Block

3

INDEXING – SEARS LIST OF SUBJECT HEADING

UNIT 12
Structure of Sears List of Subject Headings (18th Edition) 5

UNIT 13
Keyword Indexing 20

UNIT 14
Chain Indexing (DDC – 19th Edition) 37
Introduction

Subject approach to information has always been a concern to libraries as it happens to be the major approach of users to access library collection and information. Subject cataloguing provides a verbal subject approach to the document collection of a library and subject indexing is used for retrieval of information. Subject catalogues suggest what the book or other document is about whereas, subject index provides verbal subject approach to the document at a micro level. Subject indexing includes subject cataloguing also. Without a proper indexing or indexes, search and retrieval of documents or information is virtually impossible. This block provides a practical training on different subject indexing processes.

This block has three units.

Unit 12 on Sears List of Subject Headings (18th Edition) covers the features principles of the Sears list and discusses the process of deriving subject headings.

Unit 13 on Keyword Indexing demonstrates preparation of entries in a keyword index with suitable examples.

Unit 14 on Chain Indexing (DDC- 19th Edition) provides a practical training on chain indexing process illustrating with the class numbers derived from DDC 19th edition.
UNIT 12  STRUCTURE OF SEARS LIST OF SUBJECT HEADINGS (18th Edition)

Structure

12.0 Objectives
12.1 Introduction
12.2 History of the Sears List
12.3 Features of the 18th edition
12.4 Principles of Vocabulary Control
12.5 Principles of the Sears List
  12.5.1 Specific Entry
  12.5.2 Direct Entry
  12.5.3 Common Usage
  12.5.4 Uniformity
12.6 Structure of the Sears List
  12.6.1 Parts of Sears List
  12.6.2 List of SHs
12.7 Grammar of the Subject Headings
12.8 Key Headings
12.9 Adding Subdivisions
12.10 Categories of Subject Headings Omitted
12.11 Limitations
12.12 Summary
12.13 Answers to Self Check Exercises
12.14 Key Words
12.15 References and Further Reading

12.0 OBJECTIVES

After reading this Unit, you will be able to:

- discuss the development and features of Sears List of subject heading;
- explain the principles governing the Sears list;
- understand the structure of the Sears List; and
- derive subject headings using the Sears List.

12.1 INTRODUCTION

The language as such is both affluent and poor in its vocabulary. The flexibility in our
day to day language allows conveying ideas in different ways. But to convey ideas in
science, academics and in serious business we need to convey in a straightforward
language devoid of all such luxuries. So is the requirement of our information retrieval languages. An uncontrolled language affects the precision of information retrieval due to retrieval of irrelevant material. Vocabulary control is a process to minimise the retrieval of irrelevant literature. For example, putting a query ‘bridge’ to a library catalogue or a search engine retrieves a lot of information that includes information on flyovers as well as the game bridge. Anyone interested in finding information on the game ‘bridge’ would have to further specify his query as ‘bridge (game)’ resulting into more meaningful recall. Vocabulary control involves the use of standardised names of subjects in databases/catalogues, etc.

The **Sears List of Subject Headings** (popularly called Sears List) is an example of a vocabulary control tool. It is used for assigning standardised subject headings to documents. Library of Congress Subject Headings (LCSH) is another example of a vocabulary control tool. The difference between the two is that SLSH is used in public libraries and small libraries having a collection up to 20,000 books whereas LCSH is useful for large libraries.

### 12.2 HISTORY OF THE SEARS LIST

It was first designed in 1923 by Minnie Earl Sears (1873-1933) to fulfill the demands of small American libraries for broader subject headings (SHs) for use in their dictionary catalogues. These libraries found **Library of Congress Subject Headings List (LCSH)** too big and specialised. Since then the Sears List has always been published by the H.W. Wilson Company, New York (Now the Company has been taken over by Ebsco) who are its proprietors and copyright holders. Its editor is an employee of the company.

Its new editions are produced regularly to:

- incorporate new subjects;
- restructure the form of old headings based on the changing information needs and information seeking behaviour of the users;
- give new terms to old subject headings based on current usage;
- delete the obsolete subject headings based on current usage; and
- discover new relations between subjects.

Orientation to the online electronic environment started with the 13th edition (1986). It was the first edition to be created as an online database for editorial use. It started changes in the form of de-inverting the inverted headings to suit searching OPACs and online databases. It was believed that majority of the library users search subjects in an electronic database under natural form of their names. For example, “Library, Public” was changed to “Public library”, similarly “Chemistry, organic” was changed to “Organic chemistry”. In the 15th edition (1994) edited by Dr. Joseph Miller de-inversion process was completed.

Another important change introduced since its 15th edition is its thesaurus format of listing subject headings using standard thesaural abbreviations, i.e. NT, BT, RT, USE and SA instead of the earlier x, xx and SA codes. Thesaurus format conforms to the ANSI/NISO (American Standards Institution) (1993). Nevertheless, Sears still remains a list of subject headings. It is not a thesaurus. The 18th edition (2004) has been edited by Joseph Miller in association with Ms. Joan Goodsell. Dr Miller retired in December 2012 after successfully editing six editions from 15th (1994) to 20th (2010). Its current editor is Ms. Eve Miller who has brought out the 21st edition in May 2014.
Self Check Exercises

Note:  
i) Write your answer in the space given below.

   ii) Check your answer with the answers given at the end of this Unit.

1) What do you understand by vocabulary control? State its principles.

....................................................................................................................
....................................................................................................................
....................................................................................................................
....................................................................................................................

12.3 FEATURES OF THE 18TH EDITION

Its philosophy is to accommodate change while maintaining continuity. There are about 500 new SHs in the 18th edition. Total number of preferred headings is likely to the tune of 8000, yet the number of headings that can be coined or subdivided is, as usual, much larger. Many of the new headings are suggested by the working librarians, bibliographic product vendors, and the specialists with the H W Wilson Company. It simply means the new terms are from the recently published literature. This is how its currency is maintained.

12.4 PRINCIPLES OF VOCABULARY CONTROL

Every system of controlled vocabulary is based on some principles regarding:

1) Choice of preferred headings (i.e. vocabulary used)
2) Levels of specificity of terms (Depth of subject analysis allowed)
3) Form and structure of preferred headings (Grammar of headings).

These issues make principles of the system and grammar of the headings (indexing language). Choice and structure of the headings is determined by user studies, information seeking behaviour, and the literary warrant. Level is determined by the strength of collection, level of users and above all by the library policy.

12.5 PRINCIPLES OF THE SEARS LIST

From the very beginning, as a matter of policy, the Sears List has always been based on the principles of the Library and Congress Subject Headings (LCSH) with certain modifications needed for simplification to suit small libraries. The principles of the Sears List are:

1) Direct and specific entry
2) Common (popular) usage
3) Uniformity and consistency

It may be noted these are the same principles which C.A. Cutter (1837-1903) gave in his famous Rules for a Dictionary Catalog (1873). These principles have been explained in Sears-18th edition (2004) on pages xvi-xx.
12.5.1 Specific Entry

It means a subject should be entered under its most specific heading, not under the class to which it belongs. For example, Lily should be entered under “Lilies”, not under “Flowers”. Duck is entered under “Ducks”, not under “Birds” or even “Water birds”. Similarly Lung cancer is entered under “Lung cancer” not “Cancer—lungs”. But specificity is a matter of relativity depending upon the strength of collection, levels of the users, and on the policy of the library.

12.5.2 Direct Entry

It means that the specific heading chosen should be entered directly instead of a subdivision. For example, “Ducks” entered as such instead of “Water birds—Ducks. Similarly, use “Lung cancer” instead of “Cancer—Lungs”.

12.5.3 Common Usage

The terms chosen as preferred headings should be from common usage. If a word has more than one spelling, then the popular ones are chosen for this purpose. (It may be noted Sears uses American spellings, but the Indian libraries should use British spellings).

It uses common and popular terms instead of scientific or technical terms or jargon.

Sears uses terms current among lay users. For example, it uses “Language disorders” instead of “Dysphasia”; “Cancer” instead of “Carcinoma”; and “Renaissance” instead of “Renascence”.

12.5.4 Uniformity

Using a list of subject headings brings in uniformity. Once a heading is chosen for use it should be used consistently and uniformly until a decision is taken to the contrary. It, however, does not mean that old terms cannot be changed or deleted, or new terms cannot be added. It is not a frozen system. Controlled vocabulary also changes and grows with time.

12.6 STRUCTURE OF THE SEARS LIST

Sears List is an alphabetical [word by word arranged according to ALA Filing Rules (1980)] general list of standard names of subjects in English language for use in small and medium size libraries. It provides subject headings for the entire range of knowledge.

The 18th edition (2004) has the following bibliographic details:


12.6.1 Parts of Sears List

It is in one volume divided broadly in two parts:

1) Prefatory and introductory part including the list of about 500 (common) subdivisions and the List of Key Headings.

2) Alphabetical list of subject headings in word-by-word order (by ALA filing rules, 1980) given in two columns on every page.

Introductory part describes brief history, and principles of the Sears List. But essentially it is a sort of an operation manual to use the List to select and use proper SHs. It also provides instructions to divide further the chosen SH, if needed; and to coin new SHs as per grammar of the Sears List.
12.6.2 List of SHs

Core of the system is the word by word alphabetical list of SHs. All the headings are of two types:

1) Non-preferred headings
2) Preferred headings
   - Subdivisions used to subdivide a preferred heading

A) Non-preferred Headings

These headings are those which are not to be used. Such headings are given in light type face print. These are usually variants or less popular synonyms of the preferred heading to which it directs the cataloguer. Against each such non-preferred heading is invariably given the instructions “USE” directing us to the preferred heading, e.g.:

- Earth- Magnetism
  USE Geomagnetism

- Genes
  USE Heredity

- Insurance, Group
  USE Group Insurance

- Feelings
  USE Emotions

- Cyclopedias,
  USE Encyclopedias and dictionaries

Obviously the SH following the word USE is always printed in bold face; and a full entry exists for such headings at its proper alphabetical place. To explain the above, we are not allowed to use the term “Cyclopedias”, instead we are directed to use the SH “Encyclopedias and dictionaries”

B) Preferred Headings

These are the headings which can be assigned to a document. These are printed in bold type face. Along with it is given the full entry with its DDC class number(s), scope or definitional note, if any, instruction for its further subdivision, and all the Narrower (NT), Broader (BT), Related (RT) terms. For example take the following simple entry:

Marketing (May subdiv. geog.) 381; 658.8

Use for materials on the principles and methods involved in the transfer of merchandise from producer to consumer. Materials on food buying are entered under Grocery shopping.

UF Distribution (Economics)
Merchandising

SA subjects with subdivision Marketing, e.g. Farm produce- Marketing (to be added as needed)
Indexing – Sears List of Subject Heading

| BT     | Business Management |
| NT     | Direct marketing   |
|        | Direct selling      |
|        | Telemarketing       |
| RT     | Advertising         |
|        | Selling             |

It means the following in practical terms:

- The SH Marketing (printed in bold type face) can be used as a heading. Its synonymous terms Distribution (Economics) and Merchandising are non-preferred terms and hence are not to be used as subject headings.

- “May subdiv. geog” in the parenthesis means this heading may be subdivided geographically (by a place name), e.g.:
  - Marketing - India
  - Marketing - Uttar Pradesh
  - Marketing - Lucknow

- 381 and 658.8 are its DDC numbers from the Abridged DDC-14 (2004).

- The three terms given against the abbreviation UF (Used for) are non-preferred (synonyms) of the heading used. For this, the cataloguers will have to make see references from these terms to the entry terms, e.g.:
  - Distribution (Economics) See Marketing
  - Merchandising See Marketing

- BT means (hierarchically) Broader Term. Its practical implication is to prepare “See also” entry from broader to the narrower terms above given as the preferred heading:
  - Business
    - See also Marketing
  - Management
    - See also Marketing

- NT means Narrower Term. These are subordinate terms to the preferred heading. For this we have to make see also references from broader to narrower terms.
  - That is make a cross reference from BT to all its NTs:
  - Marketing
    - See also
      - Direct Marketing
      - Telemarketing

**Never make any cross reference from NT to BT**
RT means related terms. These are the terms at equal level of hierarchy but are related with the entry in some way. Its practical implication is to prepare see also entries on reciprocal basis. For example in the entry

**Marine plants** (May subdiv. geog.) 579

---

---

RT  **Freshwater plants**

So we will prepare the following two entries for the RT:

**Freshwater plants**

*See also* **Marine plants**

**Marine plants**

*See also* **Freshwater plants**

Note: *See also* references are only made to the terms on which publications are available in the library. Otherwise it will be a misleading direction which is called a blind reference.

i) **Subdivisions**

Strictly speaking preferred headings are of two types. About 500 preferred SHs are used as direct headings as well as subdivisions to other headings. For example, Marketing is a heading and also used as a subdivision, e.g.

**Marketing— India**

**Television – Marketing**

**Periodicals** (May subdiv. geog.) 050

**Library Science – Periodicals**

**Geography – Periodicals**

### 12.7 GRAMMAR OF THE SUBJECT HEADINGS

Grammatically the SHs are of four types:

1) **Single nouns**: Christmas; Computers; Gardening.

2) **Compound headings**: Church and state; Occupational health and safety; National parks and reserves.

3) **Adjectives + nouns**: Christmas trees; Compressed air.

4) **Phrases**: Crimes without victims; Fathers of the church; Radio in education; Hearing in animals; Insects as carriers of disease; September 12 terrorist attacks, 2012.

Rules for singular and plural terms are quite clear: Abstract words which cannot be counted are in singular form: Ability, Success, Art.

Concrete words are always in plural form: Trees, Museums, Credit cards, Dams.
12.8 **KEY HEADINGS**

In the list all subjects are not listed. For some subjects models are given to coin SHs on that pattern. On the basis of these models analogous headings can be coined. Major key (or model) headings are:

- **Author**: Shakespeare, William, 1564-1616
- **Ethnic groups**: Native Americans
- **Country**: United States
- **State**: Ohio
- **City**: Chicago (Ill)
- **Language**: English language
- **Literature**: English literature
- **Public figures**: Presidents—United states
- **Wars**: World War, 1939-1945

It means, if we have a subject pertaining to any country we will look under the United States for a similar SH for that country, and then adapt the heading accordingly. Let us say our subject is

- **Geography of Japan**

We will look under the United States where an analogous headings is

- **United States – Geography**

So our SH will be

- **Japan – Geography**

Similarly, for

- **Gazetteer of Kerala**

We will look under Ohio, and adapt the heading:

- **Kerala – Gazetteers**

For historical buildings of Jaipur we will look under Chicago, and form the following headings:

- **Historic buildings – Jaipur**

For a book on “Biography of Chetan Bhagat” we will look under Shakespeare, William to get the following SH:

- **Chetan Bhagat, 1974 – Biography**

Similarly Marathi Grammar will get the heading:

- **Marathi language – Grammar**

Hindi Ucharan will get the SH

- **Hindi language – Pronunciation**
A Dictionary of Kannada literature will get the SH

Kannada literature—dictionaries

12.9 ADDING SUBDIVISIONS

Some of the SHs are already subdivided, while all the SHs in the list may be further subdivided by any of the about 500 subdivisions given on pages xlv-l of the Sears List to make a heading more specific:

- Science—Philosophy
- Science—Periodicals
- Girls—Education
- Trees—India
- Education—Bibliography
- Hindi literature—History
- Bible—Study and teaching
- India—History—1857-1947
- Mumbai—Description and travel
- Kolkata—guide books
- India—Maps
- Trucks—Fuel consumption

These subdivisions are either generally applicable to all the SHs or somewhat restricted in use suitable for a given category of headings. These subdivisions are like the standard subdivisions of the DDC (given in Table 1) which can be added anywhere without any specific instruction to use them. It may be noted that though the list of subdivisions is given separately, yet instructions to apply these subdivisions are given for each separately in the main list under that heading. For example, to use “Indexes” which is listed as a subdivision, we go to the main list (p. 376, Sears—18). There we find the instruction to use it as a subdivision under names of subjects:

- English literature—Indexes
- India—History-Indexes
- Newspapers—Indexes

As said earlier some headings are both a SH as well as a subdivision. It is due to the growing complexity of subjects and documents. For example, Bibliography is a SH as well as a subdivision.

There are four types of subdivisions:

1) Topical: Birds—Eggs
2) Bibliographical: Hindi language—Dictionaries
3) Geographical: Trees—India; City planning—Chennai
4) Chronological: India—History—20thCentury; Hindi literature—21stcentury
Self-Check Exercise

Note:

i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

2) What are on- preferred headings. Give example.

3) What are subdivisions? How are these applied?

........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................
........................................................................................................................................................

12.10 CATEGORIES OF SUBJECT HEADINGS OMITTED

As said earlier the Sears is a list/register of headings as well as it provides patterns and instructions to coin new headings for subjects. Paradoxically the headings which can be newly formulated from the Sears are much more in number than listed therein. Apart from those implied in the Key Headings these unlisted but coinable headings. Omitted headings mostly pertain to: Specific names of individuals, corporate bodies, associations, institutions, commercial organisations, processes, products, events, historical and mythical figures, natural and geographical entities (mountains, rivers, lakes), vegetables, fruits, animals, chemicals, and all creatures (living, extinct, or mythical). All these can form subject headings and are to be supplied by the cataloguers as per the instructions. All specific names are subject headings.

We can have the following subject headings though these are not listed in the Sears List:

Kapil Dev—Biography
Kurukshetra University—Administration
Prem Chand—Characters
Taj Mahal—Maintenance and repair
Urdu language—Dictionaries
Haryana—Boundaries
Himalayas—Geography
Ramayana—Quotations
Parrots—Eggs
Maruti Udyog Limited—Accounting
Punjab National Bank—Officials and employees
India—Bibliography
Sikhs—Canada
Beas (River)—Maps
Note: It may be remembered that literary books of fiction, drama, poetry, etc. will have no subject heading as these books have no subject. For example, Hamlet by William Shakespeare, or Gitanjali by Rabindra Nath Tagore will get no subject heading. But books on literary history and criticism will have subject headings.

12.11 LIMITATIONS

It may be noted that the Sears List is designed for American, Christians and Western Culture. It also uses American spellings, for example, “catalog” instead of “catalogue”. We can adapt it to use Indian/British spellings. For other cultures and countries it may not be wholly suitable. It has headings which have no relevance in India at the moment, e.g., Only child [family], Unmarried fathers, Teenage fathers. It does not have headings for Indic subjects and concepts. There is no heading specific for Caste system, Gurdwara, Sati, Child marriage, Dowry, Bride burning, etc. It has about sixty SHs on the Bible alone whereas on Vedas there is only one entry. Sikh scripture Guru Granth sahib has not even a single entry. For such subjects the Indian libraries will have to make their own SHs or modify and adapt the existing ones. For example for History of (Sikh) Gurdwaras in Punjab, we have to adapt the heading “Ohio—Church—History” to get Punjab—Gurdwara—History. Indeed, it makes the SHs work interesting, challenging and creative.

Self-Check Exercise

Note:  
i) Write your answers in the space given below.  
ii) Check your answers with the answers given at the end of this Unit.

4) Prepare cross references for the following entry

Elementary schools
UF Grade schools
BT Schools
RT Middle schools

.....................................................................................................................
.....................................................................................................................
.....................................................................................................................
.....................................................................................................................

12.12 SUMMARY

Vocabulary control is vital for efficient indexing and retrieval of subjects and topics in library catalogues, information retrieval systems and databases. Sears list is a tool for preparing subject authorities. First published in 1923 it was designed by Miss Minnie Earl Sears for providing standard subject headings in small libraries of about 20,000 titles. Its revised editions have been regularly brought out by its proprietary publisher H.W. Wilson Company, New York. You are using the 18th edition (2004) though its 21st edition has been published in May 2014.

Sears broadly consists of two parts: (1) Introduction (pp.i-li) containing preface, operational instructions and common subdivisions. (2) The core list (pp. 1-804). Introduction is essential for understanding for the location of right SH, and subdividing
Indexing – Sears List of Subject Heading

it further, if required. It also gives detailed guidance on coining headings not explicitly listed in the system. In the core part all sorts of headings since 1986 have been listed in word- by- word order according to ALA filling rules (1980). Headings are of three categories (1) Non-Preferred headings (2) subdivisions, and (3) Preferred headings. Non-preferred headings which are always printed in light type face are not used, but these headings lead the cataloguers to the preferred headings through the rubric “USE”. Preferred headings, which are used as SHs, are always given in bold (dark) print and form the full entry. The full entry apart from the preferred heading contains DDC class numbers, in some cases instructions to divide the heading geographically or the scope or definition note. These are followed by some headings signaled by the rubrics UF, BT, NT, and RT. These make coded instructions to prepare See and See also cross references. From the non-preferred headings (always printed in light type face) given against UF prepare See references to the (preferred) heading above. These are followed by headings (printed in bold face) preceded by UF, BT, NT and RT rubrics. These are coded instructions to prepare the cross references. From all the headings given against UF prepare See references to the heading above. For headings BT and NT prepare See also reference from broader to narrower heading. Never prepare a cross reference from narrower to broader term. For RT prepare See also reference both ways that is on reciprocal basis. Headings or terms given under “List of subdivisions provided for in the Sears List” (pp. xlv-l) can be used to subdivide any preferred heading. Seven key headings (p. xli) are model headings for their class which provide pattern to coin headings similar to them. Also as per general rule or as list (p. xl) subject headings can be minted for topical subjects, geographical places and specific names of persons or bodies, processes or events. The books in creative literature such as fiction, plays or poetry are given no subject heading. The list uses US spellings (even terminology) whereas Indian librarians should convert them to British spellings. The list was designed to cater to the western and US culture, but now there is a lot of guidance and substance in the system to adapt it for the subjects from other nations and cultures. In the Indian conditions it is equally suitable for college and public libraries.

12.13 ANSWERS TO SELF CHECK EXERCISES

1) Vocabulary Control: The act or process of formulating a set of select terms free of homonyms and synonyms and formulating rules for their combination (grammar) to generate standardised subject headings. The Sears List is a tool for vocabulary control. Vocabulary control is important for providing efficient subject access to information in libraries and databases and even in the use of search engines. Names of subjects must be standardised for use in subject catalogues and indexes, otherwise our information retrieval system will be chaotic, inefficient and costly.

Every system of controlled vocabulary is based on the following principles for (1) Choice of preferred headings (i.e. vocabulary) (2) Levels of specificity of terms (Depth of subject analysis allowed) (3) Form and structure of preferred headings (Grammar of Headings).

2) Non Preferred headings are terms or headings not used as a SH, and are usually variants or less popular synonyms of the preferred heading. These are always printed in light type face and direct the user to the preferred heading by the direction USE. For example, Civil disorder USE Riots

3) Subdivisions are terms or phrases added to a preferred SH with a dash to restrict its scope and make it more specific. There are four types of subdivisions: Topical, Form, Geographical, and Chronological. List of Topical and Form subdivisions is
given on pages xlv-l of Sears-18. These can be freely added to a SH where needed. Guidance for their use is also given individually in the main list under that term.

4) Grade schools See Elementary schools
Schools See also Elementary schools
Middle schools See also Elementary schools
Elementary schools See also Middle schools

12.14 KEY WORDS

Blind reference: : A reference to a heading on which material is not available in the library. It is a misleading reference and should not be prepared.

BT (Broader Term) : A thesaural code preceding the term hierarchically broader than the main heading. A See also reference is prepared from the BT to the heading, and for that reason to all the narrower terms (NTs).

Common Usage : A basic principle of subject cataloguing given by C A Cutter which states that among the synonymous terms the one most familiar among the users should be designated as preferred headings. Rest of the equivalent terms become non-preferred headings.

Consistency : Another principle of indexing which states that the form of heading once established should follow the same pattern in all other headings.

Currency : The principle which states that preferred heading should be current among the library users and should be taken from current and latest publications.

Direct Entry : It means a chosen heading should be made the access point, and not shown as subdivision of a class to which it belongs. Rose should be entered under “Rose” instead of Flowers-Rose.

Geographic Subdivision : A subdivision qualifying a subject by a geographical area, e.g. Trees—India. Here India is a geographic subdivision.

Key Headings : A set of model headings whose subdivisions can be used for any similar headings in that class. These are model headings to coin new headings not explicitly listed in the Sears List.

May subdiv. geog. : A parenthetical instructions which stands for “May be subdivided geographically”. It is a permission to subdivide that heading by a
Indexing – Sears List of Subject Heading

geographical area, if needed, e.g. Hotels and motels—Kolkata.

Non-preferred Heading: A term or heading not used as a SH, and is usually a variant or less popular synonym of the preferred heading. It is always printed in light type face.

NT (Narrower Term): A thesaural code proceeding the terms which are narrower (more specific) than the SH. A see also cross reference is made from the SH (BT) to the NTs.

Preferred Heading: A usable SH preferred over its numerous non-preferred equivalent or variant terms. It is always printed in bold type face. In the Sears List it is a main entry.

RT (Related term): A thesaural code preceding independent preferred terms which are related to or associated with entry the entry preferred term. For example, SH Classified catalogues is related to SH Library classification. A see also cross reference is made between the RTs on reciprocal basis.

SA: Abbreviation for See also is a suggestion to the cataloguers to consider broadly more specific and thus suitable terms for the documents. A few terms are always given after SA as examples.

Scope note: A note describing the scope and likely content of the entry. This note usually differentiate the SH from seemingly related, e.g. see under the SH Hymns (p..370) or Counting (p.189).

See: A reference directing the users from non-preferred heading to the preferred heading.

See also: In the public catalogue a suggestion to the library users to look for more related literature under the referred headings. A See also reference is made from a BT to NTs and also between RTs. It increases retrieval ratio.

Specificity: A specific subject heading which closely corresponds with the length and breadth of the document. Specific SH for a book on Roses is “Roses” not Flowers.

Subdivisions: A term or phrase added to a preferred SH with a dash to restrict its scope and make it more specific. There are four types of subdivisions: Topical, Form, Geographical, and Chronological. List of Topical and Form subdivisions is given on pages xlv-l of Sears-18. These can be freely added to a SH where needed.
Subject Heading

: Also known as a subject descriptor, it is a standardised key word, phrase or a string of terms usually concise to uniquely represent a subject. A SH is an element of Vocabulary Control.

UF (Used For)

: A sign preceding non-preferred headings in the main entry. A cataloguer has to prepare See references from non-preferred headings to the preferred heading.

Uniformity

: It is a principle of Vocabulary Control. Uniformity applies to the choice of term, its form, spellings and the entry element. The principle of uniformity makes Sears a single entry system as opposed to the multi-entry systems like the PRECIS and KWIC.

USE

: A direction following a non-preferred heading directing the cataloguer to use the preferred heading instead, e.g., Civil liberty USE Freedom.

Vocabulary Control

: The act or process of formulating a set of select terms free of homonyms and synonyms and formulating rules for their combination (grammar) to generate standardised subject headings. The Sears List is a tool for vocabulary control.

12.15 REFERENCES AND FURTHER READING


UNIT 13  KEYWORD INDEXING

Structure
13.0  Objectives
13.1  Introduction
13.2  Keyword Indexing – Concept
13.3  Structure and Format of Keyword Indexing
13.4  Indexing Process
13.5  Variants of Keyword Indexing
   13.5.1  KWIC
   13.5.2  KWOC
   13.5.3  KWAC
   13.5.4  KWWC
   13.5.5  KEYTALPHA
   13.5.6  WADEX
   13.5.7  DKWIC
   13.5.8  KLIC
13.6  Advantages and Disadvantages of Keyword Indexing
13.7  Summary
13.8  Answers to Self Check Exercises
13.9  Keywords
13.10 References and Further Reading

13.0  OBJECTIVES

After reading this Unit, you will be able to:
- explain the meaning of keyword indexing;
- describe the structure of keyword indexing;
- demonstrate the preparation of entries in a keyword index; and
- discuss the various versions of keyword indexing with suitable examples.

13.1  INTRODUCTION

Specialised indexes to technical literature are an accepted means for directing scientists to sources of information pertinent to their interest. Indexes based on the titles of documents or authors of the documents are a poor substitute for a micro-document. Limitations of titles as indicators of document contents or absence of terminology control leads to various problems in indexing micro-documents. The establishment of index entries is a matter of judgment and experience and constitutes a considerable part of the intellectual effort involved in the manual compilation of indexes. The accelerated pace of scientific development along with demand for speedier communication have accentuated to establish an alternative method of subject indexing. It is argued that such demand can be satisfied by using machine in the form of a series of extractions each containing a significant, or key word as its nucleus.
13.2 KEYWORD INDEXING – CONCEPT

Keyword Indexing is a system of indexing technique which uses the natural language for indexing keywords or significant terms of a title. Significant words are the words which have relatively high correlation with the actual thought contents of the documents. The concept was first given by Andrea Crestadoro in 1864 in the name of Keyword-in-Title (KWIT). There was another term, ‘catchword indexing’, which was used to refer keyword indexing during 19th century. British Books in Print used catchword indexing for quite a long time and the well recognised journal ‘Nature’ also used this technique to derive keyword entries for their journal articles. In keyword indexing, the generation of keywords is done without use of any vocabulary control device like thesaurus. The word chosen may be a single word, multiple words or even phrases that convey the contents. The significance of such keywords could be determined only by referring to the statement from which the keyword had been chosen. The statement acts as a modifier pointing up the more specific sense in which a keyword has been applied. Several keywords may be selected for a title to provide access from different access point of users. This principle has been applied in present days in various indexing systems with a slight variation. There are eight known variants of keyword indexing: KWIC, KWOC, KWAC, KWWC, KEYTELPHA, WADEX, DKWIC and KLIC.

13.3 STRUCTURE AND FORMAT OF KEYWORD INDEXING

An entry of a keyword index is in three parts:

a) **Keywords:** Subject denoting words or significant words which can be approach terms

b) **Context:** Remaining part of title serving as the context to the keyword.

c) **Identification or Location Code:** An identification number (usually the serial numbers of the entries in the main part) to provide location of the document where the document will be available.

13.4 INDEXING PROCESS

The overall process of indexing involves the followings steps:

a) **Choosing Keyword:** Keywords are chosen either from the title and /or abstract of the document. An indexer or an editor marks the significant terms and also marks words in the ‘stop list’. The stop-list is the list of words which are considered to have no significant value for indexing and no indexing entries need to be produced through those terms. These insignificant terms include articles (a, an, the), prepositions, conjunctions, pronouns, auxiliary verbs together with some general terms (like aspect, view-point, reference to, etc.). The larger this list, the fewer are expected index entries. The keywords thus selected serve as approach terms. For a document titled “Treatment of skin diseases by using Homeopathy”, the significant terms or keywords will be ‘treatment’, ‘skin’, ‘disease’, and ‘Homeopathy’ and the stop list will be ‘of’, ‘by’, ‘using’.

b) **Entry Generation:** Index entries in a KWIC index or any of its versions are generated in association with all of the words in the batch of titles that are not stored in the stop-list. The title is so manipulated that the keyword comes in the beginning (or in the middle) followed by rest of the title. The word is printed and
displayed ‘in context’, that is, together with the remainder of the title in which it appears. Each significant word is normally written in either in bold face or in capital letters. In this way, a single line entry, which includes title and source reference of some type, is produced for significant/keyword word in the title. In the above example there will be four index entries for four significant words and each of them coming in the beginning by rotation. The last word and first word of the title is separated by a symbol ‘stroke’ (/) or other symbol like asterisk (*) or equal (=). An identification number or reference number is provided at the right end of each entry to link one entry with other.

TREATMENT of skin disease by using Homeopath 133
SKIN disease by using Homeopath/ Treatment of 133
DISEASE by using Homeopath/ Treatment of skin 133
HOMEOPATHY/ Treatment of skin disease using 133

c) Filing: All the index entries are arranged alphabetically.

DISEASE by using Homeopath/ Treatment of skin 133
HOMEOPATHY/ Treatment of skin disease using 133
SKIN disease by using Homeopath/ Treatment of 133
TREATMENT of skin disease by using Homeopath 133

In the above example, the first words (disease, homeopathy, skin, and treatment) are the ‘keywords’. The part of the title followed by each keyword is the ‘context’. The number attached to every entry on the extreme right is the ‘identification code’.

Self-Check Exercise

Note:  
   i) Write your answers in the space given below.
   ii) Check your answers with the answers given at the end of this Unit.

1) What do you mean by keyword indexing?
2) What are the various elements of keyword indexing?

13.5 VARIANTS OF KEYWORD INDEXING

13.5.1 KWIC (Keyword –in- Context)

KWIC was developed by H.P. Luhn of IBM in the International Conference of Scientific Information held at Washington in 1958. This mechanised system is based on titles of documents indexed on the principle that title of a scientific document represents its contents. The significant words in the title indicate the subject of the document. The index is produced by rotating each significant term in the title at the beginning. The remaining part of the title also appears with each significant term to keep the context intact (in-context).
Keyword-in-context indexing may be carried out on various levels depending on the purpose that the index is to serve. The process may be applied to the title of an article, its abstract or its entire text. Keywords can be defined as those which characterise a subject more than others. To derive them, rules have to be established for differentiating between what is significant and non-significant. Since significant is difficult to predict, it is more practical to isolate it by rejecting all obviously non-significant or common words. Such words may include terms like ‘report’, ‘analysis’, ‘theory’ and the like, as well as conjunctions, prepositions, auxiliary verb etc. The remaining significant or ‘key’ words would be extracted from the text together with a certain number of words that precede and follow them. By making the keywords assume a fixed position within the extracted portions and by arranging these portions in alphabetic order of the keywords, the KWIC index is generated.

Let us take the title ‘Prevention of diseases of wheat caused by insects’ to demonstrate the index entries generated through KWIC principle. In this title ‘of’, and ‘by’ have no significance and ‘prevention’ ‘disease’ ‘wheat’ ‘and ‘insects’ are the keywords. While generating entries through KWIC, we have to keep in mind that every keyword should come as approach term. The remaining terms should be written in such a manner so that context of the document must be maintained intact. To maintain the context, stroke (/) should be placed in proper position so that searcher of the document can understand what the starting or ending point of the title is. Although, capitalisation, or making bold is the job of the machine, indexer has to identify the significant terms associated with the document. It is the job of the editor to mark the keywords before the title is punched so that the key puncher is able to tag them and instruct the computer.

**Diseases** of wheat caused by insects/Prevention of 13243
**Insects**/Prevention of disease of wheat caused by 13243
**Prevention** of disease of wheat caused by insects/ 13243
**Wheat** caused by insect/Prevention of disease of 13243

In the computer generated index, the keywords can be positioned at centre also.

Prevention of **DISEASE** of wheat caused by insects/ 13243
Disease of wheat **INSECTS**/Prevention of 13243
caused by
Wheat caused **PREVENTION** of diseases of 13243
by insects/
Of diseases of **WHEAT** caused by insect/Prevention 13243

Let us take another example. We have a document entitled ‘Monetary Policy of India’ with identification number 3642. The entry will be as,

**INDIA**/Monetary Policy of 3642
**MONETARY** Policy of India/ 3642
**POLICY** of India/Monetary 3642

Or
## Indexing – Sears List of Subject Heading

<table>
<thead>
<tr>
<th>Term</th>
<th>Identification Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policy of India/Monetary</td>
<td>3642</td>
</tr>
<tr>
<td>Of India/MONETARY Policy</td>
<td>3642</td>
</tr>
<tr>
<td>Monetary POLICY of India/</td>
<td>3642</td>
</tr>
</tbody>
</table>

We have another document entitled ‘Indexing of articles in medical library’ with identification number 24513. The entry will be as,

- ARTICLES in medical library/Indexing of 24513
- INDEXING of articles in medical library/ 24513
- LIBRARY/ Indexing of articles in medical 24513
- MEDICAL library/Indexing of articles in 24513

Or

- Indexing of ARTICLES in medical library/ 24513
- Medical library/ INDEXING of articles in 24513
- In medical LIBRARY/ Indexing of articles 24513
- Articles in MEDICAL library/Indexing of 24513

Let us take another example: Classroom behaviour of urban students in India with identification code 46135.

- BEHAVIOUR of urban students in India/Classroom 46135
- CLASSROOM behaviour of urban students in India/ 46135
- INDIA/Classroom behaviour of urban students in 46135
- STUDENTS in India/Classroom behaviour of urban 46135
- URBAN students in India/Classroom behaviour of 46135

Or

- Classroom BEHAVIOUR of urban students in India/ 46135
- In India/ CLASSROOM behaviour of urban students 46135
- Students in INDIA/Classroom behaviour of Urban 46135
- Of urban STUDENTS in India/Classroom behaviour 46135
- Behaviour of URBAN Students in India/Classroom 46135

In another example: ‘Online information storage and retrieval’ with identification number 66213. The entry will be as,

- INFORMATION storage and retrieval/Online 66213
- ONLINE information storage and retrieval/ 66213
- RETRIEVAL/Online information storage and 66213
In the above examples the context of the document remains intact in spite of that fact that four different approach terms appeared one-by-one at the first.

Self-Check Exercise

Note:  
1. Write your answers in the space given below.
2. Check your answers with the answers given at the end of this Unit.

3) What are various variants of keyword indexing?

4) Prepare index entries for title: Collection Development Policy in Academic Libraries of India through KWIC.

....................................................................................................................
....................................................................................................................
....................................................................................................................
....................................................................................................................

13.5.2 KWOC (Key-Word Out-of-Context)

KWOC is another version of keyword indexing, in which each keyword is taken out and printed separately in the left hand margin with the complete title to provide complete context. The identification number of document is written on the right.

For example, entry for the document ‘Prevention of diseases of wheat caused by chemicals’ under KWOC will be as:

DISEASES  Prevention of diseases of wheat caused by chemicals  13243

CHEMICALS  Prevention of diseases of wheat caused by chemicals  13243

PREVENTION  Prevention of diseases of wheat caused by chemicals  13243

WHEAT  Prevention of diseases of wheat caused by chemicals  13243

Sometime, keyword is printed as heading and the title is printed in the next line instead of the same line as follows.

DISEASES
  Prevention of diseases of wheat caused by chemicals  13243

CHEMICALS
  Prevention of diseases of wheat caused by chemicals  13243

PREVENTION
Prevention of diseases of wheat caused by chemicals 13243

**WHEAT**

Prevention of diseases of wheat caused by chemicals 13243

In earlier example: ‘*Indexing of articles in medical library*’ with identification number 24513. The entry will be as,

**ARTICLES**  Indexing of articles in medical library 24513

**INDEXING**  Indexing of articles in medical library 24513

**LIBRARY**  Indexing of articles in medical library 24513

**MEDICAL**  Indexing of articles in medical library 24513

Or

**ARTICLES**

Indexing of articles in medical library 24513

**INDEXING**

Indexing of articles in medical library 24513

**LIBRARY**

Indexing of articles in medical library 24513

**MEDICAL**

Indexing of articles in medical library 24513

If we have a document entitled ‘*Monetary Policy of India*’ with identification number 3642. The entry will be as,

**INDIA**  Monetary Policy of India 3642

**MONETARY**  Monetary Policy of India 3642

**POLICY**  Monetary Policy of India 3642

Or

**INDIA**

Monetary Policy of India 3642

**MONETARY**

Monetary Policy of India 3642

**POLICY**

Monetary Policy of India 3642

For title: *Classroom Behaviour of urban students in India* with identification code 46135, entries will be:

**BEHAVIOUR**  Classroom behaviour of urban students in India 46135

**CLASSRO**  Classroom behaviour of urban students in India 46135
For earlier example: ‘Online information storage and retrieval’ with identification number 66213, the entry will be as,

```
INFORMATION  Online information storage and retrieval  66213
ONLINE       Online information storage and retrieval  66213
RETRIEVAL    Online information storage and retrieval  66213
STORAGE      Online information storage and retrieval  66213
             Online information storage and retrieval  66213
```

In a true KWOC an asterisk appears in the printed title in the position of and instead of the keyword that features as heading. Following is an example which explains how asterisk appears in title while index entries are generated.

**ADULTS**

A description study of Indian * in North Indian Region.

**ADVANCED**
The * evolution of globular cluster stars.

The KWOC format preserves the title verbatim. But it fails to provide the convenient adjacent context which the KWIC format provided.

**Self-Check Exercise**

**Note:**

i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

5) Differentiate between KWIC and KWOC.

....................................................................................................................

....................................................................................................................

....................................................................................................................

....................................................................................................................

13.5.3 **KWAC (Key-Word Augmented-in-Context)**

KWAC also stands for ‘key-word-and-context’. It is the most improved version of KWIC. In many cases, title cannot represent the thought content of the document. The keyword of a fancy title (title which is not self expressive) can be a problem in the retrieval of relevant documents. In order to solve the problem of retrieving irrelevant documents, KWAC provides additional keywords, taken either from the abstract or from the original text of the document or its contents, and then inserted into the title to give further index entries. The meaning of ‘augmented’ here is ‘in addition to’. The CBAC (Chemical Biological Activities) of BIOSIS uses KWAC index where is enriched by another title-like phrase formulated by the indexer.

Let us understand the KWAC by an example: *African women in agricultural development.*

Here the concept ‘African women’, in reality, does not include all women of Africa but only the women of Sierra Leone. The main focus of the study is employment conditions of women in agriculture. After detailed study of the document, it came to light that ‘working hours’ is the central theme of the document. An indexer should augment these concepts in keywords for effective retrieval.

<table>
<thead>
<tr>
<th>Sierra Leone</th>
<th>African women in agricultural development</th>
<th>6452</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employment conditions</strong></td>
<td>African women in agricultural development</td>
<td>6452</td>
</tr>
<tr>
<td><strong>Working hours</strong></td>
<td>African women in agricultural development</td>
<td>6452</td>
</tr>
</tbody>
</table>

Similarly a title entitled: *The use of peer tutoring and programmed radio instruction* cannot be understandable unless the term *peer-tutoring* is explicitly indexed. Terms like *Educational radio, programmed instruction, non-formal instruction* are added to augment the actual concept of the document.

Let us take another example: ‘*Prevention of disease of wheat caused by insects*’ with identification number 13243. The entry will be as,

<table>
<thead>
<tr>
<th>Streak mosaic</th>
<th>Prevention of disease of wheat caused by insects</th>
<th>13243</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Arthropods</strong></td>
<td>Prevention of disease of wheat caused by insects</td>
<td>13243</td>
</tr>
</tbody>
</table>
Here, streak mosaic is the name of disease, arthropods are the insects causing the disease and the wheat variety on which this investigation took place is Malvika. So, we have to augment all these concepts into the original title to make it searchable.

In another example: Classroom behaviour of urban students in India with identification code 46135.

Discipline Classroom behaviour of urban students in India 46135
Boarding school Classroom behaviour of urban students in India 46135
Hostellers Classroom behaviour of urban students in India 46135
Metro Cities Classroom behaviour of urban students in India 46135

Here the term behaviour means discipline and this study was conducted for boarding school hostellers of metro cities. Unless these concepts are added the actual content of the document cannot be understandable and retrieval is also affected.

Let us take another example. We have a document entitled ‘Monetary Policy of India’ with identification number 3642. The entry will be as,

Reserve Bank of India Monetary Policy of India 3642
Recession Monetary Policy of India 3642
Interest Rate Monetary Policy of India 3642

Here monetary policy of Reserve Bank of India is main concern of the document. Among monetary policy ‘recession policy’ and ‘interest rate’ are concern areas of the document. So these concepts need to add while indexing the documents.

In another example: ‘Online information storage and retrieval’ with identification number 66213. The entry will be as,

Searching Techniques Online information storage and retrieval 66213
Indexing Online information storage and retrieval 66213
Digital Libraries Online information storage and retrieval 66213

‘Online information storage and retrieval’ is a very vague term and can be used for various other contents too. Here, the prime emphasis of the document is digital library scenario. So these concepts need to be added while indexing.

Self-Check Exercise

Note:  
   i) Write your answers in the space given below.
   ii) Check your answers with the answers given at the end of this Unit.

6) Why KWAC system is said to be an advanced version of KWIC?

......................................................................................................................................................
......................................................................................................................................................
......................................................................................................................................................
......................................................................................................................................................
13.5.4 KWWC (Key-Word-With-Context)

The key word with context is another version of KWIC, where only the part of the title (instead of full title) relevant to the keyword is considered as entry term. Sometimes, for clarity and delimitation of the scope of the subject, a secondary aspect of the scope of the subject is added to the primary aspect, separated by a punctuation mark. Keyword index of Indian Science Abstracts (ISA) used KWWC for its indexing. An example of KWWC is as follows for a title ‘Bacterial contamination in Indian distilleries using waste molasses’.

- Alcohol Fermentation / Effect of Bacterial contamination 963
- Bacterial contamination / Effect on Alcohol Fermentation 963
- Fermentation, Alcoholic / Effect of Bacterial contamination 963
- Molasses / Alcohol Fermentation ; Effect of Bacterial 963

Let us see another example: Implacability of distillation theory in radio frequency breakdown in isomeric liquid.

**Distillation theory**

- Implacability in radio frequency breakdown in isomeric liquid 667

**Isometric liquid**

- Implacability of distillation theory in radio frequency breakdown 667

**Radio-frequency breakdown**

- Implacability of distillation theory breakdown in isomeric liquid 667

13.5.5 KEYTALPHA (Key-Term Alphabetical)

It is permuted subject index that lists only keywords assigned to each abstract. In KEYTALPHA, only keywords are taken from title instead of full title. Keywords are arranged side by side without forming a sentence. The entry generation of a document entitled ‘Acquisition of journals in a university library in Japan’ will be as follows:

- Acquisition, Journals, Japan, Library, University 335
- Journals, Japan, Library, University, Acquisition 335
- Japan, Library, University, Acquisition, Journals 335
- Library, University, Acquisition, Journals, Japan 335
- University, Acquisition, Journals, Japan, Library 335

Considering with the earlier example of ‘Prevention of diseases of wheat caused by insects’ index entries will be:

- DISEASES, Insects, Prevention, Wheat 13243
- INSECTS, Prevention, Wheat, Diseases 13243
- PREVENTION, Wheat, Diseases, Insects 13243
- WHEAT, Diseases, Insects 13243

In another example: ‘Indexing of articles in a medical library’ with identification
If we have a document entitled ‘Monetary Policy of India’ with identification number 3642. The entry will be as:

INDIA, Monetary, Policy 3642
MONETARY, Policy, India 3642
POLICY, India, Monetary 3642

In another example: Classroom behavior of urban students in India with identification code 46135.

BEHAVIOUR, Classroom, India, Students, Urban 46135
CLASSROOM, India, Students, Urban, Behaviour 46135
INDIA, Students, Urban, Behaviour, Classroom 46135
STUDENT, Urban, Behaviour, Classroom, India 46135
URBAN, Behaviour, Classroom, India, Students 46135

For example: ‘Online information storage and retrieval’ with identification number 66213, the entry will be as:

INFORMATION, Online, Retrieval, Storage 66213
ONLINE, Retrieval, Storage, Information 66213
RETRIEVAL, Storage, Information, Online 66213
STORAGE, Information, Online, Retrieval 66213

Oceanic Abstracts Service is using this technique to derive indexing entries for their documents.

13.5.6 WADEX (Word and Author Index)

WADEX stands for Word and Author Index. It is an improved version of KWIC index where the names of authors are also treated as keyword along with significant subject terms and facilitates to satisfy author approach also. WADEX can be used for both retrospective and current search. Alphabetically sequenced entries are printed out of context. Words are single words or hyphenated word pairs or ‘tagged words’. WADEX is arranged in two columns, both columns printed simultaneously with dictionary entries at top and pagination at bottom by computer. It is used in ‘Applied Mechanics Review’. AKWIC (Author and keyword in context) index is another version of WADEX.

For example, a title entitled ‘Selected Water Resources Index for Wisconsin’, can be index through various terms like Wisconsin University, Madison Water Resources Center, Water resources, Water rights, Water supplies, Water treatment. Here Wisconsin University, Madison Water Resources Center is the corporate author of the title and
Water resources, Water rights are the significant terms of the title. So the index entry will consist of:

Wisconsin University Water Resources for Wisconsin 6636

Madison Water Resources Center Water Resources for Wisconsin 6636

### 13.5.7 DKWIC (Double KWIC) Index

It is another improved version of KWIC index. The keyword is extracted from title and regarded as main index term. The remaining words are rotated using a wrap-around format. In DKWIC index, specific search for two words in combination is possible. DKWIC indexes have most of the features, facilities and failures of KWIC and KWOC indexes. Entry for the title ‘The computer analysis of weather forecast’ will be:

**COMPUTER**

- Analysis of weather forecast - The* 36
- Forecast –The* analysis of weather 36
- Weather forecast – The* analysis 36

**ANALYSIS**

- Computer* of weather forecast -The 36
- Weather forecast -The computer* of 36
- Forecast -The computer* of weather 36

Entry term is indicated by asterisk (*) and is not repeated in the rotated titles.

### 13.5.8 KLIC (Key-Letter-In-Context)

KLIC was developed by Kent. This system allows truncation of word, instead of complete word. The truncation of titles, either at the beginning or at the end, can be specified and the computer will pick up any term containing that fragment.

The Chemical Society (London) published a KLIC index as a guide to truncation. The KLIC index indicates which terms any particular word fragment will capture.

**Self-Check Exercise**

**Note:**

i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

7) Prepare KWIC, KWOC and KWAC entries for title: “Classification and Cataloguing for Students”

8) Prepare a KEYTALPHA index entry for title “Role of Mass Media in eliminating illiteracy”

............................................................................................................................................................................
............................................................................................................................................................................
............................................................................................................................................................................
............................................................................................................................................................................
13.6 ADVANTAGES AND DISADVANTAGES OF KEYWORD INDEXING

Like every indexing system keyword indexing has its own advantages and disadvantages.

Advantages of Keyword Indexing

1) The main merit of keyword indexing is the speed and economy with which an index can be produced, owing to its machine origin. It has therefore, become feasible to issue keyword indexes at frequent intervals, perhaps monthly.

2) Absence of interpretation of contents leads to perfect consistency and predictability. If a word appears in the title of the document then it is certain that, unless the word is in the stop-wordlist, an entry will be generated under that word. There is no possibility of inconsistency in the allocation of terms in such systems as there is with human indexers. No scope for error or dispute exists.

3) In the knowledge-based economy, human intellect has become costlier day-by-day and difficult to find. It does not require intellectual effort or trained indexing staff as it is produced by computer. The computer interfiles the entries from a number of batches of input and prints the cumulative index.

4) Today most user search document by title rather than its author. Keyword index is very useful for such use.

5) Keyword-in-context permit the cross correlation of subjects to an extent not realisable by conventional procedures.

6) Now a days the authors, especially in the field science and technology use representative and meaningful titles which express the contents of documents. So use of keyword indexing leads to better results.

7) Keyword indexing satisfies the current approaches of users.

8) There is no need of vocabulary control devices to handle indexing.

Disadvantages of Keyword Indexing

1) It is good for science and technology but not effective in the field of humanities and social sciences, where no controlled vocabulary is used.

2) It depends on title of the document. If the title is not representative the system will become ineffective, particularly in humanities and social science subjects. For example what conclusions about subject content can you drawn from the title like: ‘Black money white power?’ or ‘Integration: for and against’. There is some evidence to suggest that titles are becoming more informative, but titles will always be limited in the amount of information that they can convey.

3) KWIC is normally produced by computer and the format is of fixed field length. Due to this fixed field length, part of the title is truncated when the title is lengthy. This truncation leads to funny results far away from context.

4) Scattering of related terms occurs because of alphabetical arrangement. Search of a topic may have to be done under several keywords. It takes very high search time. Several pages of entries under one information for some documents to be rapidly rejected. Sub-arrangement at entry terms can break down long sequences of entries listed under the same keyword.
5) Searchers very often face to high recall and low precision.

6) It is ineffective for exhaustive approach for a large collection.

**Self-Check Exercise**

**Note:**

i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

9) Identify any two advantages of keyword indexing?

10) Name two Indian integrated library management Software that use keyword indexes while preparing index entries.

.....................................................................................................................
.....................................................................................................................
.....................................................................................................................
.....................................................................................................................

**13.7 SUMMARY**

Keyword index may offer various advantages including that of performing well for retrieval of information in computer environment. In fact, it is one of the most widely used indexing services in Online Public Access Catalogues. Various integrated library management software like LIBSYS and NewGenLib use this technique for their OPAC services. However, one has to keep in mind that machine products can never reach the level of perfection that humans are capable of and that there will always be residual effort left for humans.

Keyword indexing is based on significant words and arrangement of these keywords is done alphabetically. So, related and identical subjects are scattered throughout the index file. Because of no reference system is used for connecting two related terms, synonymous terms, singular and plural form of terms, alternative spellings, etc. the users should search under all possibilities to identify documents.

**13.8 ANSWERS TO SELF CHECK EXERCISES**

1) Keyword indexing is a process of indexing where indexer prepares entries by choosing significant words or keywords of a document. The significance of such keywords could be determined only by referring to the statement from which the keyword had been chosen. The statement act as A modifier pointing up the more specific sense in which a keyword has been applied. This indexing is mostly based on natural language and no human intellect is essential for preparing index entries. The concept was first launched by Andrea Crestadoro in 13856 in the name of Keyword-in-Title (KWIT).

2) The entries of Keyword indexes are one line three parts:
   a) Keywords: Significant or subject denoting words which can be as approach terms
   b) Context: Remaining part of title serve as the context to the Keyword.
   c) Identification or Location Code: An identification number (usually the serial numbers of the entries in the main part) to provide location of the document where the document will be available.
There are eight known variants of keyword indexing has been developed: KWIC, KWOC, KWAC, KWWC, KEYTELPHA, WADEX, DKWIC & KLIC.

Collection Development Policy in Academic Libraries of India/ Academic Libraries of India/ Collection Development Policy in India/ Collection Development Policy in Academic Libraries of India.

In KWIC, index entries are prepared on the basis of keywords available in the document. Sometime key term of an title is not clearly reveals the subject of the document. For clarity and defining the scope of subject, a secondary aspect of the scope of the subject is added to the primary aspect. In KWAC, indexer chooses keyword by reading the title, abstract or contents of the document. The flair of indexer is important in choosing terms in KWAC. Although, preparation of entries through KWAC bit difficult than KWIC, the precession of KWAC is much more higher than KWIC.

The KWAC provides for the enrichment of the keywords of the title with additional significant words taken either from abstract of the document or its contents. In KWIC such additional significant words are not chosen instead it select keyword as it is available in title. So, making document more searchable with high satisfaction ration KWAC can be said to be as advanced version on KWIC.

KWIC:

For Indian. Classification and Cataloguing Classification and Cataloguing for Indian Cataloguing for Indian.

KWOC:

Classification and Cataloguing for Indian Cataloguing for Indian.

KWAC:

Classification and Cataloguing for Indian Cataloguing for Indian.

Eliminating, Illiteracy, Role, Mass Media, Illiteracy, Role, Mass Media, Eliminating, Illiteracy, Role Role, Mass Media,

Eliminating, Illiteracy

Simplicity and Cost are two very common advantage of keyword indexing.

Name of Indian Integrated Library Management Software that are using Keyword Index while preparing Index entries.
LIBSYS and NewGenLib are two Indian software using keyword indexing while preparing index entries.

## 13.9 KEYWORDS

**Keywords**

Important Word or words having relative importance of the title.

**Context**

The parts of something written or spoken that immediately precede and follow a word or passage and clarify its meaning.

## 13.10 REFERENCES AND FURTHER READING


UNIT 14  CHAIN INDEXING (DDC – 19th EDITION)

Structure
14.0  Objectives
14.1  Introduction
14.2  Classified Catalogue
   14.2.1  Problems of Subject Cataloguing
14.3  Advent of Chain Indexing
   14.3.1  Mechanism of Chain Indexing
   14.3.2  Step by Step Method
   14.3.3  Working with the DDC
   14.3.4  Preparation of Class Index Entries (CIEs)
   14.3.5  Chain Indexing for a Dictionary Catalogue
   14.3.6  Advantages of Chain Indexing
   14.3.7  Limitations and Problems of Chain Indexing
14.4  Summary
14.5  Answers to Self Check Exercises
14.6  Keywords
14.7  References and Further Reading

14.0  OBJECTIVES

After reading this Unit, you will be able to:

- highlight the problems of deriving subject headings from a readymade list;
- discuss the advantages and problems of chain indexing;
- prepare class index entries for a classified catalogue;
- apply chain procedure to a dictionary catalogue;
- use chain procedure with the DDC; and
- discuss the advantages and limitations of chain indexing.

14.1  INTRODUCTION

Library cataloguing is broadly divided into two categories: Descriptive Cataloguing and Subject Cataloguing. Descriptive cataloguing or is now ISBD based for which rules for description of documents are provided by many international codes such as the AACR 2-1978+. Classified Catalogue Code (CCC) (5th ed. 1964) developed by S R Ranganathan is not based on ISBDs for descriptive cataloguing. Descriptive cataloguing which satisfies author, collaborators, title and series approach to library documents, provides full bibliographic description of the documents for their identification and choice. The second process of cataloguing is called Subject Cataloguing. It serves another major and important function of a catalogue i.e., to serve the subject approach to the documents and help to know what a library has on a given subject. It serves the unknown
Indexing – Sears List of Subject Heading

item approach to library documents whereas the descriptive cataloguing helps to retrieve a document of which either author, title, collaborator or series is known. In a dictionary catalogue this approach is served by subject headings assigned to a given document either as key words derived from its title/summary or given from a separate tool such as a standard list of subject headings, or a subject thesaurus. Subject headings can also be derived by a procedure such as Precis (by Derek Austin) POPSI (by G. Bhattacharyya) Cyclic Indexes (such as by T. Craven) or by Ranganathan’s Chain Procedure. The process of formulating and assigning subject headings and preparation of subject added entries is known as subject cataloguing.

14.2 CLASSIFIED CATALOGUE

A classified catalogue has two parts; classified part and alphabetical part. The main part is the classified part in which all (main) entries are arranged by the call numbers of the system used. It means here the main arrangement of entries and subsequent access is by subject. Subject approach is mostly completed in two stages. Since the lay users are not familiar with the nuances of the classification scheme, so an alphabetical approach is essential to the main part. Hence, a classified catalogue is always bipartite. It has aptly been said that words are the ultimate key to information retrieval. For alphabetical subject approach to the main part, Ranganathan has formulated Class Index Entries which are termed as Subject Added Entries in a dictionary catalogue. Subject Headings for the Class Index Entries in the alphabetical part are derived by a procedure now known as Chain Indexing.

14.2.1 Problems of Subject Cataloguing

C.A. Cutter (1837-1903) first provided systematic guidelines for subject cataloguing in his famous work, Rules for a Dictionary Catalog (1876, 3rd ed. 1903). Apart from that, pioneers like Julius Otto Kaiser (1868-1927) also formulated basic but simple rules for subject indexing. To bring uniformity and consistency in subject cataloguing some readymade lists of standardised subject headings were prepared. The pioneer among them are ALA List of Subject Headings and the voluminous Library of Congress Subject Headings (LCSH) for big and research libraries and then came the Sears List of Subject Headings (SLSH) in 1923. The latter two lists are still popular.

But it has been observed that no authoritative and consensual rules have been formulated for subject cataloguing to overcome the problems it usually poses. Subject cataloguing, being a highly intellectual work, is a field full of uncertainties. J. Mills (1992, p.307) aptly writes “The failure of cataloguers to develop a consistent and coherent theory of alphabetical subject cataloguing is a notable feature in the history of cataloguing…”.

Here there are no concrete and unambiguous rules like the rules given in AACR 2. It is a work of flair at best. Indeed, it is a work of skill and intelligence. Many librarians find it difficult to design subject catalogue due to lack of expertise.

Ranganathan considered the subject headings in dictionary catalogues illogical and quite ineffective, and saw no justification in continuing the use of headings that way. The subject headings lists give us only choice among synonymous terms, and some current concepts are always missing, as if by default. But such lists do not present any uniform rule nor help in selecting more specific headings. No help is provided in eliminating the wrong headings. Identical materials may get entered under different headings and the users/cataloguers are led to different paths. Moreover, all such lists are heavily biased towards the country and culture of their origin. The indexers in other countries have to make many adaptations and additions to use them. Hence, there is a widespread dissatisfaction with the subject headings on account of numerous drawbacks.
In many cases the cataloguers will not be certain as to under which headings the user would approach. See and See also references make the catalogue bulky, thus increasing the cost of cataloguing, especially in manual catalogues.

14.3 ADVENT OF CHAIN INDEXING

In his *Theory of Library Catalogue* (1938) Ranganathan introduced Chain Procedure to derive subject headings for alphabetical part of a classified catalogue. From a hit or miss method, assignment of subject headings became a sure and almost mechanical method. It is an economic, cleverly simple, but ingenious method of mechanically deriving subject headings from the class number of the document itself. It completely eliminates the endless permutation of components of a heading in cyclic methods. Ranganathan claims in his *(CC 5th ed, p. 30)* that its advantages due to economy are being appreciated all over the world. British National Bibliography (BNB) and the Indian National Bibliography (INB) have been its major users.

14.3.1 Mechanism of Chain Indexing

A hierarchical class number consists of linked digits which can be unravelled in a chain of verbal terms to show back each link. In this context a chain may be defined as a hierarchical string of terms obtained by retranslating the meaning of each digit of the class number into a natural language. It is the reverse process of reverting back to the verbal plane from the notational plane. In the unravelling of the chain we proceed from general to specific, i.e. in the PMEST order if using the CC. But the corresponding component terms get automatically arranged from specific to general to maintain the context. Each step in the unravelling of the chain is called a Link. So there are as many links in the chain as the number of digits in the class number. A digit is any distinct symbol, whether semantic or indicative of the facet or phrase. For example 500.2 *Physical Science* (DDC-19 edition) has five digits in all. The first digit makes the First Link. The first two digits make the Second Link. The Last Link is the closing link of the chain which emanates from the full class number. Apart from these two links a few more links in the chain have been identified and formally defined by Ranganathan in his CCC 5th 1964, Chap. KB, pp. 287-289. These are:

**False Link**

A link which emanates from a non-semantic digit that is an indicator digit. This is either a punctuation mark (in the CC) or the digit 0(zero) or a . (dot). Such a link does not represent a subject but is indicator of the type of facet to follow. Ranganathan also designates the Time Facet as a False Link as it may not correspond to some verbal heading (CCC-5th ed., Rule KB Number 5, p. 288).

In context of the DDC the statutory filler zeroes, to make the number of digits to a minimum of three digits, will also be considered False Links. The dot after the third digit and the initial zero in a standard subdivision are false links. For example, take the following chain for the Class Number 500.2

<table>
<thead>
<tr>
<th>Digit(s)</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Natural Science</td>
</tr>
<tr>
<td>50</td>
<td>False Link</td>
</tr>
<tr>
<td>500</td>
<td>False Link</td>
</tr>
<tr>
<td>500.</td>
<td>False Link</td>
</tr>
<tr>
<td>500.2</td>
<td>Physical Science</td>
</tr>
</tbody>
</table>
But the two most important links of practical use are: Unsought and Sought Links.

**Unsought Link**

It is a substantive heading on which either there is no published material or a user is unlikely to ask or look for material on that subject in the library. But it is not anything absolute and may differ from library to library. It may depend upon the factors listed in the CCC itself (KB3, p. 288). To simply summarise, it varies on the local situation depending upon:

a) Library users’ interests and needs, and  
b) Level and kind of services provided by the library.

Hence each library has to make a policy on what and how to define and designate Unsought Links.

**Tips for Students**

The sorting out of Sought or Unsought Links requires experience and knowledge of the subject. It needs flair, too. However, for students like you there is a simple mantra to decide the issue: put a question to yourself “Is any library user likely to ask material on this topic”. If the answer is yes, then treat it a Sought Link; if no, it might be an Unsought Heading. Some cases may be on the fence seemingly belonging to both sides. In such cases give the benefit of doubt and treat that as a Sought Link. Anyhow, this sort of judgement can only be learned with error and trial, which takes time.

**Sought Link**

It is a link which is neither false nor unsought. Some library user is most likely to ask some material on it. The first link is always a sought heading. The last link too is a sought heading if it does not end with a Time Facet. A link from the Time Facet is a False Link. Each Sought Heading generates one Class Index Entry. Thus, the number of class index entries depends upon the number of sought headings in the chain.

**Upper Link**

It could be any link other than the last link. It is relative like the broader/narrower terms. An upper link for one may be lower link for other. For example:

<table>
<thead>
<tr>
<th>Class Number</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>954</td>
<td>History of India</td>
</tr>
<tr>
<td>900</td>
<td>History</td>
</tr>
<tr>
<td>950</td>
<td>Asia, History</td>
</tr>
<tr>
<td>954</td>
<td>India, History</td>
</tr>
</tbody>
</table>

Here, 950 is the Lower Link for 900, while for 954 it is the Upper Link.

**Lower Link**

A link next to its upper link. In the above example 950 is the lower link of 900 while 954 is an upper link of 950. The last link has no lower link.

**Missing Link**

It is a bypassed link which occurs in an un-modulated chain. It is an invisible link without its rightful upper link.
14.3.2 Step by Step Method

Chain indexing was devised to prepare class index entries for a classified catalogue. According to Rules KSD (CCC, Ed 5, pp 327-334) subject heading for a dictionary catalogue can also be derived by Chain Indexing. According to Professor G. Bhattacharyya (1936-2006) a close associate of Ranganathan, there are eleven steps in deriving subject headings from a class number and subsequently preparing class index entries. But these eleven steps also include the steps for synthesising the class number from a Raw Title. Here, we will only learn to derive class index entries from a given class number. The chain indexing was designed for CCC (first published in 1934) and the classification used for this purpose was CC (first published in 1933). Later especially in 1950 it was found that chain indexing can also work with any hierarchical classification system. We will make use of DDC, 19th edition (1979) to illustrate the working of chain indexing.

Self-Check Exercise

Note:  i) Write your answers in the space given below.
      ii) Check your answers with the answers given at the end of this Unit.

1) What is subject cataloguing?
2) Define a Sought Heading. How is a Sought Heading identified in the chain?

14.3.3 Working with the DDC

It is not easy to work out chain indexing with a system such as the DDC due to its many cognitive and structural defects. The DDC aims at only grouping of subjects rather than to individualise each document on the shelves as aspired by the CC. However, the DDC being largely a hierarchical scheme, is amenable to chain indexing with some modifications and concessions.

Core Steps

- Make the First Link from the first digit which is always a main class digit and provides the anchoring context to the latter headings.
- Make the second link from the first two digits, and the third from the first three digits and so on till the last digit of the whole class number.
- Write the links vertically one below the other in two columns. Class number digit(s) on the left and corresponding verbal heading as taken from the schedules on the right—latter preceded by an equal to sign.
- Always qualify the terms in the new link by the terms of the upper link to maintain the full context.
- Supply heading for the missing link, if any.
- Categorise all the headings into Sought Headings(SH) and Unsought Headings(USH)
Against any False Link write FL without writing the terms of the upper link.

After solving all the links of the chain pick up all the Sought Links and arrange them in the specific to general order. It simply means start picking the sought links from the last sought link in the chain and move upward to the first link which is listed last in the sorted and arranged Sought Headings.

Sought Headings may be edited by the indexer to make the terms bit tidy by removing the intervening terms which are no more needed to keep the headings in context. Ranganathan allows the use of an axiomatic phrase if it exists to replace the whole heading to make it brief and cryptic (Rule KD3, CCC-5, p. 300).

Examples

Let us learn the procedure with the help of examples given below.

Title

History of India during the Mogul King Shah Jahan.

Class No. 954.0257

Chain:

954.0257 History of India during the Mogul King Shah Jahan
900 = General Geography and History, etc. (USH)
930/990 = History (SH)
950 = Asia, History (SH)
954 = India, Asia, History (SH)
954. = False Link
954.0 = False Link
954.02 = Asian Dynasties, India, History (SH)
954.025 = Mogul Empire, India, History (SH)
954.0257 = Shah Jahan, Mogul Empire, India, History (SH)

Now, the sought headings are sorted in the following order along with some editing of the headings.

Shah Jahan, India, History 954.0257
Mogul Empire, India, History 954.025
Muslim period, India, History 954.02
India, History 954
Asia, History 950
History 930/990

You may note the replacement of heading for 954.02, and also insertion of heading 930/990 for History which is a sort of missing link.

14.3.4 Preparation of Class Index Entries (CIEs)

It may be noted that a CIE is not a bibliographic entry but a reference. It does not refer
to any specific publication. It is about the reading materials or topics enshrined in various
documents in the library. It has three parts:

a) Heading: A sought heading derived from the class number. Ranganathan prescribes
it to be written in capital letters or in red ink.

b) Directing Elements: It reads:

For documents in the Class and its Subdivisions, see the Classified Part of the
catalogue under the Class Number.

(In case of a library catalogue in book form the directional element being long may
be removed altogether (KF22 CCC-5, p. 306)). In case of periodical publications
this directional element is also not required. It is omitted except in case of in case
ordinary CIEs of a periodical publication.

c) Class number, call it Class Index Number

For the above sorted Sought Headings the Class Index Entries are:

SHAH JAHAN, INDIA, HISTORY.

For documents in the Class and its Subdivisions, see the Classified Part of the
catalogue under the Class Number

MOGULS, INDIA, HISTORY.

For documents in the Class and its Subdivisions, see the Classified Part of the
catalogue under the Class Number

MUSLIM PERIOD, INDIA, HISTORY.

For documents in the Class and its Subdivisions, see the Classified Part of the
catalogue under the Class Number

ASIA, HISTORY.

For documents in the Class and its Subdivisions, see the Classified Part of the
catalogue under the Class Number

INDIA, HISTORY.

For documents in the Class and its Subdivisions, see the Classified Part of the
catalogue under the Class Number

HISTORY.

For documents in the Class and its Subdivisions, see the Classified Part of the
catalogue under the Class Number

Since the spellings of the term Mogul vary from book to book, it is essential to use
one spelling once for all and make cross reference entries from others in popular
use.

Mughals see Moguls
Also in the above entry we have supplied the missing link of 930/990.

**Take another example**

**Title**  
British Rule in India.

**Class No.** 954.03

**Chain:**

British Rule in India 954.03

<table>
<thead>
<tr>
<th>Class No.</th>
<th>Subdivision</th>
</tr>
</thead>
<tbody>
<tr>
<td>900</td>
<td>Geography, History, etc.</td>
</tr>
<tr>
<td>930/980</td>
<td>History</td>
</tr>
<tr>
<td>950</td>
<td>Asia, History</td>
</tr>
<tr>
<td>954</td>
<td>India, History</td>
</tr>
<tr>
<td>954.0</td>
<td>False Link</td>
</tr>
<tr>
<td>954.03</td>
<td>British Rule, India, History</td>
</tr>
</tbody>
</table>

The sorted Sought Headings are:

- British Rule, India, History = 954.03
- India, History = 954
- Asia, History = 950
- History = 930/990

It may be noted that CIEs on the last three headings have already been prepared, so there is absolutely no need to prepare them again.

A Class Index Entry for a given heading is prepared only once in the library. So the only CIE to be made now is:

BRITISH RULE, INDIA, HISTORY.

For documents in the Class and its Subdivisions, see the Classified Part of the catalogue under the Class Number 954.03

**An Example with a Standard Subdivision**

**Title**  
A History of Arya Samaj in 20th century.

**Class No.** 294.55630904

**Chain:**

A History of Arya Samaj in 20th century=294.55630904

<table>
<thead>
<tr>
<th>Class No.</th>
<th>Subdivision</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>Religion</td>
</tr>
<tr>
<td>290</td>
<td>others [than Christian religion]</td>
</tr>
<tr>
<td>294</td>
<td>Religions of Indic origin</td>
</tr>
</tbody>
</table>
The sought headings sorted from the above chain are:

1) History, Arya Samaj  294.556309
2) Arya Samaj  294.5563
3) Reformation movement, Hinduism  294.556
4) Sects, Hinduism  294.55
5) Hinduism  294.5
6) Indic Religions  294
7) Religion  200

You may note that headings at serial number 3, 4 and 6 have been bit modified to replace them with popular or standard terms in literature, or edited them to make them tidy.

Followings CIEs will be made for this chain:

HISTORY, ARYA SAMAJ.
For documents in the Class and its Subdivisions, see the Classified Part of the catalogue under the Class Number 294.556309

ARYA SAMAJ.
For documents in the Class and its Subdivisions, see the Classified Part of the catalogue under the Class Number 294.5563

REFORMATION MOVEMENT, HINDUISM.
For documents in the Class and its Subdivisions, see the Classified Part of the catalogue under the Class Number 294.556

SECTS, HINDUISM.
For documents in the Class and its Subdivisions, see the Classified Part of the catalogue under the Class Number 294.55

HINDUISM.
For documents in the Class and its Subdivisions, see the Classified Part of the catalogue under the Class Number 294.5
INDIC RELIGIONS.

For documents in the Class and its Subdivisions, see the Classified Part of the catalogue under the Class Number 294 RELIGIONS.

For documents in the Class and its Subdivisions, see the Classified Part of the catalogue under the Class Number 200

Authority Record

If we make some modifications in headings as we did above then a formal subject authority list will have to be maintained to record such decisions for uniformity in their later use. Indeed, it will make the chain indexing less mechanical.

Self-Check Exercise

Note:  i) Write your answers in the space given below.
       ii) Check your answers with the answers given at the end of this Unit.

3) Draw the chain and prepare CIEs for a book on “Women Workers in Agriculture Sector” 331.48 3

............................................................................................................................
............................................................................................................................
............................................................................................................................
............................................................................................................................

14.3.5 Chain Indexing for a Dictionary Catalogue

A dictionary catalogue is unipartite and all the entries and references are arranged in one single A/S order. Here apart from a few see and see also references all are bibliographic entries which specify a document in the library. The subject headings are also given to a specific book rather than to a class of subjects. After lot of experience and wide discussion Ranganathan discovered that chain indexing could be applied with certain modifications to derive subject headings for a dictionary catalogue (Rule KSD, CCC-5, 1964). As back as 1953 Ranganathan was told by A J Wells and Eric J Coates (both of the BNB) that those who use the dictionary catalogue would like to have benefits of SHs derived mechanically and consistently from class numbers and also retains the benefits of a list of subject headings. He found the chain indexing versatile enough to produce SHs for a dictionary catalogue with some modifications in rules. He produced an alternative set of rules for this purpose (Rule KSD 403-405, CCC-5, pp. 330-331).

Modified Rules

In case of SHs by chain procedure for a dictionary catalogue the chain is conceptually divided into parts. The First Part (Main) is of the links before the common isolate or standard subdivision digit.

Common Isolate Part

It is the part of the chain beginning with the common isolate digit till the next common isolate digit, if any.
**Subsequent Parts**

In this way every common isolate including the geographical isolate is a part of its own. Each phase in a complex class is also regarded as a separate part of the chain.

**Examples:**

**Title**  
A Dictionary of Hinduism.

**Class No.** 294.503

**Chain:**

A Dictionary of Hinduism 294.503 by Richard K. Martin

**1st Part**

| 200 | = | Religion |
| 290 | = | others [Non-Christian religions] |
| 294 | = | Indic Religions |
| 294. | = | (FL) |
| 294.5 | = | Hinduism |

**2nd Part**

| 294.503 | = | Hinduism, dictionaries |

In the second part, it may be noted the heading for the common isolate has been used as a subdivision instead of a lead heading. Secondly the lengthy heading for the standard subdivision 03 Dictionaries and Encyclopedias has been shortened to Dictionaries only for brevity. The subject headings for the First Part will be as usual. The SHs for the Second Part along with the full entry will be:

HINDUISM—DICTIONARIES

Martin, Richard K.

A dictionary of Hinduism/by Richard K Martin. – New Delhi: Munshilal Manoharlal, 1979.—xvi, 207p.; 25cm. 294.503 MAR

Rule KSD 499 states that “There is to be a See also Subject Entry corresponding to each of the Sought links of the Chain, upper or lower to the Link contributing the Main Heading of the Specific Subject Entry’… (p. 332). This will require the following See also entries:

Hinduism See also Hinduism—Dictionaries

Indic Religions See also Hinduism—Dictionaries

Religions See also Hinduism—Dictionaries

We can also have a see entry:

Dictionaries, Hinduism See HINDUISM—DICTIONARIES
Take another example

Title Drug Addiction in India.

Class No. 362.2930954

Chain:
Drug Addiction in India 362.2930954

First Part

300 = Social sciences
360 = Social problems and services
362 = Social welfare
362. = FL
362.2 = Mental and emotional illness and destitute, social welfare
362.29 = Addictions, Social welfare
362.293 = Drug addiction, Social welfare

Second Part begins

362.29 309 = FL
362.29 3095 = Drug addiction, Asia
362.2930954 = Drug addiction, India

Individualising elements may be added to make the context clear, if not already obvious.

The Sought headings are:

1) Drug addiction—India 362.293 0954
2) Drug addiction—Asia 362.293 095
3) Drug addiction, Social welfare 362.293
4) Addictions, Social welfare 362.29
5) Social welfare 362
6) Social problems and services 360
7) Social services 300

Here the specific subject entry to be given on the subject added entry is:

DRUG ADDICTION—INDIA

Then there will be see also entries from each of the headings 2-7 to the heading 1

Drug addiction—Asia see also Drug addiction—India

Drug addiction, Social welfare see also Drug addiction—India

Addictions, Social welfare see also Drug addiction—India

Social welfare see also Drug addiction—India
Social problems and services *see also* Drug addiction—India

Social services *see also* Drug addiction—India

**Take another example:**

**Title**  
Journal of Child Psychology.

**Class No.** 155.405  

**Chain:**  
Journal of Child Psychology 155.405

1st Part begins

100 = Philosophy, etc.
150 = Psychology
155 = Differential and Genetic Psychology
155. = FL
155.4 = Child Psychology

2nd Part begins

155.40 = FL
155.405 = Child Psychology, Journal

In the last link, we have translated 06 as Journals instead of Serial Publication as given in table. In index term “Journal” is more prevalent than the Serial Publication. The sorted sought heading according to dictionary rules are:

1) Child Psychology—Journals 155.405  
2) Child Psychology 155.4  
3) Psychology 150  
4) Philosophy 100

The subject heading will be

**CHILD PSYCHOLOGY—JOURNALS**

*See also* entries  
Child Psychology *see also* Child Psychology—Journals

Psychology *see also* Child Psychology—Journals

There is no need to prepare *see also* reference to philosophy, etc. as it is incidentally clubbed here, and it is not related to psychology.

**Take another example** for a dictionary catalogue:

**Title**  
First aid in Heart Diseases.

**Class No.** 616.12 0252  

**Chain:**
Indexing – Sears List of Subject Heading

First aid in Heart Diseases 616.12 0252

Part-1

600 = Technology (SH)
610 = Medicine (SH)
616 = Diseases, Medicine (SH)
616. = FL
616.1 = Diseases of cardiovascular system
616.12 = Heart diseases (SH)

Part-2 Begins

616.120 = FL
616.12 025 = Heart diseases, Medical emergencies (SH)
616.120252 = Heart diseases, First aid (SH)

The specific heading to be given on the book is:

HEART DISEASES — FIRST AID

See also Entries:

Heart diseases—Medical emergencies See also Heart diseases—First aid
Heart diseases See also Heart diseases—First aid
Diseases, Medicine See also Heart diseases—First aid
Medicine See also Heart diseases—First aid

Since we have used the term Medicine, not Medical Sciences, so we can make a see reference as follow:
Medical sciences see Medicine

Similarly we can make a see reference:
Applied sciences see Technology

Self-Check Exercise

Note:  

i) Write your answers in the space given below.

ii) Check your answers with the answers given at the end of this Unit.

4) Draw the chain and prepare the SHs and cross references for a dictionary catalogue for the titles

a) Index to Catholic Epistles 227.9016
b) India Journal of Sociology 301.05

.......................................................................................................................
.......................................................................................................................
.......................................................................................................................
.....................................................................................................................
14.3.6 Advantages of Chain Indexing

During the 1950s and 1960s, Chain Indexing became very popular and was lauded as Ranganathan’s ingenious contribution to subject indexing. Its use was popularised in Great Britain by B I Palmer, A J Wells, Eric J Coates and D. W. Langridge. It was used by the BNB for about two decades till it was replaced in early 1970s by PRECIS designed by Derik Austin (1921-2001) to suit the computerised production of the BNB. Its advantages over other indexing systems prevalent then are as follows:

1) It serves as an alphabetical subject key to the main part of the classified catalogue.

2) No separate list of subject headings like the SLSH or the LCSH is required. Lists are costly publications and are too frequently revised to incorporate new subjects. The SHs are derived from the class number of the document already assigned by the classifier.

3) It mechanises to a large extent the choice and rendering of subject headings.

4) It is thus simple and speedy.

5) It helps in avoiding arbitrary decisions.

6) Its terminology being drawn from a classification schedule it ensures coordination and correspondence between the class number and the subject headings. This coordination is not possible by using a separate subject headings list.

7) It brings out symbiosis between classification and cataloguing hitherto considered two parallel techniques.

8) A single subject heading is rarely co-extensive with the subject of the book in case of the use of subject headings lists. Usually a large number of subject added entries are prepared for a single book.

9) It brings economy in the number of subject index entries especially in case of classified catalogue. As the library grows the need for preparation of new CIEs for new documents decreases. If two or more books share the same class number (as it usually happens) there is no need to prepare CIEs for the books other than the first.

10) Even a single class number, say having four semantic digits will require only four Class Index Entries ab initio, while a permuted subject index would require $(4 \times 3 \times 2 \times 1) = 24$ headings. Huge saving is obvious. The percentage of saving goes on increasing as a class numbers grows in length.

11) It works as a subject index to the main entries and retrieves many numbers of books for a library user to make a choice.

12) If the classification schedule is available in electronic format then the chain indexing can be made bit more automatic.

13) It is also used to prepare indexes to classification schedules. It is believed that Ranganathan got the idea of chain indexing from the Dewey’s Relative Index. Melvil Dewey used this method without giving it any proper name. He did not delve deep into it to make it a mature and objective science.

14) It can be used to derive feature headings for classified catalogue and bibliographies, and also for shelf guides in stacks.
14.3.7 Limitations and Problems of Chain Indexing

1) It needs logical and hierarchical scheme of classification. Chain indexing cannot be better than the scheme on which it is based.

2) It may not be easy to work with a classification system like the DDC which only broadly groups documents on the shelves.

3) It works only well with rigorous systems like the CC which aspire to individualise every document on the shelves.

4) Any error in assigning a class number is more likely to be carried over into subject headings.

5) It is not mechanical as assumed. Human intervention and experience is needed for (1) selection of sought headings and (2) editing of SHs to remove unnecessary contexts.

6) It provides no guidance in discovering synonyms.

7) Ranganathan allows the replacement of derived headings by an axiomatic heading or proper name, if it exists (KD3, CCC-5, p. 300). It requires knowledge of the subject and the language.

8) Dividing line between sought and unsought headings is thin and hazy and requires lot of discretion. Further a unsought heading for one library may not be unsought for another. Moreover, today’s unsoughts may be become tomorrow’s sought headings and vice versa.

9) As the headings broaden the context goes on vanishing.

10) There is a problem of missing links to be provided by the indexer.

11) In case of classified catalogue there is no sufficient guidance for see and see also cross references.

12) It does not retrieve any specific document. Choice is a two stage process, as said earlier. Only the last link, if it is a sought one, refers to a specific subject of the document without naming it specifically by author and title.

13) It does not refer to collateral entries in the form of related subjects.

14) There are some unique problems to be sorted out while working with the DDC:

   Problem of dual headings, e.g.,

   597    Coldblooded Vertebrates    Pisces (Fishes)
   954    South Asia              India

   Which of the two headings is to be used for 597 or 954 for chain indexing? There are so many such cases in the DDC. (In the DDC 23, (2010) these dual headings have been removed.

   Problem of Alternative headings:

   In many cases there are alternative headings, e.g.,

   597    Pisces (Fish)
   381    Internal Commerce (Domestic trade)
   657.2  Recording (Book Keeping)
A library will have to choose one of the two alternatives once for all and make its subject authority record. And also prepare see references from the headings not used to the headings used. For example, if we prefer the term Domestic trade then make the following see reference: Internal Commerce see Domestic trade

Cantered headings have their own problems.

383-384 Specific kind of communications.

This is apart from the problem of the DDC being a broader grouping scheme, where the BNB had to use verbal extensions to make a number specific to or co-extensive with the subject of the book.

For a dictionary catalogue it provides only one specific heading derived from the full class number. A composite book dealing with multiplicity of topics may not get adequately indexed.

15) In a dictionary catalogue lot of see also references clutter the catalogue.

16) Chain indexing rules for a dictionary catalogue as given in the 5th edition (1964) of the CCC are tentative, if not rudimentary. Ranganathan urged for further research, but no further work has been done on this area for the last fifty years. Hence the chain indexing is old and dated in the era of OPACs.

14.4 SUMMARY

In 1938 S R Ranganathan (1892-1972) invented chain procedure (now called Chain Indexing) to derive subject headings from a class number for Class Index Entries of a classified catalogue. This more or less mechanical method is not at the mercy of hit or miss chance in assigning SHs from a readymade list like the Sears List. It also generates a SH co-extensive with the specific subject of the document under cataloguing. It has been lauded as Ranganathan’s innovative and scientific contribution to subject indexing. The BNB, BCM and the INB had been its major users in 1950s and 1960s. Their feedback has contributed to its refinement to tackle the problems in applying it to a less systematic scheme like the DDC. It also motivated Ranganathan to formulate some additional rules of chain indexing for deriving subject headings and cross references for use in a dictionary catalogue. The last version of the chain indexing is available in the 5th edition (1964) of his CCC. The procedure consists in unwinding the chain one by one digit in the class number. Each step translates into one link. Verbal heading of each link has to be categorised into sought/unsought heading or a false link. Each indicator digit and the time facet correspond to a false link which is always ignored. Prepare class index entries for each of the sought link starting from narrower to broader heading. A class index entry for classified catalogue consists of three parts: (1) The SH, (2) Directional element, and (3) The Class Index Number (i.e., The corresponding class number). To count its advantages, it is mechanical, and the job of classification and subject heading assignments can be performed by the same person. It has brought out hitherto unknown symbiosis between classification and cataloguing. There is a lot of saving in making of number of class index entries, as the components are not permuted to make them access points. Further an entry once prepared is not prepared again for new documents acquired and catalogued in the library. To its limitations, it is not as mechanical as it is projected to be. Human intervention and judgment is very much required. Being classification dependent it is as good as the classification scheme as well as the classifier. Further a CIE instead of retrieving the surrogate of the document refers the users to the classified part. It means the CIEs in not providing any bibliographic
description, are mere references. Being a two stage process the users run from pillar to post, to say so. Ranganathan also formulated some additional rules for a dictionary catalogue which are rudimentary still. These are not fully grown or applied widely for feedback. In the OPACs era the classified catalogues are on the wanes which were the main stay of the Chain Indexing.

14.5 ANSWERS TO SELF CHECK EXERCISES

1) Subject cataloguing as contrasted from descriptive cataloguing is the process of providing subject access to documents in the library. It serves another major and important function of a catalogue to serve the subject approach to the documents and help to know what a library has on a given subject. It serves the unknown item approach to library documents where as the descriptive cataloguing helps to identify and retrieve a document of which either author, title, collaborator or series is known. In a dictionary catalogue subject approach is served by subject headings assigned to a given document either as key words derived from the title/summary or given from a separate tool such as a standard list of subject headings, or a subject thesaurus. Subject headings can also be derived by a procedure such as PRECIS or COMPASS or Ranganathan’s Chain Procedure. The process of formulating and assigning of subject headings. Preparation of subject added entries is known as subject cataloguing.

2) Sought Heading: A Heading on which some library user is most likely to ask some material on it. It comes from a link which is neither false nor unsought The first link is always a sought heading. The last link too is a sought heading if it does not end with a time facet. Each sought heading generates one class index entry. Thus the number of class index entries depends upon the number of sought headings in the chain. If you think a case is on the fence seemingly belonging to both sides then give the benefit of doubt and treat that a sought link. Anyhow, this sort of judgement can only be learned with error and trial, which takes time.

3) Women Labour in Agriculture Sector 331.483
   300 = Social Sciences (SH)
   330 = Economics (SH)
   331 = Labour, Economics (SH)
   331. = False Link
   331.4 = Women Workers in Specific Industries, Labour Economics (USH)
   331.483 = Agriculture, Women Workers, Labour Economics. (SH)

The Sought Headings according to the CCC are:
Agriculture, Women Workers, Labour, Economics
Women Worker, Labour, Economics
Labour Economics
Economics
Social Sciences
The CIE for the first (specific) heading is

AGRICULTURE, WOMEN WORKERS, LABOUR, ECONOMICS

For documents in the Class and its Subdivisions see the Classified Part of the

catalogue under the Class Number 331.483.

Similarly CIEs for rest of the SHs can be prepared, if needed.

4a) Index of Catholic Epistles 227.9016

**First Part**

| 200 | = | Religion |
| 220 | = | Bible |
| [225] | = | New Testament, Bible |
| 227 | = | Epistles, New Testament, Bible |
| 227. | = | FL |
| 227.9 | = | Catholic Epistles, New Testament, Bible |

**2nd Part**

| 227.90 | = | FL |
| 227.9016 | = | Indexes, Catholic Epistles, New Testament, Bible |

Following is the SH for a Dictionary Catalogue:

Catholic Epistles, New Testament, Bible—Indexes

This heading will appear on the Subject Added entries. See also entries are:

Catholic Epistles, New Testament, Bible see also Catholic Epistles, New Testament, Bible—Indexes

Epistles, New Testament, Bible see also Catholic Epistles, New Testament, Bible—Indexes

New Testament, Bible see also Catholic Epistles, New Testament, Bible—Indexes

Bible see also Catholic Epistles, New Testament, Bible—Indexes

Religion see also Catholic Epistles, New Testament, Bible—Indexes

4b) Indian Journal of Sociology 301.05

| 300 | = | Social sciences |
| 301 | = | Sociology |
| 301. | = | FL |
| 301.05 | = | Serial Publications, Sociology |

The specific and modified heading according to Dictionary Catalogue is

Sociology—Journals
Indexing – Sears List of Subject Heading

This heading will appear on the subject added entry.

Following are the see also entries

Sociology see also Sociology—Journals

Social Sciences see also Sociology—Journals

We can also have a see reference:

Serial Publications, Sociology see Sociology—Journals

### 14.6 KEY WORDS

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chain</td>
<td>A modulated and pre-coordinated sequence of terms in general to specific order. In a chain the terms are arranged in successively subordinated order. In other words it is a hierarchy of terms.</td>
</tr>
<tr>
<td>Chain Indexing</td>
<td>Earlier called chain procedure it is a comprehensive technique “to derive class index entries in a classified catalogue and specific subject entries, subject analytical, see also subject entries in a dictionary catalogue”.</td>
</tr>
<tr>
<td>Class Index Entry</td>
<td>A term used in Ranganathan’s Classified Catalogue Code which are subject entries in the alphabetical part and which refer the users to the main (classified part) part of the catalogue. It is a reference to a class of entries in the main classified (main) part, not a bibliographic description of any specific document in the library.</td>
</tr>
<tr>
<td>Class Number</td>
<td>Systematic set of notation denoting the subject of the document in symbols.</td>
</tr>
<tr>
<td>Classified Catalogue</td>
<td>A catalogue in which main entries are arranged by class numbers. Its main part is supplemented by a separate part providing access by authors, collaborators, series and subjects. Thus it is a bipartite catalogue.</td>
</tr>
<tr>
<td>Descriptive Catalogue</td>
<td>Part of a catalogue entry which deals with the bibliographic description of the document as contrasted from the subject cataloguing which</td>
</tr>
</tbody>
</table>
deals with providing subject access to the documents catalogued.

**Dictionary Catalogue**

: A catalogue in which the main and added entries and references are arranged in one single alphabetical sequence. Also called A/S catalogue, it is uni-partite in structure.

**Digit**

: Any distinct symbol including punctuation marks in a class number.

**ISBDs**

: Formulated by IFLA, these are internationally agreed set of bibliographic elements and their sequence in describing a document. Though independent of a cataloguing code, AACR 2 is based on ISBDs. There are different ISBDs for different types of documents such as monographs, serials, cartographic materials, films, microforms, music, etc, but all are in consonance with the ISBD (G).

**Raw Title**

: The title of the book given by the publishers and as it appears on the book. For classification purpose a raw title may usually be augmented to make it more expressive of the content of the book. In a catalogue entry it is the raw title that is given.

**See also Reference**

: A reference referring the users to the additional related material on the subject or to a variant name of an entry.

**See Reference**

: A cross reference directing the user from a heading not used to the heading used.

**Subject Cataloguing**

: Contrasted from descriptive catalogue, it is the process of equipping a catalogue to provide complete and effective subject access to the documents.

**Subject Heading**

: A keyword or a phrase to concisely denote the subject of the document. Also known as subject tag or subject descriptor.

---

### 14.7 REFERENCES AND FURTHER READING


Indexing – Sears List of Subject Heading


