



THEORETICAL AND PHILOSOPHICAL FOUNDATIONS OF LIS

LIS 111

Focus of LIS

- ⊠ LIS focuses on how information is:
 - Created
 - Organised
 - Stored
 - Retrieved
 - Disseminated for societal needs

Principles of LIS



- ⊠ Social Justice: concept of fairness and equality in a society to ensure equal rights
- ⊠ Intellectual Freedom: individuals' rights to seek, receive, and impart ideas without restrictions
- ⊠ Community Development: process of working together to create positive change and solve shared problems and improve quality of life

Sources of LIS Theories and Philosophy

- ⊠ Sociology
- ⊠ Psychology
- ⊠ Computer science

Key Concepts of LIS

- ⊠ Information behaviour:
- ⊠ Information retrieval
- ⊠ Information ethics
- ⊠ Philosophical questions about information itself

Key Theoretical Foundations of LIS

- ⊠ Information Behaviour & Use: theories explaining how individuals search, use and interact with information
- ⊠ Information Organization: theories behind classification, indexing, metadata and subject description
- ⊠ Information Retrieval: theories explaining the efficiency of and function of information systems

Philosophical Underpinnings of LIS

- ⊠ Nature of Information: information as a resource; its relationship to data and knowledge, and its impact on society
- ⊠ User-centredness: user needs, reduction of barriers to access
- ⊠ Intellectual Freedom and Ethics: freedom from censorship, privacy and equitable access
- ⊠ Social role of libraries: libraries as democratic institutions fostering education and information for all
- ⊠ Epistemology: process of knowledge construction and the role of the information professional

Modern Focus of LIS

- ⊠ Digital Transformation: adapting traditional principles to digital environments, database management, information architecture, and AI
- ⊠ Social Impact: addressing digital divides, promoting open access and understanding the societal implications of information technologies.

Common Theories of LIS

- A. Information Behaviour Theories/Models
 - i. Kulthau's Information Search Process (ISP)
 - ii. Wilson's Model of Information Behaviour
 - iii. Dervin's Sense-making Theory
 - iv. Social Cognitive Model of Information Seeking
 - v. Psychodynamic Model of Information Seeking
 - vi. Constructivist Model of Information Seeking

Kulthau's Information Search Process

- ⊠ Developed by Carol Kulthau
- ⊠ Information search process occurs in six stages:
 - Initiation
 - Selection
 - Exploration
 - Formulation
 - Collection
 - Presentation
- It highlights the emotional experiences during information seeking process and they create behaviours.

Wilson's Model of Information Behaviour

- ⊠ Encompasses how people interact with information
- ⊠ It starts with recognition of the need for information
- ⊠ Culminates to seeking information to meet the need
- ⊠ Developed by T.D. Wilson

Dervin's Sense-Making Theory



- ⊠ Focuses on how people try to make sense of things in specific contexts
- ⊠ Applicable to the use of information for making decisions
- ⊠ Useful in complex, uncertain or changing environment

Social Cognitive Model of Information Seeking

- ⊠ Developed by Fisher, Erdelez and McKenzie
- ⊠ Focuses on the impact of social factors on information seeking
- ⊠ Posits that information seeking is often a social activity influenced by the social environment, networks and societal norms of an individual

Psychodynamic Model of Information Seeking

- ⊠ Conceptualized by T.D. Wilson
- ⊠ Posits that emotional and psychological factors influence information seeking behaviour
- ⊠ Combines the concepts of psychology and emotional response to the the study of information behaviour

Constructivist Model of Information Seeking

- ⊠ Based on the the theory of constructivism.
- ⊠ Constructivism focuses on the role the individual in constructing knowledge through experience.
- ⊠ The model views information seeking as a process of knowledge-building where the individual actively seeks information to improve understanding and construct new knowledge.

Highpoints of Information Behaviour Theories

- ⊠ They provide insights into how information is approached and used.
- ⊠ They emphasize that information seeking is not simple process.
- ⊠ They present different viewpoints about how information need is initiated, how information is searched and assessed, and how individual and environmental factors influence information seeking behaviours.

Information Classification Theories

- These are frameworks for organizing data by categories.
- They include:
 - ❑ General classification theory that are frameworks for grouping objects based on similarities, differences or other criteria that are essential across knowledge
 - ❑ Information security classification for organising data by risk or sensitivity using the CIA triad (confidentiality, integrity, availability) to define levels of access such as Public, Internal, Confidential, Restricted, Secret, Top secret.
 - ❑ Library classification theory which focuses on organizing knowledge based on concepts like universe of subjects based on control vocabulary systems.
 - ❑ Facet analysis theory which breaks subjects fundamental categories (personality, matter, energy, space, time) for flexible classification

Application of classification theories

- **Information Security:** Classifying data to protect sensitive information (e.g., financial, health, national security).
- **Information Retrieval:** Structuring data for easier searching (e.g., libraries, databases).
- **Knowledge Organization:** Creating systems to map and organize the universe of knowledge

Information Retrieval Theories



- ⊠ These provide the foundational frameworks for identifying and returning relevant information to meet a user's needs typically from large, unstructured or semi-structured data collections.
- ⊠ They evolved from simple keyword matching to complex, semantic-based approaches incorporating AI and user-behaviour analysis.

Core Theoretical Models of Information Retrieval

- ⊠ **Boolean Model (Set-theoretic):** it is the earliest model, utilizing Boolean logic (AND, OR, NOT) for exact matching. It treats documents as sets of terms, offering high precision but lacking ranking capability
- ⊠ **Vector Space Model (Algebraic):** It represents documents and queries as vectors in a multi-dimensional space, calculating similarity using cosine similarity. It enables partial matching and ranked results based on term frequency-inverse document frequency (TF-IDF).
- ⊠ **Probabilistic Model:** It operates on the Probability Ranking Principle (PRP), which aims to rank documents by their probability of relevance. This model computes likelihoods based on term distribution, with BM25 (Best Matching 25) being a popular variant.

Core Theoretical Models of Information Retrieval

- **Language Models:** These treat retrieval as a statistical process, calculating the probability that a document model generates the query.
- **Cognitive and User-Centred Models:** These focus on the user's information-seeking behaviour and mental processes, such as the Anomalous State of Knowledge (ASK) model, which suggests users seek information when they realize their current knowledge is inadequate.
- **Hybrid Models:** Modern systems often combine multiple approaches (e.g., combining sparse, keyword-based retrieval with dense, semantic vector search) to balance efficiency and accuracy.

Features of Information Retrieval Models

- ⊠ They rely on the principles of precision (accuracy) and recall (completeness) to measure documents relevance to a search.
- ⊠ They use inverted index (metadata) to map terms to documents containing them for easy retrieval .
- ⊠ They arrange retrieved results according to their relevance to user input.
- ⊠ They use latent semantic indexing (LSI) to allow for retrieval even when terms do not match exactly.