How to conduct research?

Following is the outline for student research projects:

1. Selection of a research topic/supervisor
2. Literature survey and reference collection
4. Current status of the topic chosen
5. Synopsis
6. Data collection
7. Data analysis and interpretation of result
8. Research presentations

Selection of a Research Topic/Supervisor

Before choosing a research topic following points are important:

1. Topic should be **suitable** for research.

2. The researcher should feel **interest** in it.

3. Topic is fixed in **consultation** with the research supervisor.

    Often research supervisors suggest a topic and state it in a **broad view**.

    The researcher has to **narrow it** and define it in an **operational form.**

--   Many research supervisors give **complete freedom** to to researcher to choose a topic **within** the area of their research group.

--   Because the normal time duration of BS/MPhil dissertation is about 6-8 months, it is better to work on the problem **suggested by the supervisor**.

--   If a student wishes to do research for PhD degree with **fellowship** then he/she cannot have freedom to choose a topic as the goal is **already defined** by the project investigator.

-- On the other hand, after choosing a topic of own interest the researcher **has to find** a supervisor who is working on that topic or interested in guiding him.

-- In this case, results would prove better in terms of **the growth of the investigator** and the **quality of the work**.

-- A researcher should **avoid working** under the guidance of a supervisor who is committed to **strong involvement in administrative work and in nonacademic matters**.

-- It is also important that topic **must be of interest** to **scientific community** and **society**.

-- If so, it will be **easier to publish findings** in reputed journals and **convince the funding agencies**.

-- It will also help earn a **post-doctoral fellowship**, **respectability** and a **permanent job** in an institution.

-- **Don’t** choose a topic simply because it is **fascinating**.

-- In choosing a topic one should take care of the **feasibility** of **data collection, it’s volume, breadth of the topic** and **cost**.

-- The topic should not be **too narrow**. There should be some flexibility.

Review of Literature

Once you have decided a topic for research, a **review of literature** is the first step to know **where the scientific world is standing in this area at present**.

Literature survey also helps us:

-- To **sharpen the problem** and **reformulate** it

-- To get **proper understanding** of the chosen problem

-- To **acquire** proper theoretical and practical **knowledge** to investigate the problem

-- To show how the problem under study **relates** to the previous research studies

Scientific journals are the **most authentic source** of information.

-- Their authenticity is measured by their **impact factor** and **citation index**.

-- Every scientist aspires to publish in a **high impact factor** journal to **boost CV**.

-- The impact factors currently range from **0.01 to 90**.

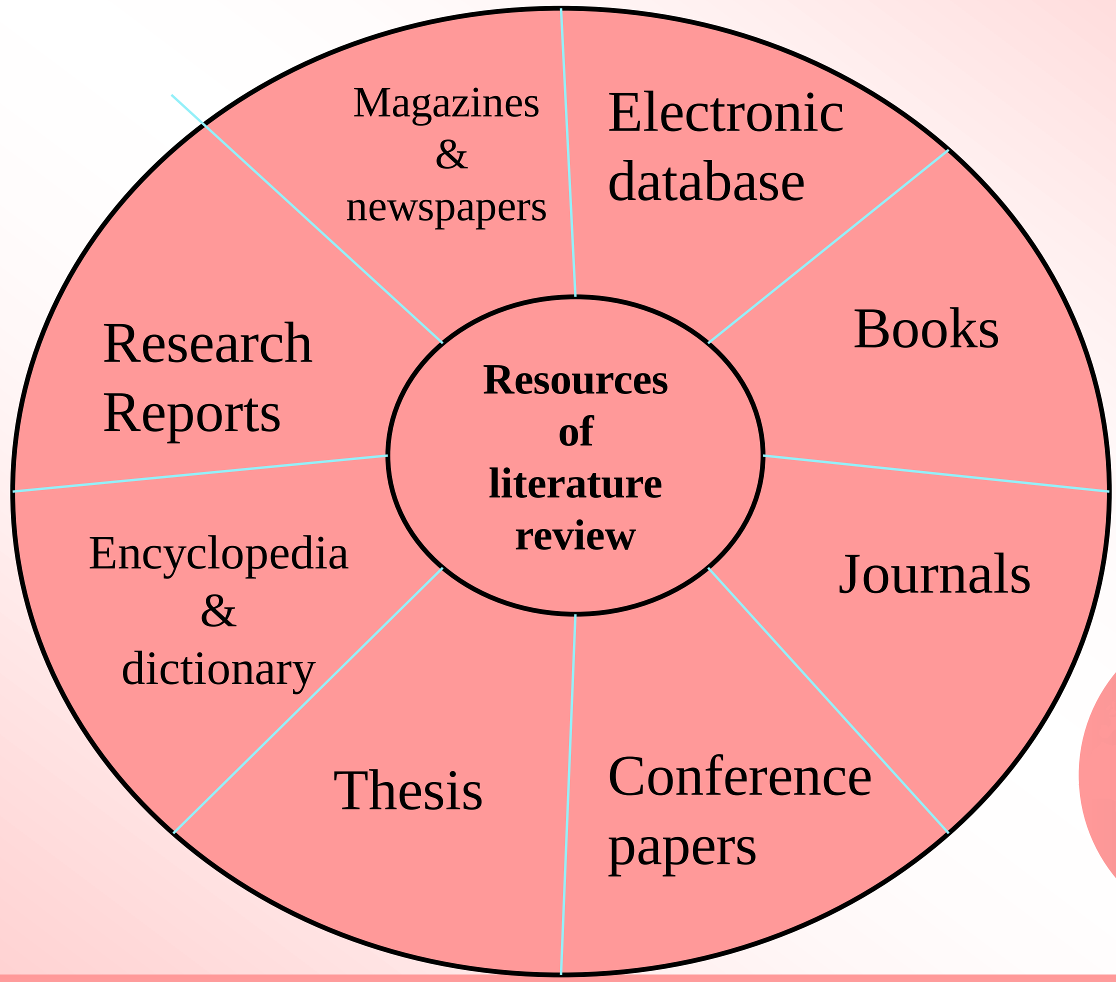
-- The highest impact factor of a Pakistani journal is **1.5**.

-- Total number of Pakistani journals with any impact factor is **10-15**.

-- **Total Cites** indicate the total number of times that each journal has been cited by all journals included in the database within the **current Journal Citation Reports (JCR) year**.

-- The **Impact Factor** is calculated by dividing the number of citations in the JCR year by the total number of articles published in that journal during two previous years.

The main sources from where literature can be searched are as …



The Internet

-- **Electronic mail**, **e-journal**, **on-line submission** of articles to journals, **online focus groups**, **on line video conferencing** and **online questionnaires** are some of the latest tools opened-up by the internet.

-- Thousands of books and journals have been made **available online** that would be extremely difficult to locate otherwise, including **out of- print** books.

-- **HEC** provides free access to more than **10,000** journals in designated universities and institutions.

Some of the features of conducting research through internet are:

-- **Short time** for collecting and recording data.

-- **Unknown data** can be identified and downloaded.

Important databases include:

-- **Science direct**

-- **Google scholar**

-- Most important database for Medical Sciences is **Pub Med** www.ncbi.nlm.nih.gov/entrez

-- It provides free access to **MEDLINE** that contains more than **23 million** references to journal articles in life sciences with a concentration on **biomedicine**.

-- PubMed also includes additional selected life sciences journals not in MEDLINE

-- It contains **all citations** from the medical literature **back to 1953**.

-- The number of PubMed searches ranges from **500,000 to over one million per day**.

-- Importantly, i**t is free**.

Reference Collection (Bibliography)

-- As soon as the survey of available sources begins, the preparation and collection of **references** preferably with **annotations** should be undertaken.

-- Keeping records **systematically** during research helps a researcher achieve various objectives.

-- It preserves data for **future use**.

-- The researcher may stumble upon something that may not be of immediate use, but would **help later**.

-- Articles can be **purchased** from the publishers on payment.

-- Alternatively, **reprint** of the article can be had from the author by **sending an e-mail to the author**.

-- **Cross references** (that is research articles or books referred or cited in a research report) should also be collected and classified.

-- One can **store** the details of the references in **computers** and have soft copies saved on **USB or external hard drives** in addition.

There are different styles of quoting references.

These include:

- **Vancouver style** often used in medicine and natural sciences, and sometimes in technology.

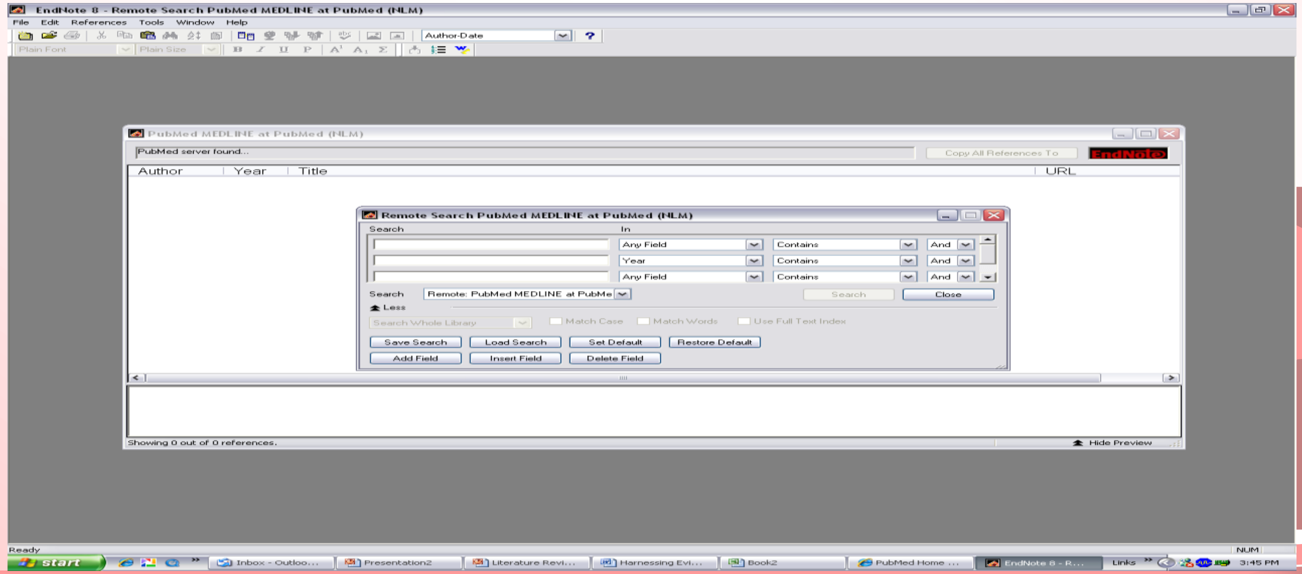
- **Harvard style** used in the social sciences, technology and natural sciences.

- **APA style** used in the social sciences, arts and humanities.

- **Chicago style** used in the social sciences, arts and humanities.

Tools for managing bibliography

- EndNote
- ProCite
- Mendely Reference Manager



After review of literature (which has enhanced your knowledge):

1. State the problem in **questionnaire form**.

2. **Specify the problem** in detail and in precise terms.

3. Remove the **ambiguities**, if any, in the statement of the problem.

4. Reexamine the **feasibility**.


Thank You!