# DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE

BHARATHIDASAN UNIVERSITY

TIRUCHIRAPPALLI-620024

## NAME OF THE PROGRAMME: M.LIB.I SC

## COURSE - 1.3: KNOWLEDGE ORGANIZATION (THEORY) - CLASSIFICATION AND CATALOGUING

## COURSE CODE: P24MLS3)

Unit-I : Universe of Knowledge: Structure and Attributes-Mapping of Knowledge/ Subject, Modes of Formation of Subjects,

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# Course - 1.3: KNOWLEDGE ORGANIZATION (Theory) - CLASSIFICATION AND CATALOGUING
# Course Code: P24MLS3

- **Unit-I**

  Universe of Knowledge: Structure and Attributes-Mapping of Knowledge/ Subject, Modes of Formation of Subjects,

- **Unit-II**

  Library classification Schemes; Need and Purpose, Schemes of Library Classification: Introduction – Structure, Approaches, Features of Library Classification Schemes, Salient Features and Application-CC ,DDC, UDC, L C; BSO- the Broad System of Ordering..

- **Unit–III**

  General theory of Library Classification: Devices of Zone Analysis; Normative Principles and their applications; Canons and Facet Analysis; Mnemonics; Fundamental Categories, Systems and Specials, Principles and Postulates of Helpful Sequence

# Cont..,

- **Unit–IV**

  Cataloguing: Purpose, structure, types including OPAC, Web OPACs, normative principles, Canons & Laws; Standard Codes of Cataloguing– CCC and AACR 2; Copy Cataloguing. Centralized Cataloguing, Co-operative Cataloguing, Cataloguing at Source, CIP and Union Catalogues; Standard codes of Cataloguing – ISBDs, (RDA) and (RDF).

- **Unit–V**

  Subject cataloguing–Subject Headings: Sears' List of Subject Heading,-LCSH, MeSH, SHE, Chain Procedure. Bibliographic Control–ISBD (G)and UBC.

- **Unit-VI**

  Trends in classification: Automatic classification, Classification in online system and Web; Knowledge Organization for Digital Libraries; Ontologies; Advancement study for LOC, Online DDC, Copy Cataloguing, IFLA and LC initiatives – FRBR, FRAD, FRSAD, BIBFRAME 2.0

# Basic Concepts and Terminology

**Subject**: Subject refers to 'an organized systematized body of ideas, whose extension and intension are likely to fall coherently within the field of interest and comfortably within the intellectual competence and the field of inevitable specialization of a normal person.

## Simple Subject

A subject consisting only of a basic subject idea.

**Example :** Chemistry, Mathematic, Physic etc

## Compound Subject

A compound subject is "a subject with a basic subject idea and one or more isolate ideas as components" (Prolegomena, P.84).

**Example :** In '**Chemistry of halogens**",

Chemistry is a **basic subject**

Halogens is an **isolate idea**.

## Complex subject

Complex subject is a "subject formed by coupling two or more subjects expounding, or on the basis of, some relation between them".

For example "**statistics for economists,"**

"**Influence of politics on science**,"

"**Difference between history and political science."**

## Micro subject

A subject of small extension and great intension, usually embodied in an article in a periodical, or in a part of a book (Ranganathan).

## Macro subject

A subject of great extension and small intension, usually embodied in a whole book single volume or multi-volume (Ranganathan).

## Micro document

A document, such as an article in a periodical or the part of a book, not having an independent physical existence.

## Macro document

Usually a book single volumed or multi-volumed.

# Facet

A generic term to denote any component – be it a basic subject or an isolate idea – of a compound subject and also its respective ranked forms, terms, and numbers.

A generic term to denote facet idea, facet term and focal number.

**Examples :**

Consider "Injuries to corn in France in 1978".

Injuries belong to the **disease facet**;

Corn belongs to the **cultivar facet**;

France belongs to the **geographical facet** and

1978 to the **time facet**.

A group of isolate identified on the basic of a singlr fundamental category**-Dr.SSR**

## Basic facet

Basic facet is a context specifying element.

**Examples:** 1.' Human disease"

Medicine is a **basic facet**.

2. 'Indian Libraries"

Library science is a **basic facet.**

## Isolate facet

Isolate facet can have the following components: personality, property, action, space and time

## Class Number

The class number of a book is a translation of the name of its specific subject into the artificial language of ordinal numbers

## Book Number

Ordinal number which fixes the position of a document in a library relative to the other documents having the same ultimate class.

## Collection Number

The collection number of a book denotes the collection to which it belongs.

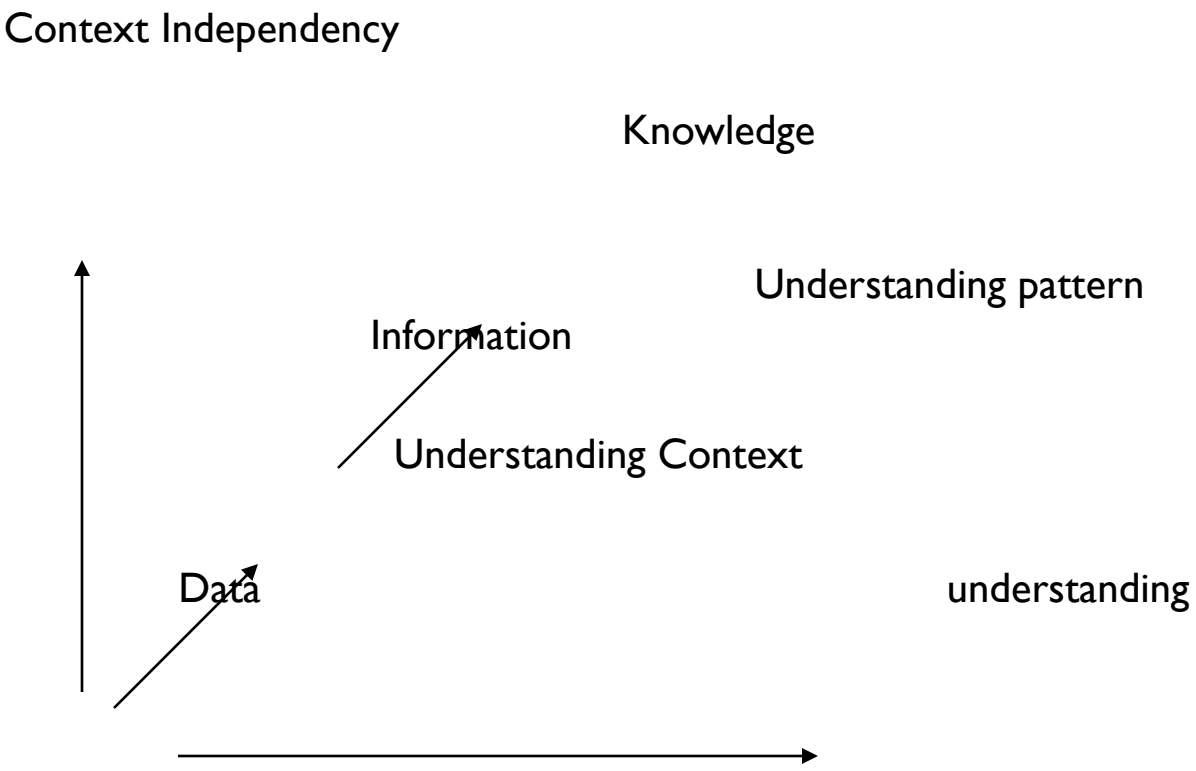
# Knowledge

- Knowledge was power-old paradigm
- Sharing Knowledge is power-Today
- Knowledge is relation between-
- Data,
- Information &
- Knowledge

# Relation of Data, Information & Knowledge

- Data-Information consist of data
- Data cannot become information as such, unless a context is added to the data.
- Data is nothing but facts.
- For example: Rama loved Sita is a fact, so it is a data. but we don't know who are "Rama" and "Sita" unless we know that "Rama is the son of Dasharatha" and "Sita is the daughter of Janaka". We know something about "Rama"and "Sita"the fact."Rama loved Sita" becomes information for us. That is why information is always "context dependent".

# Relation of data, Information and Knowledge



# Cont.,

- Data are viewed as objective by nature where as information is subjective and relative.
- Knowledge is a growth of data

# Differentiation of Information and knowledge

- Information and Knowledge

| ***INFORMATION*** | ***KNOWLEDGE*** |
|---|---|
| *Transient* | Durable, |
| *Specific* | General, |
| *Practical* | Theoretical, |
| *Subjective* | Objective, |
| *Context dependent* | Context independent |
| *Content of variable* | Relation to variable. |

# Cont.,

- The origin point of knowledge is data and it becomes information. when it is communicated with a meaningful way.
- The accumulated information in a particular area is known as “knowledge”.
- Meaning: knowledge is natured, experienced, value added, recorded information.

# Key Points of Knowledge

- It is an asset.
- It is value added.
- It is evidence based.
- It is never static.
- It is sharable.
- Knowledge begets knowledge.
- It passes from generation to generation

# Define

- Knowledge is the sum total of what is know to the society and has a greater value.

K
N → Result of learning

O → Action
W
L → value added behaviour
E
D → Focused Innovation
G
E → Pooled Expertise

# Define Knowledge

- Intellectual acquaintance with perception of fact or truth clear and certain mental apprehension, the fact, state or condition of understanding.
- Acquaintance with a branch of learning, a language or the life, theoretical or practical understanding of an arts science. Industry etc.
- To most of them knowledge is considered on what a person believes and states as his belief
- The simplest definition that is possible is the totality of ideas, conserved through human civilization

# Davenport and Prusak (1998)

- Knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experience and information.

# Types of Knowledge

- Explicit Knowledge
- Tacit Knowledge
- Shallow and Deep Knowledge
- Knowledge as Know-How
- Reasoning and Heuristic
- Common sense as knowledge
- From Procedural to Episodic knowledge
- Expert knowledge

# Cont…

- **Shallow knowledge**

  Is to determine whether it is shallow or deep. Knowledge indicates minimal understanding of the problem area.

- **Deep knowledge**

  Acquired through year of experience would be required to decide on such a topic .

# Cont.,

- **Knowledge as know-How**

Knowledge based on know – How are accumulated lessons of practical experience, is what is needed for building experts systems.

**Reasoning and Heuristics**

1.Reasoning by analogy: relating one concepts to another

2. Formal Reasoning: Using deductive and in deductive method

# Cont.,

- **Common sense as knowledge**

  All human beings possess in varying forms and in varying amounts.

  It is a collection of personal experiences and facts acquired over time and the type of knowledge that human tend to take for granted.

# Cont.,

- **Procedural Knowledge:**

  knowledge of how to do a task that is essentially motor in nature; the same knowledge is used over and over again

- **Declarative Knowledge**

  Surface information that is available in short-term memory and easily verbalized; useful in early stages of knowledge capture but lee\ss so in later stages.

# Cont.,

- **Semantic Knowledge**

  Hierarchically organized knowledge of concepts facts, and relationships among facts.

**Episodic Knowledge**

Knowledge that is organized by temporal spatial means, not by concepts of relations; experiential information that is chunked by episodes. This knowledge is highly compiled and autobiographical and is not easy extract or capture

# Universe of knowledge

- Universe of knowledge is a
  - multi-dimensional,
  - multi- direction continuum,
  - ever- changing and
  - ever- growing
- giving rise to new disciplines and broad area of knowledge and their subdivision.
- The development of knowledge has also caused a great threat to the libraries and the libraries and the libraries of today and also will cause more and more problems. If the knowledge is not properly organized

# Characteristics

- Infinite
- Continuum
- Turbulently
- Dynamic
- Multidimensional
- Cumulative and
- Coherent

# Infinite

- Knowledge has an endless growth.
- It is consistently growing.
- The universe of knowledge should be taken **to include all knowledge past, present and future. i.e. known as well as unknown knowledge.**
- Thus in the universe of knowledge as the number of entities known at any moment is finite,
- the number of entities not known at any moment is finite, and
- some of the entities in known at any moment are some to the known from time to time in the future.

# Cont..,

- What is already known in is infinitesimal and what to be known is infinite.

**Examples:**

- Biology, General biology, Cellular biology, Cancer logy, Microbiology,
- Bacteriology, Molecular biology, Biophysics and Biochemistry etc

# Continuum

- Universe of knowledge bends towards continuum always continuum means that which have continuity.
- **A set of entities is said to be continuous if it is packed that it is impossible to extricate any single entity from out of its neighboring ones.**
- No subject can be development without calling for some development in every other subject later.
- This inter subject interaction has become quite significant and every much accelerated during the present century.

# Cont..,

Now there exists:

- More than even before, scholars cultivating the universe of subject.
- Cultivation of subject is carried on at many points.
- There exist better facilities for quick dissemination and utilization of new ideas.

# Turbulently Dynamitic

- Universe of Knowledge has a dynamic quality.
- The boundaries of knowledge change with time.
- Thus at **any moment we may speak of future knowledge**. This is now only potential it is not knowledge at the moment.
- Universe of knowledge a dynamic continuum.
- **Dr. S. R. Ranganathan indicates the dynamic nature of universe of knowledge by measuring the rate of discoveries in a particular period and also the growth of research expenditure on a given period.**

# Cont..,

- Knowledge trends to be turbulently dynamic.
- **For example:**
- One fundamental law may exist for a short time or for a long time and a sudden out from that part may happen.
- The greater the strength of the fundamental law the more will be the turbulence.

# Manifold Multidimensional

- Manifold characteristic of universe of knowledge represents the quantitative growth of knowledge.
- Dimension is an indefinable term in respect of the universe of knowledge. "**Dimension is degree of manifoldness of a system fixed by the numbers of parameters necessary and sufficient to distinguish any one of its entities (or) parts from all others".**
- In the hierarchical structure there are three kinds of dimensions.
- They are **facet dimension, phase dimension and array dimension.**

# Facet dimension

- The facets of a subject are personality, Matter, Energy, space and Time.
- Facet dimension may be of personality, Matter, Energy, space or time. Consider the subdivisions of Zoology,
  - Invertebreta
  - Arthropoda
  - Insecta
  - Mollusca.., etc., from the dimensions of natural group.
- The dimensions of problem is formed by Ecology, physiology, etc.,

# Cont…,

- A dimension of space is got by the successive division of the subjects.
- Such as physiographical halite, land, mountain and so on.
- A subject may be of one dimension, two dimensions, and three dimensions and so on.

**For example**

- Zoology of Arthopoda - one dimensional
- Ecology of Arthopoda - Two dimensional
- Ecology of Arthopoda of mountains-Three dimensional

# Array Dimension

- Number of characteristics used in the formation of an array in equivalent to the number of array dimension.

| | | | |
|---|---|---|---|
| Universe | - | Dimension | 0 |
| World | - | Dimension | 1 |
| Continent Group | - | Dimension | 2 |
| Country | - | Dimension | 3 |
| State | - | Dimension | 4 |

# Phase Dimension

- Phase is the component of a complex subjects, phase can be a basic subjects.

**For example**

- Mathematics and Engineering.
- Normally **phases are two dimensions**.
- But **interaction of subjects resulting three or four dimensional phase** are also possible.

Example

- Economics bias to political and sociology.
- This is **three dimensional**.

# Cumulative

- The universe of knowledge is accretion.
- "Knowledge grows by cumulative process in which the new knowledge is dependent upon that already in existence and in which new knowledge is gradually accumulated.
- Hence the universe of knowledge has a cumulative characteristic.

# Coherent

- By coherence mean each and every element in the universe of knowledge in interrelated and a change in one element will affect the denotation of the whole.

**For example**

- In a compound subject having basic subjects, if the basic subject component is changed the subject denoted by the totality of ideas in it would lie completely different.

**For example:**

- Medicine female - Female Medicine
- Psychology, Female - Female psychology

# Multi directional

- The growth of knowledge occurs is many directions. Because of interdisciplinary approach a subject may have interaction with many other subjects.
- And this interdisciplinary, interaction of subjects takes place in different directions.
- For example: The subjects biology interacts with others subjects as shown in the fig me below resulting new subjects the
- microbiology, sociobiology, bioengineering, psychobiology, chemical biology etc.,

# Structure

- Dichotomy
- Tiracheotomy
- Dechotomy
- Polychotomy

# MODES OF FORMATION OF SUBJECTS

- **Fission**
- **Fusion**
- **Lamination**
- **Loose Assemblage**
- **Agglomeration**
- **Cluster**
- **Distillation**

# Fission

- "A basic subject or an isolate is split into subdivision."

**Fission of Basic Subject**:

The primary basic subject "Physics" may be fission into properties of Matter, sound, heat, light, electricity, magnetism, etc.

**Fission of Isolate ideas**:

An array division

As the combination of a principal isolate and a speciator.

.

# Cont..,

**Example:**

- Fissioning of the isolate idea "Asia" gives us array division such as Iran, India, Nepal Afghanistan and so on.

- "Bicycle-Hind Brand" is the combination of "bicycle" (principal isolate) and "Hind Brand" is a speciator

# Dissection

- "Dissection is cutting a universe of entities into parts of co-ordinate status even as we cut a slice of bread into strips. When its parts are ranked they form an array'.
- **Example**

**Universe of basic subject**

Life science

Botany agriculture zoology

# Cont..,

- **Universe of isolate ideas**

Agriculture plants

Feed plant Food plant Stimulant plant

# Denudation

- Denudation is the progressive **decrease of extension** and the **increase of intension** of a basic subject as an isolate idea.

# Cont..,

- Example:

**Universe of Geographic Area:**

World

Asia

India

Tamil Nadu

Madras

# Other Characteristic

- By Continent: Asia, Europe, Africa, America, Australia
- By Country: India, China, Japan, Persia
- By State: Tamilnadu, Kerala, Karnataka, Andhrapradesh
- By District: Madurai, Ramnad, Trichy, Thanjore
- By Taluk: Thirumangalam, Periyakulam, Usilampatti

# Fusion

- "Two or more primary basic subjects are fused together in such a way that each of them loses its individuality with respect to the schedule of isolates needed to form the compound subject going with it".
- **Examples:**

1. Bio Chemistry 2. Biophysics 3. Astrophysics 4. Chemical Engineering, 5. Geochemistry 6. Geology 7. Geopolitics, 8. Geophysics, 9. Bio Engineering and 10. Bio Mechanics etc.

# Lamination

- "Lamination is constructed by overlaying facet on facet, even as we make sand which by laying vegetable layer over a layer of bread".
- When the basic layer is a basic subject and the other layers are isolate ideas, a compound subject is formed. There are two kinds

# Lamination- Kind -1:

- "One or more isolate facet is combined with a basic subject. As a result this gives rice to a compound subject".
- **Examples** :

Agricultural in India

Agricultural is a basic subject

India is Isolate idea

# Cont…,

| **Basic Subject** | **Isolate Facet** | **Isolate Facet** | **Compound Facet** |
|---|---|---|---|
| Medicine | Eye | -- | Eye of Human body |
| Agricultural | Wheat | Disease | Disease of wheat in Agricultural |
| Library Science | Books | Classification | Classification of books in Library Science. |

# Kind 2:

- "Two or more species of basic subjects going with the same primary basic subjects are compounded over one another, giving rise to a compound basic subject".
- "Two ore more isolates from the same schedule of isolates are compounded, giving rise to the compound isolated".

# Examples

| Basic Subject | Basic Subject | Isolate Idea | Isolate Idea | Compound basic subject / Isolate |
|---|---|---|---|---|
| Wave Mechanics | Light | -- | -- | Wave Mechanics of Light |
| Quantum theory | Mechanics | -- | -- | Quantum theory of mechanics. |
| Kinetic Theory | Sound | -- | -- | Kinetic theory of sound. |
| -- | -- | Child | Abnormal | Abnormal Child |
| -- | -- | Lung | Hart | Lung and Hart |
| -- | -- | Rural | Women | Rural women |

# Loose Assemblage

- Loose Assemblage "is the assembling together two or more of subject (basic or compound) "

- **Kind I : (Inter Subject Phase relation)**

  "Two or more subject simple or compound are studied in their mutual relation".

# Example :

1. General relation between Botany and Agriculture
2. Mathematics Biased to physics
3. Physics compared with Engineering
4. Different between Botany & Zoology
5. 5. Influence of Religion on Education

# Kind 2 : Intra facet phase Relation

- "Two or more isolates from one and the same schedule are brought into mutual relations".
- **Example :**

1. Relation between Jainism and Hinduism
2. Bias of Bernard Shaw to Shakespeare
3. Comparison between Hinduism & Buddishsim
4. Different between child and adult
5. The influence of human physiology on disease

# Kind 3 : Intra Array facet phase Relation

- "Two or more isolates taken from one and the same array of order higher than one in one and the same schedule are brought into mutual relation".

# Example :

1. Relation between UDC and DDC
2. The bias of UDC toward DDC
3. CC compared with DDC
4. Differences between CC & DDC
5. The influence CC on DDC

# Agglomeration

- "Agglomeration is the process of collecting together of entities into larger means without cohesion among the components".
- It may be made up of consecutives constituents or non - consecutives constituents

# Example

| **Consecutive Basic Subject**: | **Non -Consecutive Basic Subject**: |
| --- | --- |
| 1. Natural Science | History and Economics |
| 2. Physical Science | Geology and Physics |
| 3. Biological Science | Medicine and Engineering |
| 4. Social Science | Agricultural and Engineering |

# Cluster

- “Cluster means bunch or concentration of a point .
- **Examples :**

**a) Area Study**

1. Indology (Indian Studies)
2. Sinology (Chinese Study)
3. Nipponology (Japanese Study)
4. Orientalia (Assian Studies)
5. Occidentalia ( European Studies

# Cont..,

- **b) Generalia Person Study**

1. Gandhiana (M.K. Gandhi as a focus cluster)
2. Leninism (Lenin as a focus cluster)

**c) Entity or Phenomena**

1. Soil Science (Soil as a focus of cluste
2. Surface Science (Surface as a focus of cluster)
3. Ocean Science (Ocean Science as a focus of cluster)

# Distillation

- "A pure discipline is evolved as a primary basic subject from it appearance – in – action in diverse compound subjects going with either different basic subjects or one and the same basic subject.

# Example:

1. Management Science
2. Research Methodolog
3. Statistical Analyses
4. Forestry
5. Astronomy
6. Microbiology