

# Literature Survey

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## Objectives of this Lecture

- Literature survey : Why ?
- Start – Stop : When ?
- Sources of literature : Where ?
- Methodology to be adopted : What ?
- Compile and present a review : How ?
- Citation styles : How ?
- Contribute back (stages in publishing): Why/Where ?
- IF of journals & Citation index : What ?

## Literature Survey: Why

- What approach have others used?
- Why are these approaches unsuitable? (gaps)
- How is your problem different from those of others?
- What can we learn from
  - other approaches to similar problems?
  - or similar approaches to other problems?
- Set our work into context
- Avoid wasting effort when problem has already been solved (duplication)
- Controversial results may need to be checked
- State of the art: Extend & build on the work of others

## Literature Survey: In your (Thesis) context

- Thesis should be based on original research
- Even unintentional duplication - invalidation
- To gain knowledge and to establish context within which research will be carried out
- To point up questions, anomalies, or gaps in existing knowledge

## Literature Survey: In your (Thesis) context

- To establish scope, context & parameters of study
- To discuss/theorize/offer opinion/comment, and speculate, even present new information as a result of study
- Can these be done in a vacuum?
- What is then needed?
- Supporting structure of information is essential

## Literature Survey: Start- Stop

When do you start ?

When do you stop?

- Literature survey should continue throughout the research process
- Direction/emphasis/conclusion of a thesis may require modification to take into account of the publication of a new piece of work

## Sources of literature

### Primary Sources [Periodicals (solely devoted to reporting original work)]

Research reports, Conference proceedings, Official publications, Patents, Standards Trade literature, Theses and Dissertations, Unpublished works (occasionally become accessible later in their original form- Ex: Lab note books, diaries, Memoranda etc. International research report, correspondence, personal file etc.)

**Secondary Sources** (Compiled from primary sources, Represents "worked-over" knowledge, Organize primary sources in convenient form: Periodicals, Indexing and Abstracting services, Reviews of progress, Reference books: Encyclopedias/ Dictionaries/Handbooks; Monographs, Text books

**Tertiary Sources** (Aids researcher in using primary & secondary sources: Directories & year books, Bibliographies, List of books, Location list of periodicals, List of Indexing and Abstracting services, Guides to libraries and sources of information Guides to organizations)

**Non documentary Sources** (Oral sources often provide something that others do not) Formal: Government departments, Research organizations, Learned professional societies, Industry, University, colleges, Consultants. Informal: Discussion with Guides, colleagues, visitors etc. : "Corridor meetings" at conferences etc.

## Know Your (Central) Library

<b>Basement</b>	Reading Hall-1: BV of Engg & Tech. before 1980, Book Bank, Desk Top Publishing, Offset Printing, Bindery,
<b>Level-I</b>	<b>Millennium Reading Hall:</b> Books on philosophy, religion, economics, commerce, sociology, political science, Mathematics <b>Reading Hall (Books):</b> Books on computer science & engineering, architecture, management, chemical eng., metallurgy, civil eng., electrical eng., mech. eng., naval architecture, industries, building, material science, agriculture & medicine.
<b>Level-II</b>	<b>READING HALL-II:</b> Back volumes on Humanities, Social Sciences, Management and Generalia. <b>REFERENCE HALL:</b> Chemical Abstracts and Abstracting and Indexing Journals and photocopying facility <b>CURRENT JOURNALS READING HALL:</b> All current journals displayed
<b>Level-III</b>	<b>ENGINEERING AND TECHNOLOGY BACK VOLUMES</b> Right Wing: DF/44 TO FA/142 Left Wing: D/8 TO DF/43
<b>Level-IV</b>	<b>SCIENCE BACK VOLUMES- (Chemistry, Physics, Mathematics)</b> Right Wing: C/1 to B/202 (Physics, Maths) Left Wing: E/2 to E/157 (Chemistry)
<b>Level-V</b>	<b>STANDARDS, PATENTS, UNIVERSITIES PROSPECTUS, REPORTS</b> Right Wing: Students Discussion Hall, Left Wing: Reference Text books Collection, Patents, Standards, Technical Reports, Annual Reports, Spare Issues of Current Journals, News Papers, University Prospectus

## Tips Know Your (Central) Library

Become familiar with the services offered and facilities available

Develop a habit of spending time in the library  
(For Research and General reading)- it helps

Do not Reshelf books

## CATALOGS IN CENTRAL LIBRARY

### BOOKS

ALPHABETICAL / SUBJECT CATALOG  
(by author name and also subject)

UDC CATALOG

### JOURNALS

CATALOG OF PERIODICAL HOLDINGS

## UDC (UNIVERSAL DECIMAL CLASSIFICATION) CATALOG

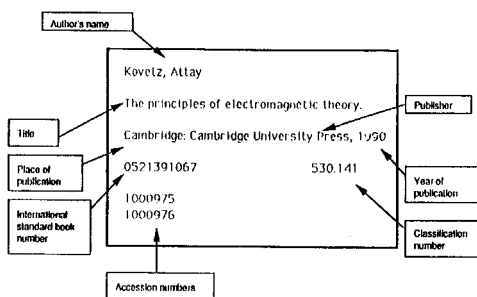


Fig. 5 Catalogue record

## UDC (UNIVERSAL DECIMAL CLASSIFICATION) CATALOG

624.04 CHO  
Chorlton, F.,  
Mechanics of Materials

624.012.45 ALE  
Alekhseev, S.N., and Ivanov, F.M.,  
Durability of concrete in aggressive environment

624.012:551.35(043)RAO(624 civil;551 Oceanography;043-thesis)  
Rao, Venkateswara, K  
Deterioration of conc.in Marine environment, PhD thesis, IITM, 1992

624.012:629.12 (082.2)CON (624Civil;629-transportation; 082.2-Conf.Proc)  
Conference on concrete ship and floating structures

#### Journal Placement number

B	- Mathematics	C	- Physics
D	- Engineering		
DA to DC	- Electrical engineering		
DD to DG	- Civil engineering		
DJ	- Aero Engg		
DK to DO	- Mechanical Engg.		
DP	- Transportation Engg.		
DQ	- Energy		
DR	- Food tech		
DS	- Ocean Engg		
E	- Chemistry	F	- Chemical Engg
FA	- Metallurgy		
HA	- Education		
HB	- Psychology		
HC	- Economics and Accountancy		
HD	- Business Management and Industrial relations		

#### List of Journals being procured

##### Catalog of Periodical Holdings

AMERICAN CONCRETE INSTITUTE MATERIALS JOURNAL  
(Bimonthly)

Publisher: American Concrete Institute

Holdings: Vol.84 1987+ /90/ (89,93)

Dept: CIV Status: Live

Placement No: DF/4A

ISSN- Int. Standard Serial No.

- 8 digit no identifies a serial title

#### Central Library: Online Catalogue/search

[www.cenlib.iitm.ac.in](http://www.cenlib.iitm.ac.in) - iPortal

Keyword search: Author, Title, Subject, ISBN, ISSN, Publisher  
Call No., Journal Title

Heading Keyword search: Title, subject heading:  
All words, Phrase, exact match

#### What is Literature Survey?

- Literature search
- Literature Acquisition / collection
- Critical study of literature/review of literature

#### Hints on planning a Literature Search

- Make sure you really understand the subject and nature of your research topic  
(seek help/advice from Guide, Seniors & colleagues)
- Examine the topic to identify a series of problem which can be tackled individually (this process should continue throughout the research process)
- Write down a statement of overall aims & objectives
- Analyze each problem in terms of information needed  
( i.e. establish a list of priorities with regard to the information that must be found)

#### Hints on planning a Literature Search

- Do not look for information until you have a fairly clear idea of what you want? & also What you do not want?
- During search you intend to find only what you look for
- At least you should be able to recognize helpful information when you see it

### Hints on planning a Literature Search

- Consider different types of information sources and decide which are likely to be most useful
- Locate guides to appropriate types of information sources and search using relevant search terms
- Select & record details of individual sources to be approached
- Locate & obtain the literature concerned
- Examine the literature referred & extract required information

### Hints on planning a Literature Search

- Be ready to modify your requirements in light of what is found as search progresses
- Bear in mind: Most problems are inter-disciplinary or even multi-disciplinary in character
- Be prepared to draw on the information sources of subject fields other than your own

### Literature search

Objective: To identify the primary sources for which the secondary, tertiary & non documentary sources are helpful

Methods:

- Snow Ball method
- Systematic manual search
- CD ROM information retrieval system
- Online information access system
- Use of Internet

### Literature search: Snow Ball method

- Tracking back from references of recent paper
- Identify a recent paper (primary source)
- Cross references lead to earlier publications

Suitable for term projects/assignments/lecture

### Literature search: Systematic Manual Search

Why Manual search? : Electronic database coverage: limited

a) Abstracting and Indexing Journals (Hard copy)

Chemical Abstracts, EI, Current contents

b) Other Bibliographic Services offered by

NTIS  
Publishers of Abstracting and Indexing Journals

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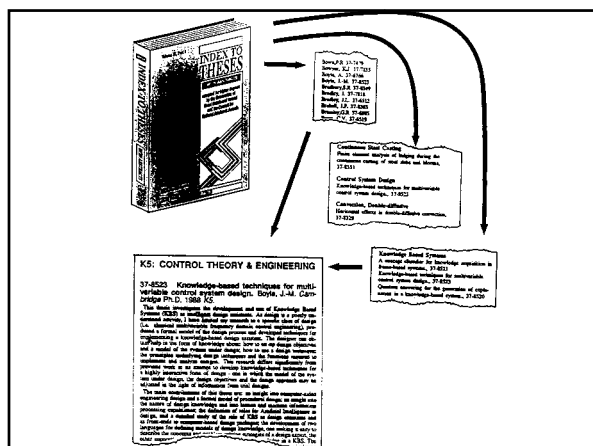
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on acid-free paper



#### Literature Search: CD-ROM Information Retrieval System

**COMPENDEX:** Engineering, electronics, instruments light and optical technology. The database contains reference to and abstracts from journals, technical reports, books, proceedings etc.

**INSPEC:** Physics, electronics, electrical engg, Computer science, Control and IT

**ESPACE WORLD:** European, PCT and UK patent applications and granted patents.

**INPAT:** Patents granted in India (INSDOC)

#### Literature Search: Online resources

Periodical visit to web pages of Journals

Contents of recent issues  
Search options  
Journal format for writing papers

Contents alert/Direct: Major publishers offer

Visit web sites of Journals and subscribe for at least 50 journals in your field of interest

[www.elsevier.nl](http://www.elsevier.nl)  
<http://www.tandf.co.uk/sara> - Taylor & Francis Group  
ASCE, ASME

#### E-JOURNALS

- [www.cenlib.iitm.ac.in](http://www.cenlib.iitm.ac.in) : e-journals
- IITM Arrangement
- INDEST
- Open Source journals

#### Online resources

JCCC – J-Gate Custom Content for Consortia, is a customized solution for accessing and sharing journal literature subscribed by all the IITs, IISc and IIMs, individually and collectively through INDEST Consortium

Joining this community of resource sharing consortium are 17 National Institutes of Technology to whom the benefits of JCCC@INDEST is extended as secondary members

#### Online resources

JCCC@INDEST is a common gateway to access 4,252 e-Journals from 1,028 publishers, subscribed by IITs, IISc, IIMs (15 Libraries).

The journals of following INDEST Consortium registered publishers are included in JCCC@INDEST

- ACM Digital Libraries
- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineers (ASME)
- IEEE Electronic Library
- Nature
- Science Direct (Elsevier)
- Springer-Link

### Online Abstracting-Indexing Journals

IEEE Xplore: Provides full text access to IEEE transactions, journals, magazines & conference proceedings published since 1988 and all current IEEE Standards.

SPRINGER LINK: Provides access to 450 full text journals published by Springer verlag

Science Direct: The world's best resource for research journals, abstract databases and reference works. over 1700 journals online available for access.

### Online Abstracting-Indexing Journals

SciFinder Scholar is today's leader in providing the most accurate and comprehensive chemical and related scientific information

MathSciNet database covers the world's mathematical literature since 1940. It provides Web access to the bibliographic data and reviews of mathematical research literature contained in the Mathematical Reviews Database

### Online Abstracting-Indexing Journals

Web of Science accesses ISI citation databases, which are multidisciplinary databases of bibliographic information gathered from thousands of scholarly journals. Using this Web based product, you can search for records within the citation databases by: **Topic , Author , Source Title , Author Address , Cited Author , Cited Work , Cited Year**

ASCE, ASME, EI Village-2, INSPEC

PROQUEST databases

Association for Computing Machinery: online access

•Full text of every article ever published by ACM

•Browse the Digital Library:

- Journals
- Magazines
- Transactions
- Proceedings
- Newsletters
- Publications by Affiliated Organizations
- Special Interest Groups (SIGs)

### Literature Search: Search Strategy

- ☛ Analyze the topic and decide the key words
- ☛ Include synonyms and variants in spelling
- ☛ Search terms could be
  - a) subject related single words
  - b) phrases
  - c) truncated word stems
- ☛ Check print equivalents
  - controlled vocabulary vs. keywords
  - (Ex: Abstracting journals give standards)
- ☛ Choose a database

### Literature search: Structuring a search

Narrow or broaden a search in two ways

- i) Field qualification:
  - Require search words that appear in a record
  - Possible to specify papers from 1985
    - published in English
- ii) Boolean Logic: Connecting search terms
  - can broaden or narrow search
  - Boolean operators - or, and, not, same, with

What if the book or journal you want is not available in our library

- Try to access through neighboring libraries
- Use of IIT Library's Inter-library loan facility
- Write to your friends abroad/other universities
- Write to the authors  
(last resort- with specific requests)

### Important libraries in/around Madras

BIS  
INSDOC  
ANNA UNIV.  
HRS  
SERC  
MADRAS UNIV.  
BCL  
AMERICAN CONSULATE  
CONNEMERA  
IGCAR

Students card available in Central library- IITM

### Literature Acquisition/Collection

#### Journals

Catalogs of periodical holdings – IIT Madras  
National Union Catalogue of Scientific Serials in India  
- INSDOC (35000 journals)  
Online search facilities

#### Conference Proceedings/thesis

Facilities offered by indexing/abstracting journals  
Inter library loan (IITM, BCL)  
Allied Publishers (UMI, NTIS)

### CRITICAL REVIEW OF LITERATURE

☛ **Carry out a detailed Literature survey using all possible sources & resources**

☛ **Read all the published papers/reports etc.**

☛ **Classify them in your own way**

### A literature survey demonstrates

- an *awareness* of an adequate body of knowledge, and
- the *ability* to apply that knowledge to research work

### Presentation of literature survey: Thesis context

- What related work is being undertaken?
- What is the motivation for the work?
- How does it help me/science?
- Why am I studying this aspect of the problem?

Presentation of literature survey: Area of investigation

- What techniques are in use?
- What are the findings of other people?
- What are the views of other people?
- How do they compare with my views?

*Literature surveys are a critical appraisal rather than a simple list of papers.*

## Citation Styles

Methods of Listing/citing References

Numerical method (Number system)

Chronological method

Alphabetical method (Name, year system)

You should be consistent and stick to one of these citation styles.

Follow the style guide of IITM for the thesis

Follow the style guide of the Journal for a paper

Style Guides: ASCE Authors' Guide

## Electronic Citation Style Manuals

<http://www.lib.siu.edu/swen/eciting.html>

### Reference Managers

*EndNote®* is the most popular and easy-to-use package.

*Reference Manager®*

offers network features with simultaneous read/write access to databases

*ProCite®* provides flexibility to group references and creates subject bibliographies.

*WriteNote™* is the Web-based tool that helps users conduct research and write papers.

<http://www.refman.com/>

<http://www.endnote.com/>

## Journal Impact Factors

**Journal Citation Reports (ISI)-** provides quantitative tools for ranking, evaluating, categorizing, and comparing journals. The impact factor is one of these

**IF:** Measure of frequency with which the "average article" in a journal has been cited in a particular year or period.

The annual JCR impact factor is a ratio between citations and recent citable items published

**IF** of a journal is calculated by dividing the number of current year citations to the source items published in that journal during the previous two years

## Citation Index

All papers/reviews/Correspondence/discussions published in scientific journals contain citations

These cite (by title, author, where & when published) – are documents that support/provide precedent for, illustrates/elaborate on what the author has to say

*"Citations are formal, explicit linkages between papers that have particular points in common"*

A citation index is built around these linkages. It leads publications that have been cited and identifies the sources of citations

## Reference Vs Citation

If **Paper R** contains a **bibliographic footnote** *using and describing Paper C*, then **R** contains a **reference to C**, and **C** has a **citation from R**.

**For a paper:**

**Number of references:** Measured by number of items in its bibliography as end notes, footnotes etc.

**Number of citations:** Found by looking it up (in a) Citation Index and seeing how many others paper mention it



### Neglect of Literature

Surveys have shown: Surprising amount of duplicating research and general wasted effort due to disregard of the published literature

Often scientists admit that "Either instances of finding literature too late, which showed that their own research duplicated other work or instances of finding literature too late for the information to have full value"

Analysis of Several MS/PhD reports: Common comment by examiner

### Assignment Problems

- Top Ten Journals ranked based on JIF
- Top Ten Researchers in your area through citation index
- Take ten Journal papers in your research area and write a Critical review – Review the same after 2 years
- Locate a Citation Manager
- Subscribe for contents alert to 50 journals of your interest