intellectual freedom guides libraries in resisting censorship.
- Future inquiry will address equity, cultural diversity, and ethical use of emerging technologies.
- Integrating philosophy and practice strengthens LIS by ensuring services remain relevant, ethical, and adaptable.

References and Attributions [Series 2: Philosophical Roots and Theoretical Perspectives]

General references

- Rubin, R. E. (2017). *Foundations of Library and Information Science* (4th ed.). Chicago: American Library Association.
- UNESCO. (2013). *Media and Information Literacy: Policy and Strategy Guidelines*. Paris: UNESCO.
- OER Commons. (n.d.). Open educational resources on library and information science. Retrieved from OER Commons database.

Illustrations (Figures, Plates, Boxes)

- *Figure 2.1 Early traditions of knowledge organisation*: AI-generated using the prompt "Create a diagram showing clay tablets, papyrus scrolls, and oral traditions as early methods of recording information." Suggested platform: Microsoft Designer. Search string: "early knowledge organisation history OER."

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- *Plate 2.2 Aristotle's contribution to knowledge organisation*: AI-generated using the prompt "Illustrate Aristotle teaching students with scrolls and diagrams representing classification." Search string: "Aristotle knowledge classification OER."
- *Box 2.1 Milestones in the evolution of libraries*: AI-generated using the prompt "Generate a text box listing milestones in the evolution of libraries including Alexandria, monasteries, and Islamic centres." Search string: "history of libraries milestones OER."
- *Figure 2.3 Humanism and the value of knowledge*: AI-generated using the prompt "Create a diagram showing literacy, lifelong learning, and equitable access as aspects of humanism in LIS." Search string: "humanism in library and information science OER."
- *Plate 2.4 Positivism in LIS*: AI-generated using the prompt "Illustrate a researcher analysing data with charts, books, and computer systems to represent positivism in LIS." Search string: "positivism in library and information science OER."
- *Box 2.2 Pragmatism in LIS practice*: AI-generated using the prompt "Generate a text box listing pragmatism in LIS practice including user needs, flexibility, innovation, and responsiveness." Search string: "pragmatism in library and information science OER."
- *Figure 2.5 Information organisation theories in LIS*: AI-generated using the prompt "Create a diagram showing cataloguing, classification, and indexing as components of information organisation theories in LIS." Search string: "information organisation theories library science OER."
- *Plate 2.6 Communication and knowledge transfer in LIS*: AI-generated using the prompt "Illustrate a librarian assisting a student with print and digital resources to represent communication and knowledge transfer in LIS." Search string: "communication knowledge transfer library science OER."
- *Box 2.3 Application of systems theory in LIS*: AI-generated using the prompt "Generate a text box listing applications of systems theory in LIS including integration, coordination, workflow, and adaptation." Search string: "systems theory application library science OER."
- *Figure 2.7 Ethical considerations in information access*: AI-generated using the prompt "Create a diagram showing privacy, equitable access, and intellectual property as ethical considerations in LIS." Search string: "ethical issues in library and information science OER."
- *Plate 2.8 Intellectual freedom in practice*: AI-generated using the prompt "Illustrate a library promoting intellectual freedom with diverse users accessing books and computers." Search string: "intellectual freedom libraries OER."
- *Box 2.4 Globalisation and cultural perspectives in LIS*: AI-generated using the prompt "Generate a text box listing globalisation and cultural perspectives in LIS including access, homogenisation, preservation, and diversity." Search string: "globalisation cultural perspectives library science OER."
- *Figure 2.9 Linking theory to professional practice*: AI-generated using the prompt "Create a diagram showing philosophy as principles and practice as services, linked together in LIS." Search string: "philosophy and practice in library science OER."
- *Plate 2.10 Relevance of philosophical roots to modern LIS challenges*: AI-generated using the prompt "Illustrate a modern library with digital tools and diverse users to show relevance of philosophical roots to modern challenges." Search string: "modern library challenges philosophy OER."

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- *Box 2.5 Future directions for philosophical inquiry in LIS*: AI-generated using the prompt "Generate a text box listing future directions for philosophical inquiry in LIS including equity, diversity, ethics, and AI." Search string: "future directions philosophy library science OER."

Attribution notes

- All illustration prompts were designed for AI generation and may be created using platforms such as Microsoft Designer or similar AI-based tools.
- Suggested search strings point to open educational resources (OER) repositories for sourcing free-to-use diagrams and teaching materials.
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COURSE CODE:LIS 111

COURSE TITLE: Introduction to Library and Information Science

COURSE CREDIT LOAD: 3 Units

Series 1 Foundations of Library and Information Science

Series 2 Philosophical Roots and Historical Development of LIS

Series 3 Contributions of Scholars to Library and Information Science

Series 4 LIS Education and Professional Practice in Nigeria

Series 5 Interdisciplinary Connections and Future Directions of LIS

Series 3 Contributions of Scholars to Library and Information Science

Proposed Outline:

- **Part 1 Theoretical foundations of LIS**
  - **3.1.1 Classification theories**
  - **3.1.2 Information retrieval models**
  - **3.1.3 User behaviour theories**
- **Part 2 Philosophical foundations of LIS practice**
  - **2.1 Intellectual freedom**
  - **2.2 Equity of access**
  - **2.3 Ethical responsibility**

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- **Part 3 Importance of foundations in LIS practice**
    - **3.1 Coherence and direction of the discipline**
    - **3.2 Technical efficiency in information organisation**
    - **3.3 Ethical and inclusive service delivery**

Introduction

In the last Series, we examined the philosophical roots and historical development of Library and Information Science, tracing its values, origins, growth, and the contributions of great scholars. Building on that foundation, this Series focuses on the scope and core foundations of the discipline. By understanding its theoretical and philosophical bases, as well as their practical importance, you will be better equipped to appreciate how LIS functions as both a science and a service profession.

The aim of this Series is to introduce you to the theoretical and philosophical foundations of Library and Information Science and to highlight their importance in guiding professional practice, ensuring coherence, efficiency, and ethical service delivery.

We shall commence this Series by exploring the theoretical foundations of LIS, including classification theories, information retrieval models, and user behaviour theories. Next, we will move on to the philosophical foundations of LIS practice, focusing on intellectual freedom, equity of access, and ethical responsibility. Finally, we will wrap up by considering the importance of these foundations in practice, showing how they provide coherence to the discipline, enhance technical efficiency, and promote inclusive and ethical services.

Series Learning Outcomes 1

Upon completing this Series, you should be able to:

- **SLO 1.1 define the core terms of Library and Information Science, including library, information, library science, and information science,**
- **SLO 1.2 explain related concepts such as documentation, knowledge management, and information literacy,**
- **SLO 1.3 analyse the areas of convergence and divergence between Library Science and Information Science,**
- **SLO 1.4 evaluate the practical implications of the relationship between Library Science and Information Science, and**
- **SLO 1.5 describe the theoretical and philosophical foundations that shape the scope and practice of Library and Information Science.**

3.1 Theoretical Foundations Of LIS

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Theoretical foundations provide the intellectual framework that guides Library and Information Science (LIS). They explain why certain practices exist, how information is organised, and how users interact with knowledge systems. By studying these theories, you will gain a deeper understanding of the discipline's scientific basis and its application in everyday library and information services.

3.1.1 Classification theories

Classification theories are principles that explain how information resources are grouped and arranged systematically. They ensure that materials are organised in a way that makes them easy to locate and retrieve. Examples include the Dewey Decimal Classification (DDC), which uses numerical codes to represent subjects, and the Library of Congress Classification (LCC), which uses letters and numbers to categorise materials.

These theories highlight the importance of structure and consistency in organising knowledge. Without classification, libraries would struggle to provide efficient access to resources.

Fill in the blank: The _____ Decimal Classification system uses numerical codes to represent subjects in libraries.

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Box 3.1

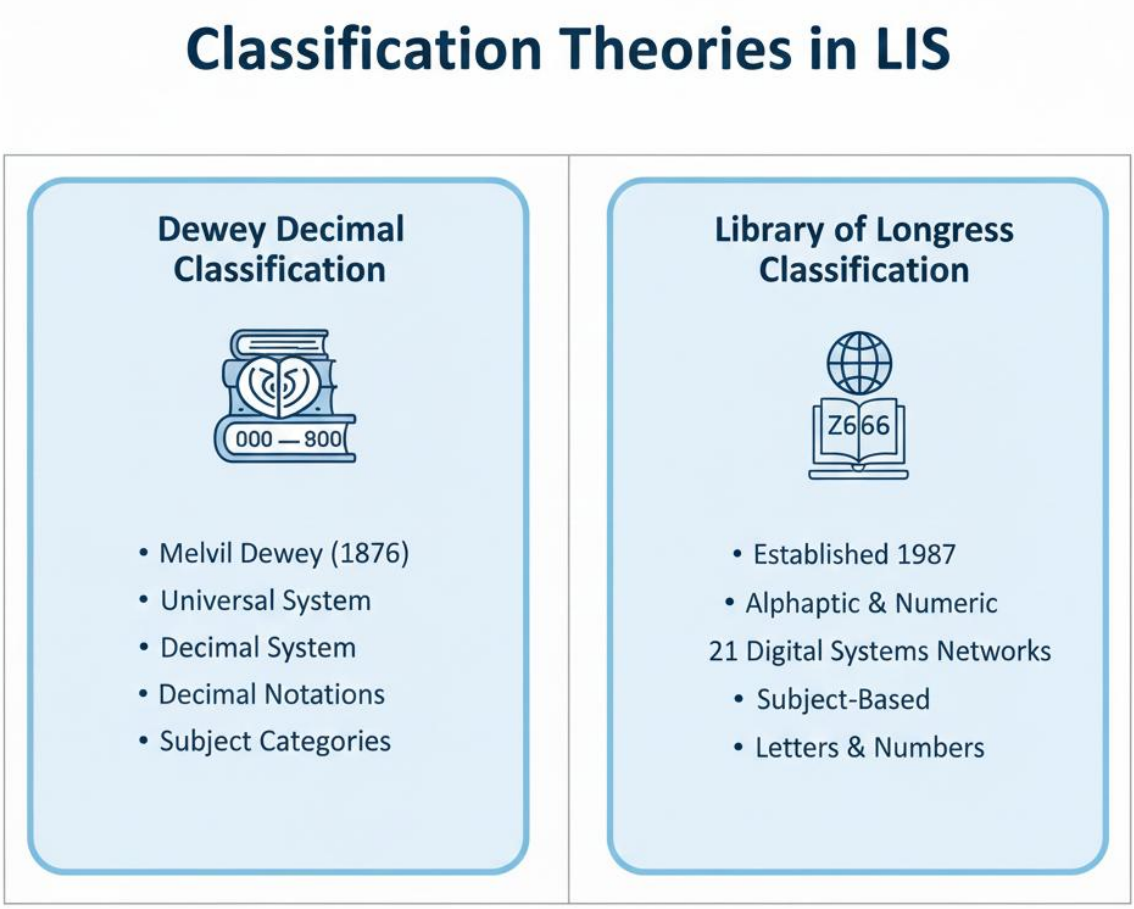

Figure 3.1 Classification theories in LIS

3.1.2 Information retrieval models

Information retrieval models are frameworks that describe how users search for and obtain information. They explain the processes involved in matching user queries with relevant resources. Common models include the Boolean model, which uses logical operators (AND, OR, NOT) to refine searches, and the probabilistic model, which ranks documents based on the likelihood of relevance.

These models are essential for designing search engines, databases, and catalogues that meet user needs effectively.

Fill in the blank: The _____ model uses logical operators such as AND, OR, and NOT to refine searches.

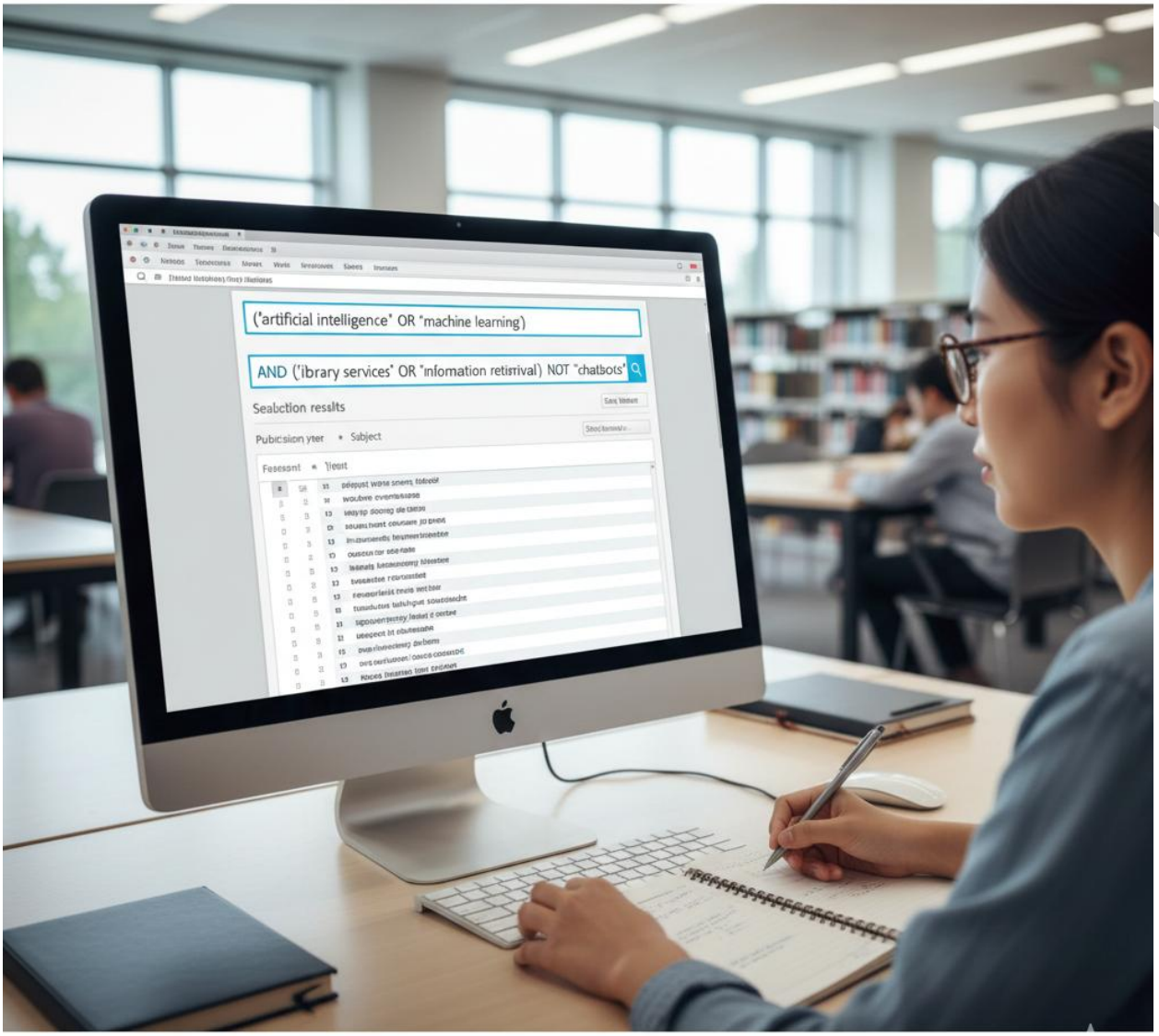

Plate 3.2 Boulean model in information retrieval

3.1.3 User behaviour theories

User behaviour theories explain how individuals seek, use, and evaluate information. They focus on the motivations, preferences, and challenges users face when interacting with information systems. One example is Wilson's model of information behaviour, which describes how users recognise an information need, search for resources, and apply the information obtained.

Understanding user behaviour helps LIS professionals design services that are user-centred and responsive to diverse needs.

Fill in the blank: Wilson's model of information _____ describes how users recognise needs and search for resources.

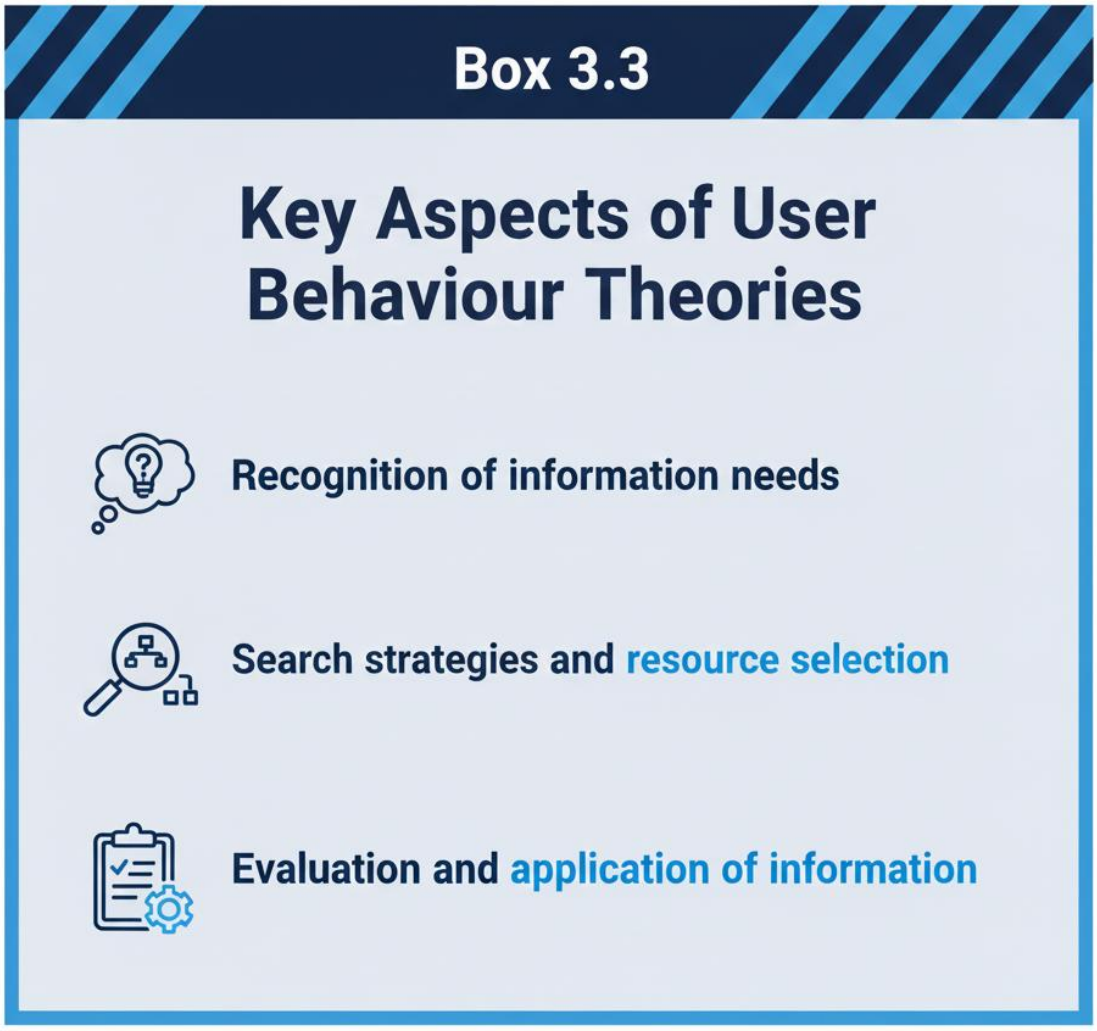

Figure 3.3 Key apsects of User behavior theories

Pilot questions 3.1

1. **Which classification system uses numerical codes to represent subjects? a. Library of Congress Classification b. Dewey Decimal Classification c. Universal Decimal Classification d. Alphabetical Subject Index**
2. **The Boolean model in information retrieval uses: a. Numbers and letters b. Logical operators such as AND, OR, NOT c. Subject headings only d. Random selection of documents**
3. **Which model ranks documents based on likelihood of relevance? a. Boolean model b. Probabilistic model c. Dewey Decimal Classification d. Library of Congress Classification**

4. **Wilson's model of information behaviour explains: a. How libraries are built b. How users recognise needs and search for resources c. How catalogues are classified d. How books are published**

5. **User behaviour theories help LIS professionals to design services that are: a. Random and inconsistent b. User-centred and responsive c. Restricted and exclusive d. Focused only on printed books**

3.2 Philosophical Foundations Of LIS Practice

Philosophical foundations provide the guiding principles that shape how Library and Information Science (LIS) is practised. They ensure that libraries and information centres uphold values that protect users' rights, promote fairness, and maintain professional integrity. In this Part, we will explore three key philosophical foundations: intellectual freedom, equity of access, and ethical responsibility.

3.2.1 Intellectual freedom

Intellectual freedom is the right of individuals to seek, receive, and use information from all points of view without restriction. It ensures that libraries resist censorship and provide diverse resources to support democratic participation and lifelong learning. This principle is central to the mission of libraries, as it protects the user's ability to explore ideas freely.

For example, a library collection should include materials representing different political, cultural, and social perspectives, even if some viewpoints are controversial.

Fill in the blank: The principle of _____ freedom ensures that libraries resist censorship and provide diverse resources.

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Plate 3.4 Intelectual freedom in LIS practice

3.2.2 Equity of access

Equity of access means that all users, regardless of background, status, or ability, should have fair opportunities to access information resources. It goes beyond equality by recognising that some groups may need additional support to achieve fair access, such as providing assistive technologies for persons with disabilities or outreach services for rural communities.

This principle ensures inclusivity and helps libraries fulfil their role as community anchors that serve everyone.

Fill in the blank: Equity of _____ ensures that all users have fair opportunities to access information resources.

Box 3.5

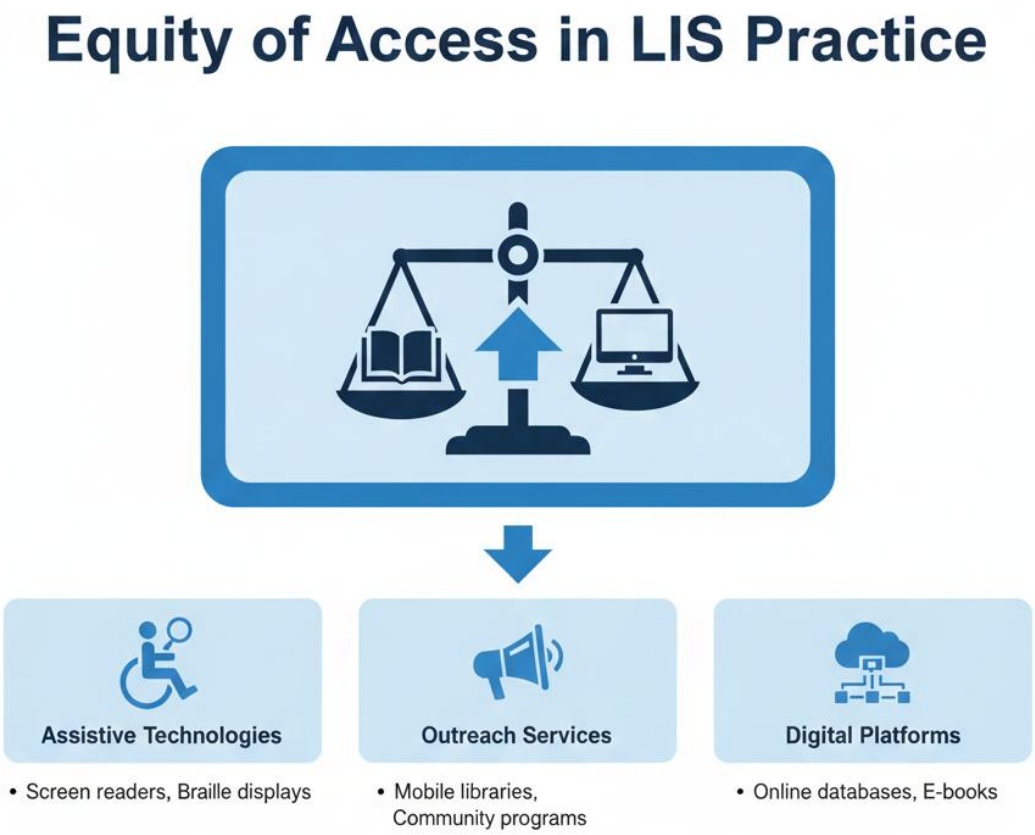


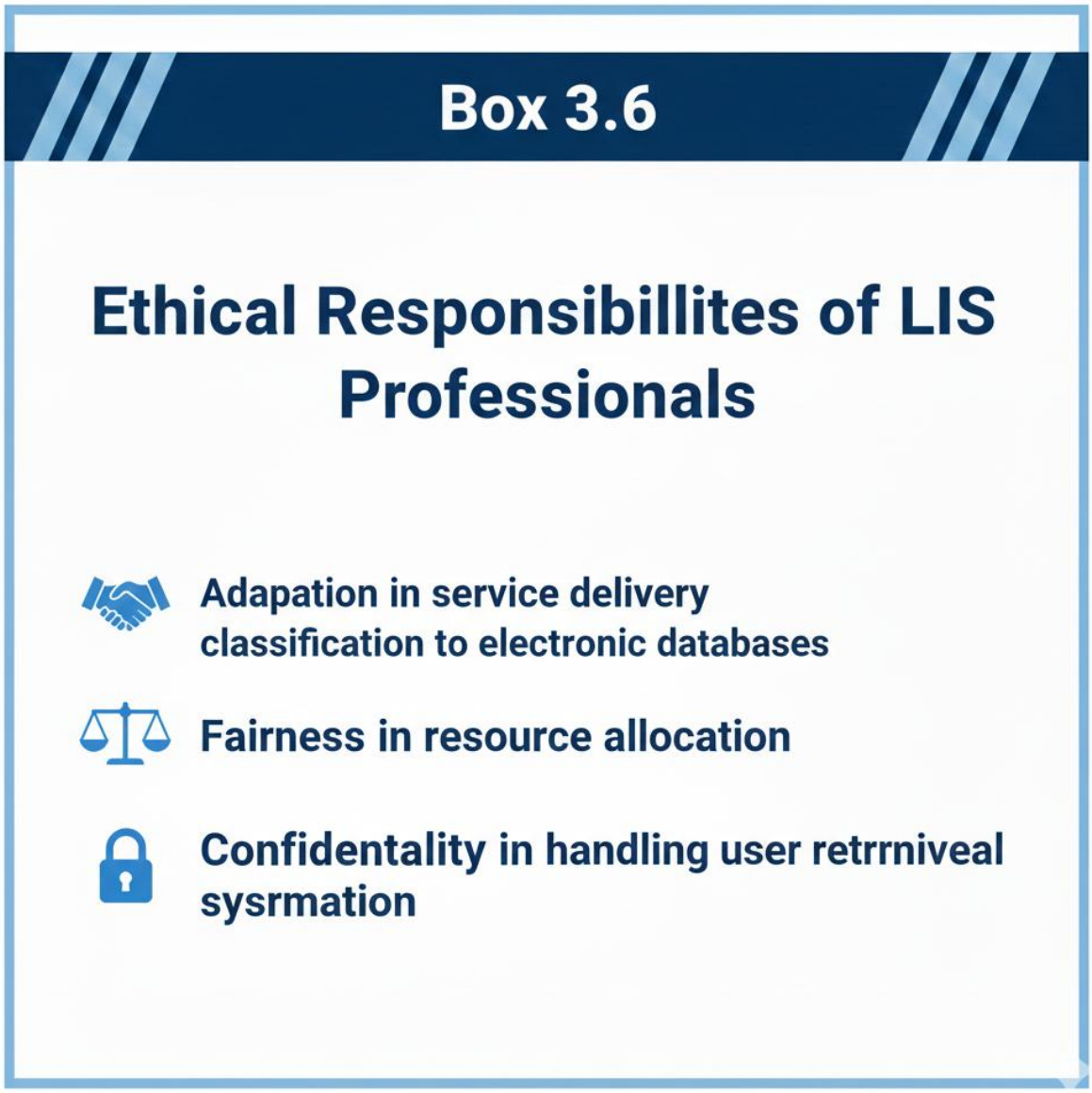
Figure 3.5 Equity of access in LIS practice

3.2.3 Ethical responsibility

Ethical responsibility refers to the moral obligations of LIS professionals to act with honesty, fairness, and respect for confidentiality. Ethics guide decision-making in areas such as resource allocation, user privacy, and professional conduct. By adhering to ethical standards, librarians and information specialists maintain public trust and ensure that services are delivered with integrity.

For example, when assisting a user, a librarian must provide unbiased information without discrimination, while also protecting the confidentiality of the user's personal details.

Fill in the blank: Protecting the personal details of users is part of the librarian's _____ responsibility.



Pilot questions 3.2

1. **Intellectual freedom ensures that: a. Libraries resist censorship and provide diverse resources b. Access is restricted to certain groups c. Only printed books are available d. Librarians discriminate in service delivery**
2. **Equity of access means: a. Only wealthy users can access resources b. All users have fair opportunities to access information c. Libraries focus only on digital resources d. Access is limited to academic institutions**
3. **Which principle requires libraries to provide assistive technologies for persons with disabilities? a. Intellectual freedom b. Equity of access c. Ethical responsibility d. Knowledge management**

4. **Ethical responsibility in LIS includes: a. Promoting censorship b. Protecting user confidentiality c. Ignoring fairness in resource allocation d. Restricting access to diverse resources**

5. **Which principle safeguards democratic participation and social inclusion in LIS practice? a. Intellectual freedom and equity of access b. Confidentiality and honesty c. Service and respect for knowledge d. Lifelong learning and fairness**

3.3 Importance Of Foundations In LIS Practice

The foundations of Library and Information Science (LIS) are not abstract ideas alone; they provide practical guidance for how libraries and information centres operate. They ensure coherence in the discipline, promote technical efficiency in organising information, and uphold ethical and inclusive service delivery. In this Part, we will explore why these foundations are essential for the continued relevance and effectiveness of LIS practice.

3.3.1 Coherence and direction of the discipline

Coherence in LIS means that the discipline has a clear framework that connects its theories, philosophies, and practices. Without coherence, library services would lack consistency and direction. Foundations provide a roadmap that helps professionals understand the purpose of their work and align their activities with broader goals such as education, research, and community development.

For example, classification theories ensure that all libraries follow systematic approaches, making it easier for users to navigate collections across different institutions.

Fill in the blank: Foundations provide _____ to the discipline, ensuring consistency and direction in library services.

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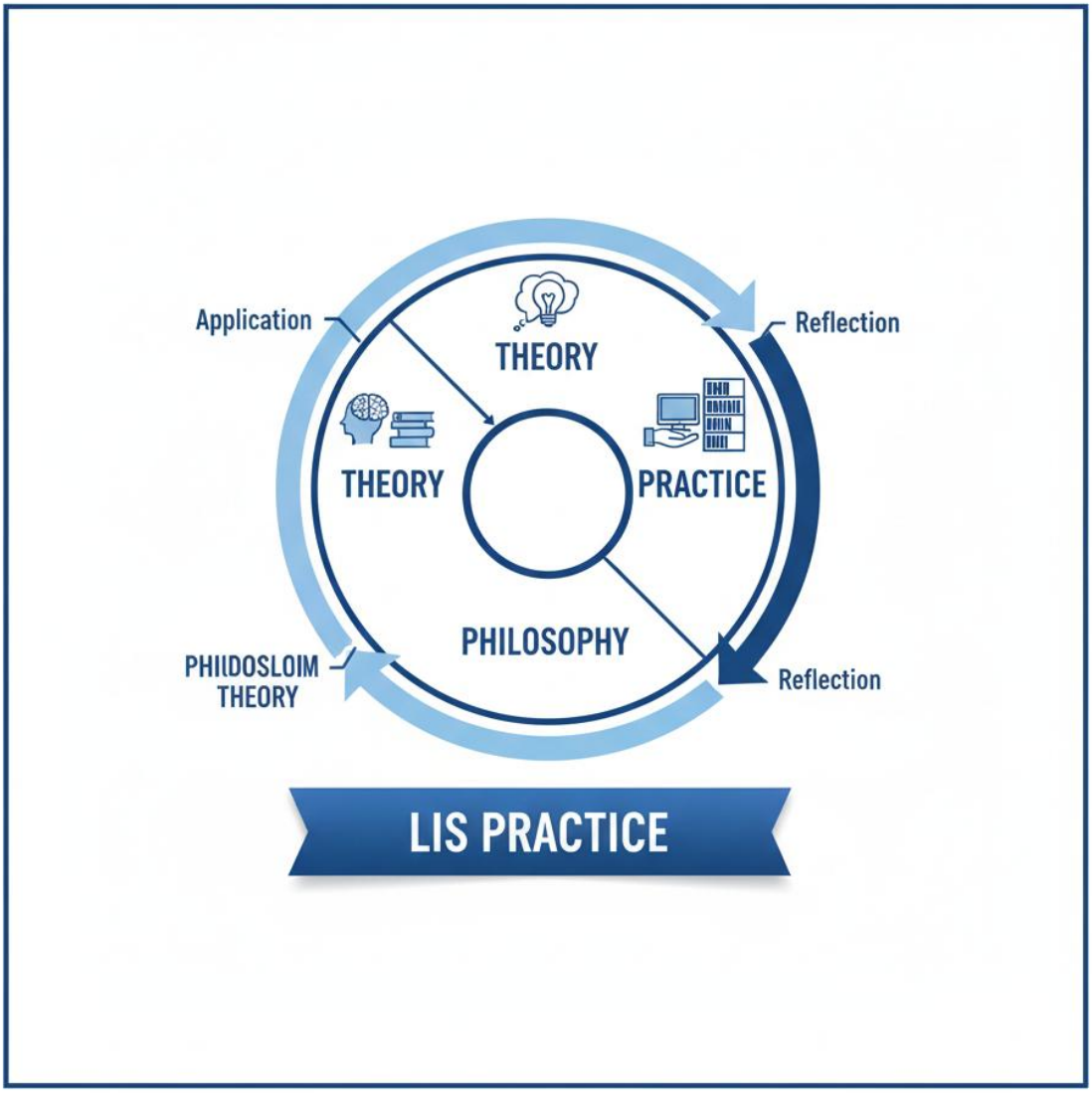

Figure 3.7 Coherence and direction in LIS practice

3.3.2 Technical efficiency in information organisation

Technical efficiency refers to the ability of LIS professionals to organise, store, and retrieve information effectively. Foundations such as classification and retrieval models provide tested methods that improve accuracy and save time. Efficiency ensures that users can access the right information quickly, which is critical in academic, professional, and community settings.

For instance, the use of Online Public Access Catalogues (OPACs) demonstrates how theoretical models are applied to improve search efficiency.

Fill in the blank: Technical _____ ensures that users can access the right information quickly and accurately.

Plate 3.8 Technical efficienty in LIS practice

3.3.3 Ethical and inclusive service delivery

Ethical service delivery means that LIS professionals act with honesty, fairness, and respect for confidentiality. Inclusive service delivery ensures that all users, regardless of background or ability, have fair access to resources. Together, these foundations protect user rights and strengthen the role of libraries as democratic institutions.

For example, providing assistive technologies for persons with disabilities or offering outreach services to rural communities reflects inclusivity in practice.

Fill in the blank: Providing assistive technologies for persons with disabilities is an example of _____ service delivery.

[Insert box here] Box 3.9 Ethical and inclusive service delivery in LIS

- **Honesty and fairness in service delivery**
- **Confidentiality in handling user information**
- **Inclusivity through assistive technologies and outreach services AI prompt suggestion: "Generate a text-based infographic listing ethical and inclusive service delivery practices in LIS." Search string: "ethical inclusive library services OER"**

Pilot questions 3.3

1. **Foundations provide _____ to the discipline, ensuring consistency and direction in library services. a. Confusion b. Coherence c. Randomness d. Isolation**
2. **Technical efficiency in LIS practice ensures that: a. Users can access the right information quickly and accurately b. Libraries restrict access to certain groups c. Librarians ignore classification theories d. Services are delivered without structure**
3. **Which of the following demonstrates technical efficiency in LIS practice? a. Random arrangement of books b. Use of Online Public Access Catalogues (OPACs) c. Restricting access to digital resources d. Ignoring retrieval models**
4. **Ethical service delivery requires librarians to: a. Act with honesty, fairness, and confidentiality b. Promote censorship and discrimination c. Focus only on printed books d. Ignore inclusivity in services**
5. **Providing assistive technologies for persons with disabilities is an example of _____ service delivery. a. Exclusive b. Inclusive c. Random d. Restrictive**

Series Summary

This Series was designed to highlight the contributions of great scholars to the development of Library and Information Science, showing how their pioneering ideas shaped the discipline's theories, practices, and professional standards. Its relevance lies in helping you appreciate the intellectual heritage of LIS and understand how these contributions continue to influence education, research, and service delivery today.

We began by examining early pioneers in library science, such as Melvil Dewey and S. R. Ranganathan, whose classification systems and Five Laws provided structure and user-centred principles. We then moved on to key figures in information science, including Vannevar Bush and Claude Shannon, whose concepts of the Memex and information theory laid the groundwork for digital information systems. Finally, we considered the lasting impact of these scholars on LIS education and practice, noting how their ideas remain embedded in curricula and professional standards worldwide. By completing this Series, you should now be able to describe the contributions of early pioneers (SLO 3.1), explain the work of key figures in information science (SLO 3.2), and evaluate the enduring influence of these scholars on LIS practice (SLO 3.3)

Glossary of Terms

- **Boolean model: An information retrieval model that uses logical operators such as AND, OR, and NOT to refine searches.**

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- **Classification theories: Principles that explain how information resources are grouped and arranged systematically to make them easier to locate and retrieve.**
- **Coherence: The clear framework that connects theories, philosophies, and practices in LIS, ensuring consistency and direction in the discipline.**
- **Dewey Decimal Classification (DDC): A system created by Melvil Dewey that organises books by subject using numerical codes.**
- **Equity of access: The principle that all users, regardless of background or ability, should have fair opportunities to access information resources.**
- **Ethical responsibility: The moral obligation of LIS professionals to act with honesty, fairness, and respect for confidentiality in service delivery.**
- **Information retrieval models: Frameworks that describe how users search for and obtain information, such as the Boolean and probabilistic models.**
- **Intellectual freedom: The right of individuals to seek, receive, and use information from all points of view without restriction or censorship.**
- **Library of Congress Classification (LCC): A system that organises library materials using letters and numbers to represent subjects.**
- **Online Public Access Catalogue (OPAC): A digital catalogue that allows users to search library collections electronically, replacing traditional card catalogues.**
- **Probabilistic model: An information retrieval model that ranks documents based on the likelihood of relevance to a user's query.**
- **Technical efficiency: The ability of LIS professionals to organise, store, and retrieve information effectively, ensuring quick and accurate access for users.**
- **User behaviour theories: Explanations of how individuals seek, use, and evaluate information, focusing on motivations, preferences, and challenges.**
- **Wilson's model of information behaviour: A theory describing how users recognise an information need, search for resources, and apply the information obtained.**

Concept Check Questions 3

Objective Questions

1. **Which classification system uses numerical codes to represent subjects? a. Library of Congress Classification b. Dewey Decimal Classification c. Universal Decimal Classification d. Alphabetical Subject Index *(Linked to SLO 3.1)***
2. **The Boolean model in information retrieval uses: a. Numbers and letters b. Logical operators such as AND, OR, NOT c. Subject headings only d. Random selection of documents *(Linked to SLO 3.1)***

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3. **Intellectual freedom ensures that: a. Libraries resist censorship and provide diverse resources b. Access is restricted to certain groups c. Only printed books are available d. Librarians discriminate in service delivery *(Linked to SLO 3.2)***

4. **Which principle requires libraries to provide assistive technologies for persons with disabilities? a. Intellectual freedom b. Equity of access c. Ethical responsibility d. Knowledge management *(Linked to SLO 3.2)***

5. **Technical efficiency in LIS practice ensures that: a. Users can access the right information quickly and accurately b. Libraries restrict access to certain groups c. Librarians ignore classification theories d. Services are delivered without structure *(Linked to SLO 3.3)***

Short-Answer Questions

6. Define classification theories in the context of LIS. *(Linked to SLO 3.1)*

7. State one example of an information retrieval model and explain its purpose briefly. *(Linked to SLO 3.1)*

8. What does equity of access mean in LIS practice? *(Linked to SLO 3.2)*

9. Identify one ethical responsibility of LIS professionals. *(Linked to SLO 3.2)*

10. Explain what is meant by technical efficiency in LIS practice. *(Linked to SLO 3.3)*

Long-Answer Questions

11. Analyse the importance of user behaviour theories in designing library services, giving examples of how they influence practice. *(Linked to SLO 3.1)*

12. Evaluate the role of philosophical foundations such as intellectual freedom, equity of access, and ethical responsibility in shaping inclusive LIS practice. *(Linked to SLO 3.2)*

13. Discuss how the foundations of LIS provide coherence, technical efficiency, and ethical service delivery, illustrating with practical examples. *(Linked to SLO 3.3)*

Answers to Concept Check Questions 3

Objective Questions

1. **b. Dewey Decimal Classification**
2. **b. Logical operators such as AND, OR, NOT**
3. **a. Libraries resist censorship and provide diverse resources**
4. **b. Equity of access**
5. **a. Users can access the right information quickly and accurately**

Short-Answer Questions

6. Classification theories are principles that explain how information resources are grouped and arranged systematically for easy retrieval.

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7. The Boolean model uses logical operators (AND, OR, NOT) to refine searches and match queries with relevant documents.

8. Equity of access means that all users, regardless of background or ability, have fair opportunities to access information resources.

9. One ethical responsibility is protecting the confidentiality of user information.

10. Technical efficiency refers to the ability of LIS professionals to organise, store, and retrieve information effectively, ensuring quick and accurate access.

Long-Answer Questions

11. *Basic response*: User behaviour theories explain how individuals seek, use, and evaluate information. They influence practice by guiding the design of catalogues, databases, and services that match user needs. *Value-added response*: Outstanding learners may add that models such as Wilson's information behaviour highlight the importance of recognising information needs, search strategies, and evaluation. They might also discuss how these theories inform digital library design, user training programmes, and personalised information services.

12. *Basic response*: Philosophical foundations such as intellectual freedom, equity of access, and ethical responsibility ensure that libraries resist censorship, provide fair access, and act with integrity. *Value-added response*: Outstanding learners may expand by linking these principles to democratic participation, inclusivity, and sustainability. They could also highlight how these foundations influence policy-making, outreach services, and the adoption of assistive technologies.

13. *Basic response*: Foundations provide coherence by linking theory and practice, technical efficiency through tested organisational methods, and ethical service delivery by promoting fairness and confidentiality. *Value-added response*: Outstanding learners may illustrate with examples such as OPACs improving efficiency, classification systems ensuring coherence across institutions, and inclusive services like rural outreach programmes. They may also connect these foundations to global trends such as open access publishing and digital libraries.

Answers to Pilot Questions 3

Part 3.1 Theoretical foundations of LIS

1. **b. Dewey Decimal Classification**
2. **b. Logical operators such as AND, OR, NOT**
3. **b. Probabilistic model**
4. **b. How users recognise needs and search for resources**
5. **b. User-centred and responsive**

Part 3.2 Philosophical foundations of LIS practice

1. **a. Libraries resist censorship and provide diverse resources**

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2. **b. All users have fair opportunities to access information**
3. **b. Equity of access**
4. **b. Protecting user confidentiality**
5. **a. Intellectual freedom and equity of access**

Part 3.3 Importance of foundations in LIS practice

1. **b. Coherence**
2. **a. Users can access the right information quickly and accurately**
3. **b. Use of Online Public Access Catalogues (OPACs)**
4. **a. Act with honesty, fairness, and confidentiality**
5. **b. Inclusive**

References and Attributions 3

This section compiles all references and attributions for Series 3: *Scope and Core Foundations of Library and Information Science*. References are presented in APA style for clarity and consistency.

General References

- **Ranganathan, S. R. (1931). *The Five Laws of Library Science*. Madras: Madras Library Association.**
- **Dewey, M. (1876). *A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library*. Amherst: Amherst College.**
- **Shannon, C. E. (1948). *A Mathematical Theory of Communication*. *Bell System Technical Journal*, 27(3), 379–423.**
- **Wilson, T. D. (1999). *Models in Information Behaviour Research*. *Journal of Documentation*, 55(3), 249–270.**
- **UNESCO. (1994). *Public Library Manifesto*. Paris: UNESCO.**
- **Open Educational Resources (OER Commons). Retrieved from https://www.oercommons.org**

Illustration Attributions

- Figure 3.1 Classification theories in LIS
- Suggested OER search: “Dewey Decimal Classification Library of Congress Classification diagram OER”
- AI prompt: “Create a diagram comparing Dewey Decimal Classification (numbers) and Library of Congress Classification (letters and numbers).”
- Plate 3.2 Boolean model in information retrieval

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- Suggested OER search: “Boolean search operators database OER”
- AI prompt: “Generate an image showing a person using Boolean search operators (AND, OR, NOT) in a database.”
- Box 3.3 Key aspects of user behaviour theories
- Suggested OER search: “Wilson model information behaviour OER”
- AI prompt: “Generate a text-based infographic listing three key aspects of user behaviour theories in LIS.”
- Plate 3.4 Intellectual freedom in LIS practice
- Suggested OER search: “intellectual freedom libraries OER”
- AI prompt: “Generate an image showing people of different backgrounds using library resources freely without restriction.”
- Figure 3.5 Equity of access in LIS practice
- Suggested OER search: “equity of access libraries diagram OER”
- AI prompt: “Create a diagram showing equity of access with examples such as assistive technologies, outreach services, and digital platforms.”
- Box 3.6 Ethical responsibilities of LIS professionals
- Suggested OER search: “library ethics responsibilities OER”
- AI prompt: “Generate a text-based infographic listing three ethical responsibilities of LIS professionals.”
- Figure 3.7 Coherence and direction in LIS practice
- Suggested OER search: “coherence in library information science diagram OER”
- AI prompt: “Create a diagram showing coherence in LIS practice by linking theory, philosophy, and practice.”
- Plate 3.8 Technical efficiency in LIS practice
- Suggested OER search: “library OPAC efficiency OER”
- AI prompt: “Generate an image showing a librarian using an OPAC system to retrieve information efficiently.”
- Box 3.9 Ethical and inclusive service delivery in LIS
- Suggested OER search: “ethical inclusive library services OER”
- AI prompt: “Generate a text-based infographic listing ethical and inclusive service delivery practices in LIS.”

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COURSE TITLE: Introduction to Library and Information Science

COURSE CREDIT LOAD: 3 Units

Series 1 Foundations of Library and Information Science

Series 2 Philosophical Roots and Historical Development of LIS

Series 3 Contributions of Scholars to Library and Information Science

Series 4 LIS Education and Professional Practice in Nigeria

Series 5 Interdisciplinary Connections and Future Directions of LIS

Series 4 LIS Education and Professional Practice in Nigeria

Proposed Outline:

- **4.1 Principles of organising information resources**
  - 4.1.1 Definition and scope of organisation
  - 4.1.2 Objectives of organising information
  - 4.1.3 Standards and guidelines in organisation
- **4.2 Tools and techniques for organisation**
  - 4.2.1 Classification schemes (DDC, LCC, UDC)
  - 4.2.2 Cataloguing practices (AACR2, RDA)
  - 4.2.3 Metadata and indexing
- **4.3 Modern approaches to information organisation**
  - 4.3.1 Digital catalogues and OPACs
  - 4.3.2 Subject gateways and databases
  - 4.3.3 Knowledge organisation in digital libraries
- **4.4 Challenges and future directions**
  - 4.4.1 Issues of standardisation
  - 4.4.2 Managing digital resources
  - 4.4.3 Emerging trends in information organisation
- **Introduction**
- In the last Series, we examined the scope and foundations of Library and Information Science, focusing on its theoretical, philosophical, and practical bases. Building on that knowledge, this Series turns to the organisation and management of information resources, which is one of the most critical functions of libraries and information centres. Without proper organisation, information becomes difficult to locate, access, and use, limiting the effectiveness of LIS in supporting education, research, and community development.
- The aim of this Series is to introduce you to the principles, tools, and modern approaches used in organising information resources, while also addressing the challenges and future directions of this essential practice. By the end, you will be able to explain the rationale behind organisation, apply key techniques, and evaluate emerging trends in the field.

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- We shall commence this Series by exploring the principles of organising information resources, including its definition, scope, objectives, and standards. Next, we will move on to tools and techniques such as classification schemes, cataloguing practices, and metadata. Following that, we will consider modern approaches to organisation, including digital catalogues, subject gateways, and knowledge organisation in digital libraries. Finally, we will wrap up by examining the challenges and future directions of information organisation, focusing on issues of standardisation, managing digital resources, and emerging trends.

Series Learning Outcomes 1

Upon completing this Series, you should be able to:

- **SLO 1.1** define the core terms of Library and Information Science, including library, information, library science, and information science,
- **SLO 1.2** explain related concepts such as documentation, knowledge management, and information literacy,
- **SLO 1.3** analyse the areas of convergence between Library Science and Information Science,
- **SLO 1.4** evaluate the areas of divergence between Library Science and Information Science, and
- **SLO 1.5** describe the theoretical and philosophical foundations that shape the scope and practice of Library and Information Science.

4.1 Principles Of Organising Information Resources

Organising information resources is one of the most fundamental responsibilities in Library and Information Science (LIS). It ensures that materials are arranged systematically so that users can easily locate, access, and use them. Without organisation, information becomes scattered and difficult to retrieve, reducing the effectiveness of libraries and information centres. In this Part, we will explore the definition and scope of organisation, its objectives, and the standards and guidelines that underpin it.

4.1.1 Definition and scope of organisation

Organisation of information resources refers to the systematic arrangement of materials such as books, journals, digital files, and other knowledge assets to make them accessible and useful. The scope of organisation covers both physical resources (like printed books) and digital resources (such as e-books, databases, and online catalogues).

Organisation is not limited to shelving books; it involves applying principles of classification, cataloguing, and metadata creation to ensure that information can be retrieved efficiently.

Fill in the blank: The organisation of information resources involves the systematic _____ of materials to make them accessible and useful.

[Insert figure here] Diagram showing the scope of organisation (physical resources vs digital resources) Caption: Figure 4.1 Scope of organising information resources AI prompt suggestion: "Create a diagram showing organisation of information resources, divided into physical (books,

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journals) and digital (databases, e-books).” Search string: “scope of organising information resources diagram OER”

4.1.2 Objectives of organising information

The **objectives of organising information** are the goals that guide how resources are arranged and managed. These include:

- Ensuring easy retrieval of information
- Saving time for both users and staff
- Promoting consistency across collections
- Supporting education, research, and lifelong learning

By meeting these objectives, libraries and information centres provide value to their communities and strengthen their role as knowledge hubs.

Fill in the blank: One key objective of organising information is to ensure easy _____ of resources.

[Insert box here] Box 4.2 Objectives of organising information resources

- Easy retrieval of information
- Saving time for users and staff
- Promoting consistency across collections
- Supporting education, research, and lifelong learning AI prompt suggestion: “Generate a text-based infographic listing four objectives of organising information resources.” Search string: “objectives of organising information resources OER”

4.1.3 Standards and guidelines in organisation

Standards and guidelines are established rules and procedures that ensure uniformity in organising information resources. Examples include international cataloguing standards such as **AACR2 (Anglo-American Cataloguing Rules, Second Edition)** and **RDA (Resource Description and Access)**, as well as classification systems like DDC and LCC.

These standards make it possible for libraries worldwide to share catalogues and collaborate effectively. They also ensure that users experience consistency when searching for information across different institutions.

Fill in the blank: The Anglo-American Cataloguing Rules, Second Edition (AACR2) is an example of an international _____ standard.

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Plate 4.3 Applying standards in organising information resources

OER"

Pilot questions 4.1

1. The organisation of information resources refers to: a. Random arrangement of materials b. Systematic arrangement of materials for accessibility c. Restricting access to information d. Shelving books without classification
2. Which of the following is part of the scope of organisation? a. Only printed books b. Both physical and digital resources c. Only journals d. Only e-books
3. One objective of organising information is: a. Promoting censorship b. Saving time for users and staff c. Restricting access to collections d. Ignoring consistency

4. AACR2 and RDA are examples of: a. Classification schemes b. International cataloguing standards c. Digital libraries d. Retrieval models

5. Standards and guidelines in organisation help libraries to: a. Work in isolation b. Share catalogues and collaborate effectively c. Restrict access to users d. Focus only on printed materials

4.3 Modern Approaches To Information Organisation

As libraries and information centres evolve in the digital age, modern approaches to organising information have become essential. These approaches integrate technology, digital platforms, and innovative systems to ensure that resources remain accessible, searchable, and relevant to diverse users. In this Part, we will explore digital catalogues and OPACs, subject gateways and databases, and knowledge organisation in digital libraries.

4.3.1 Digital catalogues and OPACs

Digital catalogues are electronic systems that store bibliographic records of information resources. They replace traditional card catalogues and allow users to search collections using computers or mobile devices. An **Online Public Access Catalogue (OPAC)** is a web-based interface that enables users to search library holdings by author, title, subject, or keyword.

OPACs improve efficiency, provide multiple access points, and support remote access, making them indispensable in modern libraries.

Fill in the blank: An _____ is a web-based interface that allows users to search library holdings remotely.

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Plate 4.3 Applying standards in organising information resources

4.3.2 Subject gateways and databases

Subject gateways are curated online portals that provide access to high-quality resources in specific subject areas. They act as filters, guiding users to reliable information sources. Examples include gateways for medicine, engineering, or social sciences.

Databases are structured collections of information that can be searched electronically. They may contain journal articles, reports, or multimedia resources. Databases often use indexing and metadata to enhance retrieval.

Fill in the blank: Subject _____ are curated online portals that guide users to reliable resources in specific fields.

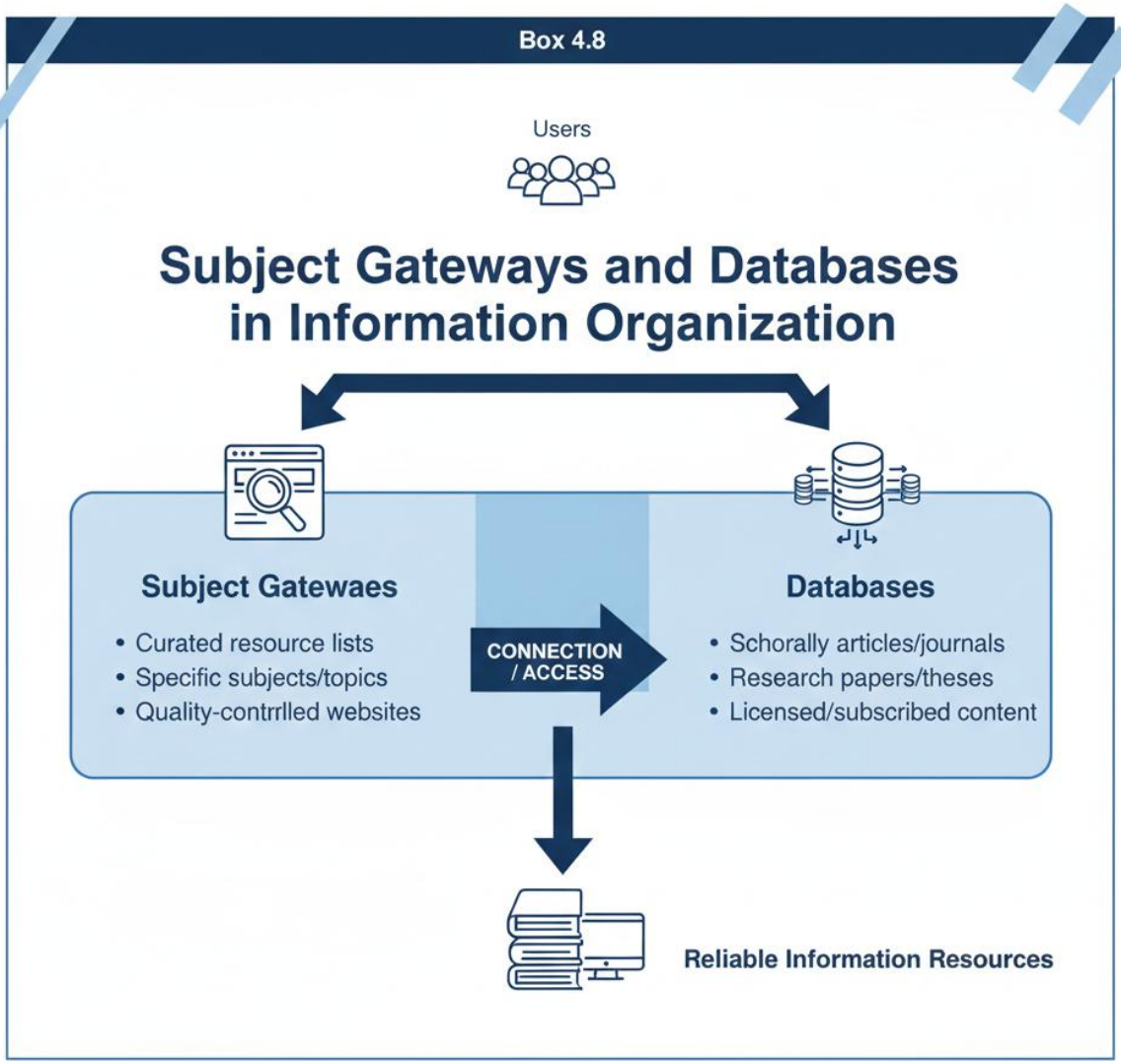

Figure 4.8 Infoırrmationı / Resources

4.3.3 Knowledge organisation in digital libraries

Digital libraries are collections of electronic resources that are accessible online. They integrate tools such as metadata, indexing, and search engines to organise knowledge effectively. **Knowledge organisation** in digital libraries involves structuring resources so that users can navigate large collections with ease.

This approach supports global access, resource sharing, and lifelong learning, making digital libraries central to modern LIS practice.

Fill in the blank: Knowledge organisation in _____ libraries involves structuring electronic resources for easy navigation and retrieval.

[Insert box here] Box 4.9 Features of knowledge organisation in digital libraries

- Use of metadata and indexing
- Integration of search engines
- Global access and resource sharing
- Support for lifelong learning AI prompt suggestion: “Generate a text-based infographic listing features of knowledge organisation in digital libraries.” Search string: “knowledge organisation digital libraries OER”

Pilot questions 4.3

1. An OPAC is: a. A physical card catalogue b. A web-based interface for searching library holdings c. A classification scheme d. A metadata standard
2. Subject gateways provide: a. Random access to resources b. Curated access to reliable resources in specific fields c. Only printed books d. Restricted access to databases
3. Databases are: a. Structured collections of information searchable electronically b. Random notes about books c. Physical shelves in libraries d. Only multimedia resources
4. Knowledge organisation in digital libraries involves: a. Random arrangement of resources b. Structuring electronic resources for easy navigation and retrieval c. Restricting access to printed materials d. Ignoring metadata and indexing
5. Which of the following is a feature of knowledge organisation in digital libraries? a. Use of metadata and indexing b. Restriction of global access c. Focus only on printed books d. Ignoring lifelong learning

4.4 Challenges And Future Directions

Organising information resources is a dynamic process that continues to evolve with technological advancements and changing user needs. While traditional methods provided a strong foundation, modern libraries face new challenges that require innovative solutions. In this Part, we will examine issues of standardisation, managing digital resources, and emerging trends that point towards the future of information organisation.

4.4.1 Issues of standardisation

Standardisation refers to the adoption of uniform rules, procedures, and formats in organising information resources. It ensures consistency across libraries and facilitates resource sharing. However, challenges arise when different institutions use varying standards, making interoperability difficult. For example, while some libraries rely on AACR2, others have transitioned to RDA, creating gaps in cataloguing practices.

The lack of global uniformity can hinder collaboration and frustrate users who expect seamless access across systems.

Fill in the blank: The lack of global _____ in cataloguing practices can hinder collaboration among libraries.

[Insert figure here] Diagram showing challenges of standardisation (different cataloguing rules across libraries) Caption: Figure 4.10 Issues of standardisation in organising information resources AI prompt suggestion: “Create a diagram showing challenges of standardisation in

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libraries, with AACR2 and RDA differences." Search string: "cataloguing standards AACR2 RDA interoperability OER"

4.4.2 Managing digital resources

Digital resources include e-books, online journals, multimedia files, and databases. Managing these resources presents challenges such as licensing restrictions, preservation, and ensuring equitable access. Unlike physical books, digital materials often require subscription agreements and specialised software.

Libraries must also address the issue of **digital preservation**, which involves maintaining long-term access to electronic resources despite technological changes. This requires strategies such as migration, emulation, and the use of trusted repositories.

Fill in the blank: Digital _____ involves maintaining long-term access to electronic resources despite technological changes.

[Insert plate here] Image showing a librarian managing digital resources on a computer system Caption: Plate 4.11 Managing digital resources in libraries AI prompt suggestion: "Generate an image showing a librarian managing digital resources such as e-books and online journals on a computer." Search string: "digital resource management libraries OER"

4.4.3 Emerging trends in information organisation

Emerging trends are new developments that shape the future of information organisation. These include the use of artificial intelligence (AI) for automated indexing, linked data for improved interoperability, and open access initiatives that promote free availability of scholarly resources.

Another trend is the integration of **semantic web technologies**, which enhance search precision by linking concepts rather than just keywords. These innovations promise to make information organisation more efficient, user-centred, and globally connected.

Fill in the blank: The _____ web enhances search precision by linking concepts rather than just keywords.

[Insert box here] Box 4.12 Emerging trends in information organisation

- Artificial intelligence for automated indexing
- Linked data for interoperability
- Open access initiatives
- Semantic web technologies AI prompt suggestion: "Generate a text-based infographic listing emerging trends in information organisation such as AI, linked data, open access, and semantic web." Search string: "emerging trends in information organisation libraries OER"

Pilot questions 4.4

1. Standardisation in information organisation ensures: a. Random arrangement of resources b. Uniform rules and formats across libraries c. Restriction of access to users d. Ignoring cataloguing practices

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2. A challenge of standardisation is: a. Lack of global uniformity in cataloguing rules b. Easy interoperability across systems c. Seamless collaboration among libraries d. Uniformity in metadata
3. Digital preservation involves: a. Maintaining long-term access to electronic resources despite technological changes b. Shelving books in physical libraries c. Restricting access to journals d. Ignoring subscription agreements
4. Which of the following is an emerging trend in information organisation? a. Random arrangement of catalogues b. Artificial intelligence for automated indexing c. Restricting access to digital resources d. Ignoring metadata standards
5. The semantic web enhances search precision by: a. Linking concepts rather than just keywords b. Restricting access to printed books c. Ignoring interoperability d. Using random notes about resources

Series Summary

This Series was designed to highlight the organisation and management of information resources, a central function of Library and Information Science practice. Its relevance lies in showing how principles, tools, and modern approaches ensure that resources are accessible, reliable, and useful to diverse users, while also preparing learners to address challenges and anticipate future directions in the field.

We began by examining the principles of organising information resources, including their definition, scope, objectives, and standards. Then we explored tools and techniques such as classification schemes, cataloguing practices, and metadata. Following that, we considered modern approaches, including digital catalogues, subject gateways, and knowledge organisation in digital libraries. Finally, we discussed challenges and future directions, focusing on issues of standardisation, managing digital resources, and emerging trends such as artificial intelligence and the semantic web. By completing this Series, you should now be able to define the principles of organisation (SLO 4.1), apply tools and techniques effectively (SLO 4.2), explain modern approaches to information organisation (SLO 4.3), and evaluate challenges and future directions in LIS practice (SLO 4.4).

Glossary of Terms

- **AACR2 (Anglo-American Cataloguing Rules, Second Edition)**: An international cataloguing standard that provides rules for describing and organising library materials.
- **Classification schemes**: Systems used to arrange information resources into categories based on subject matter, such as Dewey Decimal Classification, Library of Congress Classification, and Universal Decimal Classification.
- **Digital catalogues**: Electronic systems that store bibliographic records of resources, replacing traditional card catalogues.
- **Digital libraries**: Collections of electronic resources accessible online, often supported by metadata, indexing, and search engines.

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- **Digital preservation**: The process of maintaining long-term access to electronic resources despite technological changes.
- **Dewey Decimal Classification (DDC)**: A classification system that uses numbers to represent subjects in libraries.
- **Indexing**: The process of creating lists of subjects, keywords, or descriptors that point users to relevant resources.
- **Knowledge organisation**: The structuring of information resources, especially in digital libraries, to make them easy to navigate and retrieve.
- **Library of Congress Classification (LCC)**: A classification system that uses letters and numbers to categorise materials by subject.
- **Metadata**: Structured information that describes, explains, or locates an information resource, including details such as author, title, subject, and format.
- **Online Public Access Catalogue (OPAC)**: A web-based interface that allows users to search library holdings by author, title, subject, or keyword.
- **RDA (Resource Description and Access)**: A modern cataloguing standard that provides guidelines for describing resources in both digital and physical formats.
- **Semantic web**: A web technology that enhances search precision by linking concepts rather than just keywords.
- **Standardisation**: The adoption of uniform rules, procedures, and formats in organising information resources to ensure consistency and interoperability.
- **Subject gateways**: Curated online portals that provide access to reliable resources in specific subject areas.
- **Universal Decimal Classification (UDC)**: A classification system that extends the Dewey Decimal Classification for more detailed subject representation.

Concept Check Questions 4

Objective Questions

1. Which of the following best describes the organisation of information resources? a. Random arrangement of materials b. Systematic arrangement of materials for accessibility c. Restricting access to information d. Shelving books without classification *(Linked to SLO 4.1)*
2. The Dewey Decimal Classification system represents subjects using: a. Letters only b. Numbers c. Colours d. Random codes *(Linked to SLO 4.2)*
3. An OPAC is: a. A physical card catalogue b. A web-based interface for searching library holdings c. A classification scheme d. A metadata standard *(Linked to SLO 4.3)*

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4. Digital preservation involves: a. Shelving books in physical libraries b. Maintaining long-term access to electronic resources despite technological changes c. Restricting access to journals d. Ignoring subscription agreements *(Linked to SLO 4.4)*

5. The semantic web enhances search precision by: a. Linking concepts rather than just keywords b. Restricting access to printed books c. Ignoring interoperability d. Using random notes about resources *(Linked to SLO 4.4)*

Short-Answer Questions

6. Define **organisation of information resources** in the context of LIS. *(Linked to SLO 4.1)*

7. State one objective of organising information resources. *(Linked to SLO 4.1)*

8. Explain briefly what **cataloguing practices** involve. *(Linked to SLO 4.2)*

9. What is the role of **metadata** in digital information organisation? *(Linked to SLO 4.2)*

10. Identify one emerging trend in information organisation. *(Linked to SLO 4.4)*

Long-Answer Questions

11. Analyse the importance of classification schemes in ensuring consistency and accessibility across library collections. *(Linked to SLO 4.2)*

12. Evaluate the role of modern approaches such as OPACs, subject gateways, and digital libraries in improving information organisation. *(Linked to SLO 4.3)*

13. Discuss the challenges of standardisation and managing digital resources, and suggest possible future directions for LIS practice. *(Linked to SLO 4.4)*

Answers to Concept Check Questions 4

Objective Questions

1. b. Systematic arrangement of materials for accessibility
2. b. Numbers
3. b. A web-based interface for searching library holdings
4. b. Maintaining long-term access to electronic resources despite technological changes
5. a. Linking concepts rather than just keywords

Short-Answer Questions

6. Organisation of information resources refers to the systematic arrangement of materials to make them accessible and useful.

7. One objective is to ensure easy retrieval of information.

8. Cataloguing practices involve creating detailed bibliographic records, subject headings, and access points to help users identify and locate resources.

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9. Metadata provides structured information that describes or locates an information resource, making it searchable and retrievable.

10. One emerging trend is the use of artificial intelligence for automated indexing.

Long-Answer Questions

11. *Basic response*: Classification schemes provide a logical structure for arranging resources, ensuring consistency and accessibility across collections. *Value-added response*: Outstanding learners may add that schemes like DDC, LCC, and UDC enable resource sharing among libraries globally, support interoperability, and enhance user experience by providing predictable organisation.

12. *Basic response*: Modern approaches such as OPACs, subject gateways, and digital libraries improve access by offering multiple search points and remote availability. *Value-added response*: Outstanding learners may expand by explaining how OPACs integrate metadata, subject gateways filter reliable resources, and digital libraries support lifelong learning and global access. They may also highlight the role of semantic web technologies in enhancing precision.

13. *Basic response*: Challenges include lack of global standardisation in cataloguing and difficulties in managing digital resources such as licensing and preservation. *Value-added response*: Outstanding learners may suggest future directions such as adopting linked data for interoperability, investing in digital preservation strategies, and embracing open access initiatives to promote inclusivity and sustainability in LIS practice.

Answers to Pilot Questions 4

Part 4.1 Principles of organising information resources

1. b. Systematic arrangement of materials for accessibility
2. b. Both physical and digital resources
3. b. Saving time for users and staff
4. b. International cataloguing standards
5. b. Share catalogues and collaborate effectively

Part 4.2 Tools and techniques for organisation

1. b. Dewey Decimal Classification
2. b. Bibliographic descriptions and access points
3. b. International cataloguing standards
4. b. Structured information describing or locating resources
5. a. Creating lists of subjects or keywords to point users to resources

Part 4.3 Modern approaches to information organisation

1. b. A web-based interface for searching library holdings

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2. b. Curated access to reliable resources in specific fields
3. a. Structured collections of information searchable electronically
4. b. Structuring electronic resources for easy navigation and retrieval
5. a. Use of metadata and indexing

Part 4.4 Challenges and future directions

1. b. Uniform rules and formats across libraries
2. a. Lack of global uniformity in cataloguing rules
3. a. Maintaining long-term access to electronic resources despite technological changes
4. b. Artificial intelligence for automated indexing
5. a. Linking concepts rather than just keywords

eferences and Attributions 4

This section compiles all references and attributions for Series 4: *Organisation and Management of Information Resources*. References are presented in APA style for clarity and consistency.

General References

- Dewey, M. (1876). *A Classification and Subject Index for Cataloguing and Arranging the Books and Pamphlets of a Library*. Amherst: Amherst College.
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- UNESCO. (1994). *Public Library Manifesto*. Paris: UNESCO.
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Illustration Attributions

- *Figure 4.1 Scope of organising information resources*
- *AI-generated prompt: "Create a diagram showing organisation of information resources, divided into physical (books, journals) and digital (databases, e-books)."*

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- *Suggested OER search: "scope of organising information resources diagram OER"*

- *Box 4.2 Objectives of organising information resources*

- *AI-generated prompt: "Generate a text-based infographic listing four objectives of organising information resources."*

- *Suggested OER search: "objectives of organising information resources OER"*

- *Plate 4.3 Applying standards in organising information resources*

- *AI-generated prompt: "Generate an image showing a librarian cataloguing books and entering metadata into a digital system."*

- *Suggested OER search: "AACR2 RDA cataloguing standards library OER"*

- *Figure 4.4 Comparison of classification schemes*

- *AI-generated prompt: "Create a diagram comparing Dewey Decimal Classification (numbers), Library of Congress Classification (letters and numbers), and Universal Decimal Classification (extended numbers)."*

- *Suggested OER search: "DDC LCC UDC comparison diagram OER"*

- *Plate 4.5 Cataloguing practices in LIS*

- *AI-generated prompt: "Generate an image showing a librarian entering bibliographic details into a digital catalogue system."*

- *Suggested OER search: "RDA AACR2 cataloguing practices library OER"*

- *Box 4.6 Examples of metadata elements*

- *AI-generated prompt: "Generate a text-based infographic listing examples of metadata elements such as author, title, subject, and format."*

- *Suggested OER search: "metadata elements library OER"*

- *Plate 4.7 Online Public Access Catalogue in use*

- *AI-generated prompt: "Generate an image showing a person using an OPAC interface on a computer to search for books."*

- *Suggested OER search: "OPAC online public access catalogue library OER"*

- *Figure 4.8 Subject gateways and databases in information organisation*

- *AI-generated prompt: "Create a diagram showing subject gateways and databases connecting users to reliable resources."*

- *Suggested OER search: "subject gateways databases diagram OER"*

- *Box 4.9 Features of knowledge organisation in digital libraries*

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- *AI-generated prompt: "Generate a text-based infographic listing features of knowledge organisation in digital libraries."*
- *Suggested OER search: "knowledge organisation digital libraries OER"*
- *Figure 4.10 Issues of standardisation in organising information resources*
- *AI-generated prompt: "Create a diagram showing challenges of standardisation in libraries, with AACR2 and RDA differences."*
- *Suggested OER search: "cataloguing standards AACR2 RDA interoperability OER"*
- *Plate 4.11 Managing digital resources in libraries*
- *AI-generated prompt: "Generate an image showing a librarian managing digital resources such as e-books and online journals on a computer."*
- *Suggested OER search: "digital resource management libraries OER"*
- *Box 4.12 Emerging trends in information organisation*
- *AI-generated prompt: "Generate a text-based infographic listing emerging trends in information organisation such as AI, linked data, open access, and semantic web."*
- *Suggested OER search: "emerging trends in information organisation libraries OER"*

Course Code: LIS 111
Course Title: Introduction to Library and Information Science
Course Unit: 3 Units

Series 1: Foundations of Library and Information Science
Series 2: Philosophical Roots and Theoretical Perspectives
Series 3: Origin, Growth, and Scholarly Contributions
Series 4: Education and Practice of LIS in Nigeria
Series 5: Interdisciplinary Relations and Future Directions

Series 5: Interdisciplinary Relations and Future Directions

Series Outline

5.1 Interdisciplinary connections of LIS

- 5.1.1 Relationship with education and pedagogy
- 5.1.2 Linkages with information technology and computer science
- 5.1.3 Contributions from sociology, psychology, and communication studies

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5.2 Emerging trends and innovations

- 5.2.1 Digital transformation and artificial intelligence in LIS
- 5.2.2 Open access, open science, and scholarly communication
- 5.2.3 Data science and big data applications in libraries

5.3 Global perspectives and challenges

- 5.3.1 International collaboration and knowledge sharing
- 5.3.2 Addressing inequalities in information access
- 5.3.3 Cultural diversity and multilingual information services

5.4 Future directions for LIS practice and research

- 5.4.1 Anticipating ethical issues in emerging technologies
- 5.4.2 Designing sustainable and inclusive information services
- 5.4.3 Strengthening LIS research through interdisciplinary approaches

5.5 Integration of interdisciplinary insights into LIS education

- 5.5.1 Curriculum development for future LIS professionals
- 5.5.2 Skills for interdisciplinary collaboration
- 5.5.3 Preparing LIS graduates for evolving roles

Introduction

In today's world, libraries and information centres do not operate in isolation. They are deeply connected to other disciplines, drawing insights from education, technology, sociology, psychology, and beyond. As information landscapes evolve, these interdisciplinary relations become increasingly important for shaping the future of Library and Information Science (LIS). This Series will help you appreciate how LIS interacts with other fields, adapts to global trends, and prepares for future challenges.

The aim of this Series is to enable you to critically examine the interdisciplinary nature of LIS, explore emerging innovations, and identify future directions for professional practice and research.

We shall commence this Series by exploring the interdisciplinary connections of LIS with education, technology, and the social sciences. Next, we will examine emerging trends and innovations such as digital transformation, open access, and big data. Following that, we will consider global perspectives and challenges, including international collaboration, inequalities in access, and cultural diversity. Moving on, we will discuss future directions for LIS practice and research, focusing on ethics, sustainability, and interdisciplinary approaches. Finally, we will end with the integration of interdisciplinary insights into LIS education, highlighting curriculum development, collaborative skills, and preparation for evolving professional roles.

Series Learning Outcomes

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Upon completing this Series, you should be able to:

- **5.1** describe the interdisciplinary connections of LIS with education and pedagogy,
- **5.2** explain how LIS relates to information technology and computer science,
- **5.3** analyse contributions from sociology, psychology, and communication studies to LIS,
- **5.4** evaluate emerging trends such as digital transformation, artificial intelligence, and open access in LIS,
- **5.5** demonstrate how data science and big data applications are integrated into library services,
- **5.6** assess global perspectives and challenges including international collaboration, inequalities in access, and cultural diversity,
- **5.7** appraise future directions for LIS practice and research, focusing on ethics, sustainability, and interdisciplinary approaches, and
- **5.8** apply interdisciplinary insights to LIS education by identifying curriculum priorities, collaborative skills, and evolving professional roles.

5.1 Interdisciplinary Connections of LIS

5.1.1 Relationship with education and pedagogy

Libraries have always been closely linked with **education**, which refers to the process of teaching, learning, and knowledge development. In LIS, this connection is seen in the support libraries provide for schools, universities, and lifelong learning initiatives. Pedagogical approaches influence how information literacy programmes are designed, ensuring learners develop critical skills for evaluating and using information effectively.

Fill in the blank: _____ refers to the process of teaching, learning, and knowledge development, and is closely linked with LIS.

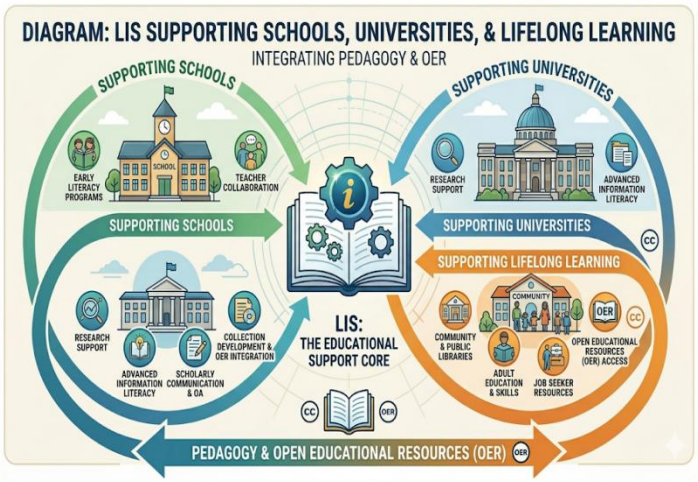

Figure 5.1 LIS and education connections

5.1.2 Linkages with information technology and computer science

The field of **information technology (IT)** refers to the use of computers and digital systems to process and manage information. LIS has strong linkages with IT and computer science,

particularly in areas such as digital catalogues, databases, and information retrieval systems. These connections have transformed libraries into hybrid spaces where physical and digital resources coexist, and where professionals must be skilled in both traditional and technological methods.

Fill in the blank: _____ refers to the use of computers and digital systems to process and manage information.

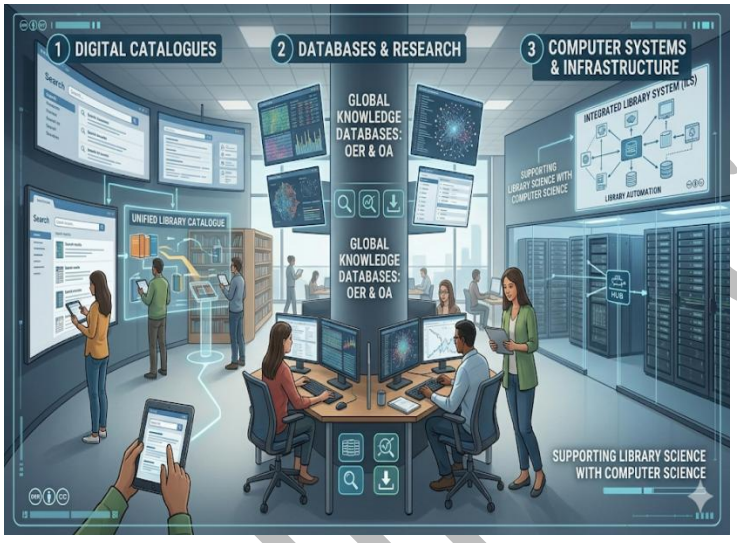

Plate 5.2 LIS and information technology linkages

5.1.3 Contributions from sociology, psychology, and communication studies

Sociology is the study of society, social behaviour, and institutions. In LIS, sociology helps explain how communities interact with information and how libraries serve as social spaces. **Psychology** is the study of the human mind and behaviour, and it contributes to understanding user needs, motivation, and information-seeking behaviour. **Communication studies** focus on how messages are created, transmitted, and received, which informs the design of effective information services and outreach programmes. Together, these disciplines enrich LIS by providing insights into human interaction with information.

Fill in the blank: _____ is the study of the human mind and behaviour, and it contributes to understanding user needs in LIS.

Discipline	Key Contributions to Library Science
Sociology	**Community Interaction & Social Roles:** Sociology helps LIS professionals understand the library as a "Third Place"—a vital social anchor. It provides frameworks for analyzing social equity, the impact of libraries on community cohesion, and how libraries can mitigate social exclusion.

Discipline	Key Contributions to Library Science
Psychology	**User Behavior & Motivation:** Psychology offers insights into "Information Search Process" (ISP) models. It helps librarians understand cognitive load, the anxiety often associated with research (Library Anxiety), and the underlying motivations that drive different demographics to seek or avoid information.
Communication Studies	**Service Design & Outreach:** This field informs the design of reference services and user interfaces. It provides strategies for effective "Reference Interviews," ensuring that the communication between the librarian and the user is clear, empathetic, and results in the retrieval of the most relevant information.

Box 5.1 Contributions of sociology, psychology, and communication studies to LIS

Pilot questions 5.1

1. How does LIS connect with education and pedagogy?
2. What role does information technology play in modern LIS practice?
3. Which disciplines contribute insights into user behaviour and community interaction in LIS?
4. Why are interdisciplinary connections important for the future of LIS?

5.2 Emerging Trends and Innovations

5.2.1 Digital transformation and artificial intelligence in LIS

Digital transformation refers to the integration of digital technologies into library services, reshaping how information is stored, accessed, and delivered. This includes online catalogues, e-books, and virtual reference services. **Artificial intelligence (AI)** is the use of computer systems to perform tasks that normally require human intelligence, such as natural language processing and predictive analytics. In LIS, AI supports personalised recommendations, automated indexing, and chatbots for user assistance.

Fill in the blank: _____ transformation refers to the integration of digital technologies into library services.

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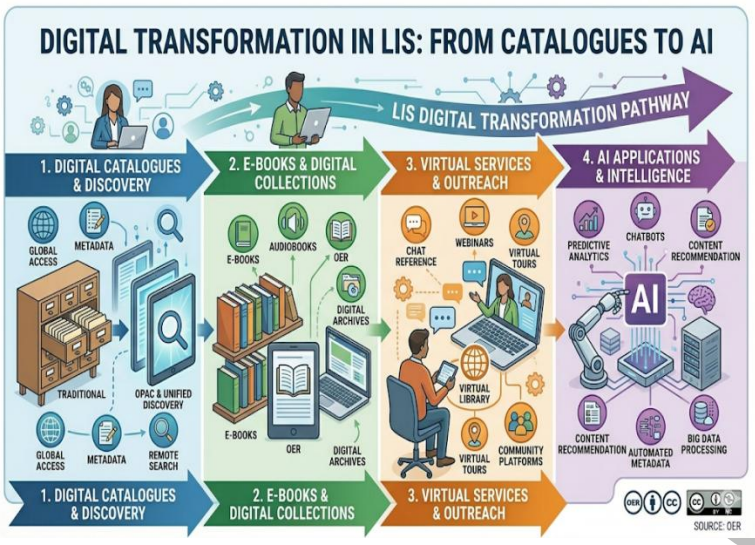

Figure 5.3 Digital transformation and AI in LIS

5.2.2 Open access, open science, and scholarly communication

Open access refers to making scholarly publications freely available online without subscription barriers. **Open science** is a broader movement that promotes transparency, collaboration, and accessibility in research processes. Together, they reshape scholarly communication by ensuring wider dissemination of knowledge and reducing inequalities in access. Libraries play a crucial role in supporting these initiatives through institutional repositories, advocacy, and training.
Fill in the blank: _____ access refers to making scholarly publications freely available online without subscription barriers.

Plate 5.4 Open access and open science in LIS

5.2.3 Data science and big data applications in libraries

Data science is the field that uses statistical methods, algorithms, and systems to extract insights from data. **Big data** refers to extremely large datasets that require advanced tools for analysis. In LIS, these are applied to understand user behaviour, improve resource management, and enhance decision-making. For example, libraries use data analytics to track borrowing patterns, optimise collections, and design services that meet evolving needs.
Fill in the blank: _____ refers to extremely large datasets that require advanced tools for analysis.

Application Area	Impact on Library Operations & Services
Tracking	**Pattern Analysis:** Utilizing big data to monitor borrowing trends, peak usage times, and digital resource navigation. This helps identifies which subjects are gaining traction and which are declining in relevance.
Optimization	**Collection Management:** Data-driven insights allow for "Evidence-Based Acquisition." Libraries can optimize physical space and digital budgets by investing in materials that have a high probability of use based on predictive modeling.
Decision-Making	**Strategic Planning:** Moving beyond gut feeling to "Informed Governance." Data analytics provides concrete evidence for budget allocations, staffing needs, and the justification of library value to stakeholders and funding bodies.
User Services	**Hyper-Personalization:** Designing user-centered services such as recommender systems (similar to "Netflix for Libraries") and tailored research alerts that match individual user profiles with relevant new acquisitions.

Box 5.2 Applications of data science and big data in LIS

Pilot questions 5.2

1. What does digital transformation mean in the context of LIS?
2. How is artificial intelligence applied in library services?
3. What is the difference between open access and open science?
4. How do libraries support scholarly communication in the digital age?
5. What are some applications of data science and big data in LIS?

5.3 Global Perspectives and Challenges

5.3.1 International collaboration and knowledge sharing

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International collaboration refers to partnerships between libraries, institutions, and organisations across different countries to share resources, expertise, and knowledge. This is vital for promoting access to diverse information and fostering innovation. Examples include global library networks, cooperative cataloguing projects, and cross-border research initiatives. Such collaboration ensures that LIS professionals can learn from one another and provide services that reflect global standards.
Fill in the blank: _____ collaboration refers to partnerships between libraries, institutions, and organisations across different countries to share resources and expertise.

Figure 5.5 International collaboration in LIS

5.3.2 Addressing inequalities in information access

Inequalities in information access occur when certain groups or regions face barriers to obtaining knowledge due to economic, technological, or social factors. Libraries play a crucial role in reducing these inequalities by offering free access to resources, providing digital literacy training, and supporting marginalised communities. Addressing inequalities ensures that information remains a public good rather than a privilege.
Fill in the blank: _____ in information access occur when certain groups or regions face barriers to obtaining knowledge due to economic, technological, or social factors.

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Plate 5.6 Addressing inequalities in information access

5.3.3 Cultural diversity and multilingual information services

Cultural diversity refers to the presence of multiple cultural traditions, languages, and perspectives within a society. In LIS, this diversity is reflected in collections, programmes, and services that represent different voices and experiences. **Multilingual information services** are library offerings that provide resources and support in multiple languages, ensuring inclusivity for diverse user groups. Together, these approaches help libraries remain relevant and responsive to global communities.

Fill in the blank: _____ diversity refers to the presence of multiple cultural traditions, languages, and perspectives within a society.

Pillar	Implementation Strategy
Collections	**Representing Diverse Voices:** Curating materials that reflect the lived experiences of global communities. This includes acquiring indigenous literature, international periodicals, and "own voices" narratives to ensure the collection is a mirror for all users.
Programmes	**Celebrating Cultural Traditions:** Developing library events that honor global heritage, such as multilingual storytelling, cultural festivals, and workshops led by community elders. These programs transform the library into a shared cultural hub.
Services	**Multilingual Support:** Providing essential library navigation, reference help, and digital interfaces in multiple languages. This removes the "language tax" on information seeking and ensures non-native speakers have equitable service access.

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Pillar	Implementation Strategy
Inclusivity	**Global Community Integration:** Creating welcoming spaces for refugees, migrants, and international students. This involves "inclusive design" in physical spaces and digital outreach that respects varying cultural norms and information-seeking behaviors.

Box 5.3 Cultural diversity and multilingual services in LIS

Pilot questions 5.3

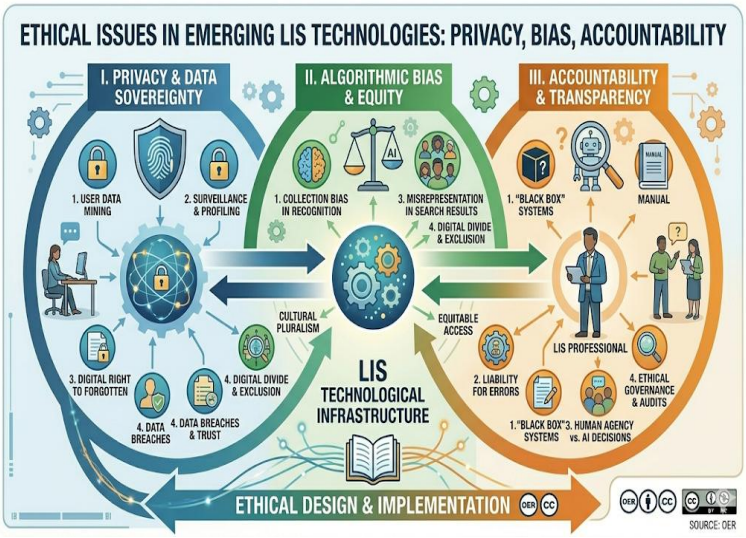
1. Why is international collaboration important in LIS?
2. What factors contribute to inequalities in information access?
3. How can libraries reduce barriers to information access?
4. What role does cultural diversity play in shaping LIS services?
5. Why are multilingual services essential in global LIS practice?

5.4 Future Directions for LIS Practice and Research

5.4.1 Anticipating ethical issues in emerging technologies

As libraries adopt new technologies, they must anticipate **ethical issues**, which are questions of right and wrong in the use of information and systems. Emerging technologies such as artificial intelligence, big data, and biometric identification raise concerns about privacy, bias, and accountability. LIS professionals need to evaluate these issues carefully to ensure that technological innovation does not compromise user rights or professional values.

Fill in the blank: _____ issues are questions of right and wrong in the use of information and systems, especially when adopting new technologies.



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5.4.2 Designing sustainable and inclusive information services

Sustainability refers to practices that meet present needs without compromising the ability of future generations to meet theirs. In LIS, this involves managing resources responsibly, adopting eco-friendly practices, and ensuring long-term access to information. **Inclusivity** means designing services that are accessible and beneficial to all users, regardless of background, ability, or circumstance. Together, sustainability and inclusivity guide libraries towards responsible and equitable service delivery.

Fill in the blank: _____ in LIS involves managing resources responsibly, adopting eco-friendly practices, and ensuring long-term access to information.

Plate 5.8 Sustainable and inclusive information services

5.4.3 Strengthening LIS research through interdisciplinary approaches

Interdisciplinary approaches involve combining methods and perspectives from multiple fields to address complex problems. In LIS research, this means drawing from education, computer science, sociology, and other disciplines to enrich understanding and generate innovative solutions. By strengthening research through interdisciplinary collaboration, LIS can remain relevant and responsive to global challenges.

Fill in the blank: _____ approaches involve combining methods and perspectives from multiple fields to address complex problems in LIS research.

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Discipline	Research Application & Methodological Integration
Education & Pedagogy	**Information Literacy Models:** Researchers apply instructional design and learning theories (such as Constructivism) to develop frameworks for teaching users how to evaluate source credibility and navigate OER repositories.
IT & Computer Science	**Computational Librarianship:** Integrating data mining, machine learning, and Natural Language Processing (NLP) to automate metadata creation, improve search algorithm transparency, and manage massive digital archives.
Sociology	**Social Informatics:** Using ethnographic methods and social network analysis to study how information flows through communities and how systemic inequalities (like the digital divide) impact resource discovery.
Psychology	**Human-Information Interaction (HII):** Applying cognitive psychology to understand how users perceive, process, and use information. This includes researching "Library Anxiety" and the cognitive load associated with digital interfaces.
Cross-Disciplinary Innovation	**Collaborative Inquiry:** Forming "Research Hubs" where LIS professionals work with urban planners (on library spaces), health professionals (on health literacy), and ethicists (on AI governance).

Box 5.4 Interdisciplinary approaches in LIS research

Pilot questions 5.4

1. What ethical issues arise from emerging technologies in LIS?
2. How can sustainability be applied to information services?
3. Why is inclusivity important in designing LIS services?
4. What does interdisciplinary research contribute to LIS practice?
5. How can LIS research remain relevant in addressing global challenges?

5.5 Integration of Interdisciplinary Insights into LIS Education

5.5.1 Curriculum development for future LIS professionals

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Curriculum development refers to the process of designing and organising educational content to prepare learners for professional practice. In LIS, curriculum development increasingly integrates insights from other disciplines such as computer science, sociology, and education. This ensures that future professionals are equipped not only with technical skills but also with social and pedagogical awareness. By embedding interdisciplinary knowledge, LIS education remains relevant to the evolving demands of the information society.
Fill in the blank: _____ development refers to the process of designing and organising educational content to prepare learners for professional practice.

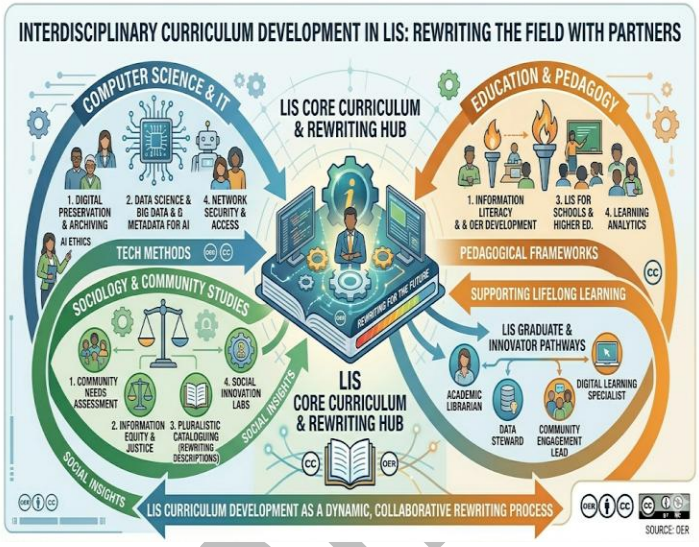

Figure 5.9 Interdisciplinary curriculum development in LIS

5.5.2 Skills for interdisciplinary collaboration

Collaboration skills are abilities that enable professionals to work effectively with colleagues from different fields. In LIS, these include communication, adaptability, and problem-solving. Interdisciplinary collaboration allows LIS professionals to partner with educators, technologists, and researchers to design innovative services and projects. Developing these skills ensures that LIS graduates can thrive in diverse professional environments.
Fill in the blank: _____ skills are abilities that enable professionals to work effectively with colleagues from different fields.

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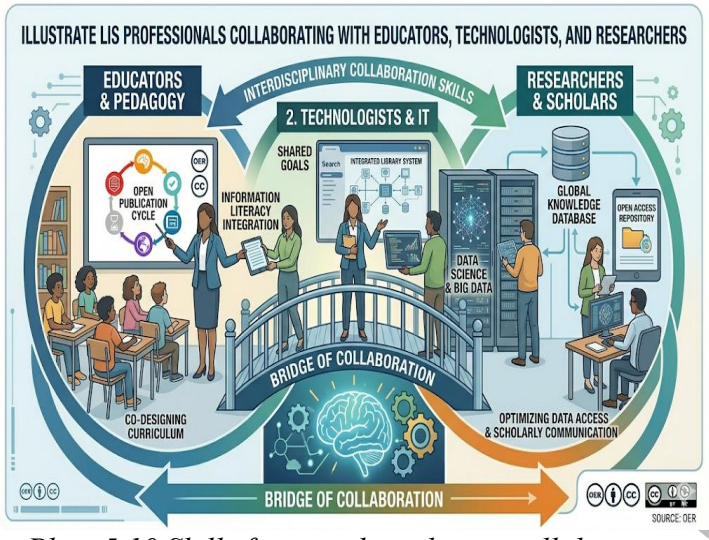

Plate 5.10 Skills for interdisciplinary collaboration

5.5.3 Preparing LIS graduates for evolving roles

Evolving roles in LIS refer to the changing responsibilities and opportunities that professionals encounter as information environments develop. These include roles in digital curation, data management, knowledge organisation, and community engagement. Preparing graduates for these roles requires a forward-looking education that combines traditional LIS foundations with interdisciplinary insights. This ensures that professionals remain adaptable and capable of meeting future challenges.

Fill in the blank: _____ roles in LIS refer to the changing responsibilities and opportunities that professionals encounter as information environments develop.

Evolving Role	Core Responsibilities & Impact
Digital Curation & Preservation	**Ensuring Longevity:** Moving beyond physical shelving to managing the lifecycle of digital assets. This involves bitstream preservation, format migration, and ensuring that "born-digital" content remains accessible for future generations.
Data Management & Analytics	**The Data Steward:** Assisting researchers with Data Management Plans (DMPs), managing institutional repositories, and using big data analytics to track research impact and optimize library resource allocation.
Knowledge Organisation	**Architect of Information:** Designing sophisticated taxonomies, ontologies, and metadata schemas for digital environments. This ensures

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Evolving Role	Core Responsibilities & Impact
	that information is discoverable across interconnected global databases and AI-driven search engines.
Community Engagement	**Social Catalyst:** Transitioning from a passive resource provider to an active community partner. This role focuses on information literacy, digital inclusion for underserved groups, and creating programs that reflect local cultural needs.

Box 5.5 Examples of evolving roles in LIS

Pilot questions 5.5

1. Why is curriculum development important for future LIS professionals?
2. What skills are essential for interdisciplinary collaboration in LIS?
3. How can LIS graduates be prepared for evolving roles in the profession?
4. Give examples of new responsibilities LIS professionals may take on in the future.

Series Summary

This Series has highlighted the importance of interdisciplinary relations in shaping the future of Library and Information Science (LIS). We began by examining how LIS connects with education, technology, and the social sciences, before moving on to explore emerging trends such as digital transformation, artificial intelligence, open access, and big data. We then considered global perspectives and challenges, including international collaboration, inequalities in access, and cultural diversity. Following that, we discussed future directions for LIS practice and research, focusing on ethics, sustainability, and interdisciplinary approaches. Finally, we explored how these insights can be integrated into LIS education, preparing graduates for evolving roles in the profession.

By engaging with these themes, you should now be able to describe interdisciplinary connections, explain emerging innovations, analyse global challenges, evaluate future directions, and apply interdisciplinary insights to LIS education, as outlined in the Series Learning Outcomes. This ensures that you are equipped not only with knowledge of current practices but also with the skills and perspectives needed to anticipate and respond to future developments in the discipline.

Glossary of Terms

- **artificial intelligence (AI)**: The use of computer systems to perform tasks that normally require human intelligence, such as natural language processing, recommendations, and predictive analytics.

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- **collaboration skills**: Abilities that enable professionals to work effectively with colleagues from different fields, including communication, adaptability, and problem-solving.
- **cultural diversity**: The presence of multiple cultural traditions, languages, and perspectives within a society, reflected in library collections, programmes, and services.
- **curriculum development**: The process of designing and organising educational content to prepare learners for professional practice in LIS.
- **data science**: A field that uses statistical methods, algorithms, and systems to extract insights from data, often applied in libraries to improve services and decision-making.
- **digital transformation**: The integration of digital technologies into library services, reshaping how information is stored, accessed, and delivered.
- **ethical issues**: Questions of right and wrong in the use of information and systems, particularly when adopting new technologies such as AI or big data.
- **evolving roles**: Changing responsibilities and opportunities for LIS professionals as information environments develop, including digital curation, data management, and community engagement.
- **information technology (IT)**: The use of computers and digital systems to process and manage information, strongly linked with LIS in areas such as catalogues and databases.
- **inequalities in information access**: Barriers faced by certain groups or regions in obtaining knowledge due to economic, technological, or social factors.
- **interdisciplinary approaches**: Methods that combine perspectives from multiple fields to address complex problems in LIS practice and research.
- **international collaboration**: Partnerships between libraries, institutions, and organisations across different countries to share resources, expertise, and knowledge.
- **multilingual information services**: Library offerings that provide resources and support in multiple languages, ensuring inclusivity for diverse user groups.
- **open access**: Making scholarly publications freely available online without subscription barriers.
- **open science**: A movement promoting transparency, collaboration, and accessibility in research processes, often supported by libraries.
- **psychology**: The study of the human mind and behaviour, contributing to LIS by explaining user needs, motivation, and information-seeking behaviour.
- **sociology**: The study of society, social behaviour, and institutions, helping LIS understand community interaction and the social role of libraries.
- **sustainability**: Practices that meet present needs without compromising the ability of future generations to meet theirs, applied in LIS through resource management and eco-friendly services.

Concept Check Questions [Series 5: Interdisciplinary Relations and Future Directions]

Objective questions (with options)

1. Digital transformation in LIS refers to: (Linked to SLO 5.2)
   a) The preservation of manuscripts
   b) The integration of digital technologies into library services

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c) The study of human behaviour
d) The promotion of cultural diversity

2. Which discipline studies the human mind and behaviour, contributing to LIS by explaining user needs? (Linked to SLO 5.1)
   a) Sociology
   b) Psychology
   c) Communication studies
   d) Education
3. What term refers to making scholarly publications freely available online without subscription barriers? (Linked to SLO 5.2)
   a) Open science
   b) Open access
   c) Digital transformation
   d) Inclusivity
4. Which of the following is an ethical issue associated with emerging technologies in LIS? (Linked to SLO 5.4)
   a) Borrowing patterns
   b) Privacy
   c) Curriculum development
   d) Multilingual services

Short-answer questions

1. Explain how international collaboration benefits LIS practice. (Linked to SLO 5.3)
2. Describe one way libraries can address inequalities in information access. (Linked to SLO 5.3)
3. State two skills that LIS professionals need for effective interdisciplinary collaboration. (Linked to SLO 5.5)
4. Give one example of an evolving role for LIS graduates. (Linked to SLO 5.5)

Long-answer questions

1. Analyse the contributions of sociology, psychology, and communication studies to LIS practice. (Linked to SLO 5.1)
2. Evaluate the impact of open access and open science on scholarly communication and the role of libraries in supporting these movements. (Linked to SLO 5.2)
3. Discuss how sustainability and inclusivity can be integrated into the design of information services, and explain why these principles are important for the future of LIS. (Linked to SLO 5.4)
4. Apply interdisciplinary insights to LIS education by outlining how curriculum development can prepare graduates for evolving roles. (Linked to SLO 5.5)

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Answers to Concept Check Questions [Series 5: Interdisciplinary Relations and Future Directions]

Objective questions

1. b) The integration of digital technologies into library services
2. b) Psychology
3. b) Open access
4. b) Privacy

Short-answer questions

1. International collaboration allows libraries to share resources, expertise, and knowledge across borders, promoting access and innovation.
2. Libraries can provide free access to resources, digital literacy training, or targeted support for marginalised communities.
3. Communication and adaptability.
4. Digital curation, data management, or community engagement.

Long-answer questions

1. **Basic response:** Sociology explains community interaction and the social role of libraries, psychology contributes insights into user behaviour and motivation, and communication studies inform effective information services and outreach.
   Value-added response: Outstanding learners may link these contributions to practical examples, such as using sociological insights to design inclusive programmes, applying psychological principles to improve user experience, and leveraging communication studies to enhance digital literacy campaigns.
2. **Basic response:** Open access and open science increase transparency and accessibility in scholarly communication, and libraries support these movements through repositories and advocacy.
   Value-added response: Outstanding learners may evaluate challenges such as funding models, copyright issues, and the need for training researchers, while also highlighting the global impact of open science in reducing inequalities.
3. **Basic response:** Sustainability ensures responsible resource management and long-term access, while inclusivity guarantees services for all users. Together, they make LIS services equitable and future-oriented.
   Value-added response: Outstanding learners may propose practical strategies such as eco-friendly library design, inclusive digital platforms, and policies that balance environmental responsibility with social equity.
4. **Basic response:** Curriculum development integrates interdisciplinary insights to prepare graduates for evolving roles such as digital curation and data management.
   Value-added response: Outstanding learners may design a sample curriculum framework that includes modules on IT, sociology, and ethics, showing how these prepare LIS professionals for diverse and future-facing responsibilities.

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Answers to Pilot Questions [Series 5: Interdisciplinary Relations and Future Directions]

Part 5.1 Interdisciplinary connections of LIS

- Education refers to the process of teaching, learning, and knowledge development, and LIS supports this through literacy programmes and learning resources.
- Information technology plays a central role in modern LIS practice by enabling digital catalogues, databases, and retrieval systems.
- Disciplines such as sociology, psychology, and communication studies contribute insights into community interaction, user behaviour, and effective information services.
- Interdisciplinary connections are important because they enrich LIS practice and ensure responsiveness to diverse user needs.

Part 5.2 Emerging trends and innovations

- Digital transformation means integrating digital technologies into library services.
- Artificial intelligence is applied in LIS through personalised recommendations, automated indexing, and chatbots.
- Open access makes scholarly publications freely available online, while open science promotes transparency and collaboration in research.
- Libraries support scholarly communication by maintaining repositories, advocating for open access, and training researchers.
- Data science and big data are applied in LIS to track borrowing patterns, optimise collections, and design user-centred services.

Part 5.3 Global perspectives and challenges

- International collaboration is important because it enables resource sharing, knowledge exchange, and global innovation in LIS.
- Inequalities in information access arise from economic, technological, and social barriers.
- Libraries reduce barriers by offering free resources, digital literacy training, and targeted support for underserved groups.
- Cultural diversity shapes LIS services by ensuring collections and programmes represent multiple traditions and perspectives.
- Multilingual services are essential to inclusivity, allowing libraries to serve diverse global communities.

Part 5.4 Future directions for LIS practice and research

- Ethical issues from emerging technologies include privacy concerns, bias, and accountability.
- Sustainability in LIS involves responsible resource management and long-term access to information.

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- Inclusivity ensures services are accessible and beneficial to all users.
- Interdisciplinary research contributes innovation and relevance by combining insights from multiple fields.
- LIS research remains relevant by addressing global challenges through collaboration and diverse perspectives.

Part 5.5 Integration of interdisciplinary insights into LIS education

- Curriculum development is important because it prepares future LIS professionals with interdisciplinary knowledge and skills.
- Essential skills for interdisciplinary collaboration include communication, adaptability, and problem-solving.
- LIS graduates can be prepared for evolving roles through forward-looking education that integrates technology, social sciences, and ethics.
- Examples of new responsibilities include digital curation, data management, knowledge organisation, and community engagement.

References and Attributions [Series 5: Interdisciplinary Relations and Future Directions]

General references

- Definitions and explanations of key terms such as *digital transformation*, *artificial intelligence*, *open access*, *open science*, *data science*, *sustainability*, and *interdisciplinary approaches* were adapted from standard Library and Information Science (LIS) literature and open educational resources (OERs).
- Concepts relating to sociology, psychology, and communication studies were drawn from introductory texts in the social sciences and their application to LIS practice.

Illustrations (Figures, Plates, and Boxes)

- *Figure 5.1 LIS and education connections*: AI-generated using the prompt "Create a diagram showing LIS supporting schools, universities, and lifelong learning initiatives."
- *Plate 5.2 LIS and information technology linkages*: AI-generated using the prompt "Illustrate a modern library with digital catalogues, databases, and computer systems."
- *Box 5.1 Contributions of sociology, psychology, and communication studies to LIS*: AI-generated using the prompt "Generate a text box listing contributions of sociology, psychology, and communication studies to LIS."
- *Figure 5.3 Digital transformation and AI in LIS*: AI-generated using the prompt "Create a diagram showing digital transformation in LIS with catalogues, e-books, virtual services, and AI applications."
- *Plate 5.4 Open access and open science in LIS*: AI-generated using the prompt "Illustrate researchers accessing open access journals and repositories supported by libraries."
- *Box 5.2 Applications of data science and big data in LIS*: AI-generated using the prompt "Generate a text box listing applications of data science and big data in LIS including tracking, optimisation, decision-making, and user services."

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- *Figure 5.5 International collaboration in LIS*: AI-generated using the prompt "Create a diagram showing international collaboration in LIS with global networks, cooperative cataloguing, and cross-border research initiatives."
- *Plate 5.6 Addressing inequalities in information access*: AI-generated using the prompt "Illustrate a community library providing access to digital resources for underserved groups."
- *Box 5.3 Cultural diversity and multilingual services in LIS*: AI-generated using the prompt "Generate a text box listing cultural diversity and multilingual services in LIS including collections, programmes, services, and inclusivity."
- *Figure 5.7 Ethical issues in emerging technologies*: AI-generated using the prompt "Create a diagram showing ethical issues in emerging technologies including privacy, bias, and accountability in LIS."
- *Plate 5.8 Sustainable and inclusive information services*: AI-generated using the prompt "Illustrate a library with eco-friendly design and inclusive services for diverse users."
- *Box 5.4 Interdisciplinary approaches in LIS research*: AI-generated using the prompt "Generate a text box listing interdisciplinary approaches in LIS research including education, IT, sociology, and psychology."
- *Figure 5.9 Interdisciplinary curriculum development in LIS*: AI-generated using the prompt "Create a diagram showing interdisciplinary curriculum development in LIS with computer science, sociology, and education."
- *Plate 5.10 Skills for interdisciplinary collaboration*: AI-generated using the prompt "Illustrate LIS professionals collaborating with educators, technologists, and researchers."
- *Box 5.5 Examples of evolving roles in LIS*: AI-generated using the prompt "Generate a text box listing evolving roles in LIS including digital curation, data management, knowledge organisation, and community engagement."

Open Educational Resources (OERs) suggested for sourcing illustrations and further reading

- Search strings included: "library science education pedagogy OER," "library information technology computer science OER," "open access open science scholarly communication OER," "data science big data library applications OER," "international collaboration library science OER," "inequalities in information access libraries OER," "cultural diversity multilingual library services OER," "ethical issues emerging technologies library science OER," "sustainable inclusive library services OER," "interdisciplinary approaches library science research OER," "curriculum development library science interdisciplinary OER," "collaboration skills interdisciplinary library science OER," "evolving roles library science graduates OER."

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