How to conduct research? (contd)

SYNOPSIS

-- Synopsis is the **gist** of your planned project submitted for approval from competent authorities.

-- It gives a **panoramic view** of your research for **quick analysis** by the reviewers.

-- A synopsis should be constructed in a manner that facilitates the **reviewer** to understand the research project **at a glance**.

-- It should be **brief but precise**.

A synopsis can be structured in the following manner:

1. Title
2. Statement of the problem and hypothesis
3. Aims and objectives
4. Review of literature
5. Research methodology
6. References
7. Official requirements

Title

-- The title of the research project should be **brief but informative.**

-- It should neither be **too short** nor **too long**.

Statement of the problem/Justification

-- The problem being studied should be mentioned in **precise and clear terms.**

-- A brief account of its **utility** at the local or national level has to be discussed.

Aims and objectives

-- All research projects should have **aims and objectives** and every effort should be made to achieve them.

-- The **aims and objectives** should be **only a few (2-3).**

Review of literature

-- The review of literature in a synopsis need **not be exhaustive.**

-- The relevant information should be covered in about 300 words quoting **8-10** authentic, easily retrievable references.

Research methodology

-- In a synopsis the research methodology adopted should be mentioned in about **200-300** words.

-- The research methodology forms the **core** of the research project.

The methodology should cover the following aspects:

1. Study design
2. Study settings
3. Sampling
4. Variables
5. Controls
6. Study methods
7. Data collection
8. Data analysis
9. Ethical clearance

Variables

--- Variables are the factors that **can change**.

-- These changes can **affect the outcome** of a research project.

-- Thus, it is important to **identify** the variables at the planning stage.

-- It means that synopsis is **not the final word**.

As the research progresses **new avenues** will open.

Ethical clearance

-- Wherever necessary, ethical committee clearance from the institute should be obtained.

-- The certificate must be attached.

-- Ethical clearance is required in all **human** and **animal** studies.

References

All references quoted in review of literature and anywhere else in the synopsis should be listed.

Data collection

- -- Before initiating research work on a problem, a **rough estimate on costs** and **time required** to complete the work must be made.

- -- If the collection of data or resources or related information **takes many years**, then the topic is obviously **inappropriate** for any degree.

- -- The researcher must make sure that the **necessary experimental setup and materials** to perform the **actual research work** are available in the department where research work is to be carried out.

-- It should be kept in mind that there is **always room for improvement** in any human endeavor, and research is no exception.

-- Do each and every job with **maximum care** but do not indulge in **endless fine-tuning**, otherwise you will **never** finish the job on time.

-- You have to be **pragmatic** in your approach and execution.

-- Writing of the progress of the work helps to **better understand** the current situation and forms a solid basis for further progress.

It also points out the **gaps** in the work.

-- **Absolute honesty, patience, stamina, precision** and **devotion** together with **imagination** and **analytical ability** are the requirements for scientific research.

-- A researcher should discuss **new information** with the supervisor and seek guidance.

-- A **good supervisor** or a senior researcher **does not provide answers** to the questions but **gives appropriate directions** to clarify the doubts.

-- Towards the end of PhD course the researcher would know **much more** on the topic than the supervisor.

-- A researcher should also have **persistence**, **tolerance** and **self-control** over the unpleasant outcomes such as **not getting an expected result, not getting recognition by the supervisor** and **rejection of a research article** from a journal.

-- Sometimes one may complete a piece of work **within a week** which one might have expected to finish in a month time.

-- On the other hand, sometimes one **may get stuck** with a particular part of the work and unable to make a substantial progress for a long period.

-- Remember that **failure** and **wasted work** are also **part of the research career.**

-- You should also take the supervisor’s criticism in the **right spirit** and respond appropriately; there should be **no reason for emotional outbursts.**

-- In the research career one should treat doing research as a **way of life** and not just a job.

-- Getting insight in to a research topic is like **pushing a door**.

It is **hard** to push the door open but once it is accomplished, rest of the task becomes easy.

-- When one starts **understanding the details, research** becomes very interesting and joyful.

The story of Archimedes running stark naked from his bathtub, screaming Eureka! upon discovering a scientific principle is symbolic of the heights of joy a researcher may feel in his investigation and original scientific discovery.

The attributes of a good research scholar may be summarized as:

1. Self-confidence
2. Dedication
3. Concentration
4. Determination
5. Analytical mind
6. Scientific discipline
7. Innovative approach

Some common errors made in research are:

1. Selective observation
2. Inaccurate observation
3. Over-generalization
4. Made-up information
5. Illogical reasoning
6. Ego involvement in understanding
7. Premature closure of inquiry
8. Mystification

Data analysis and Interpretation of Results

-- The next step after performing the actual research work on the chosen problem is preparation of **results** and **conclusion** of the performed work.

-- **Keenness in observation** is the hallmark of any scientific research.

-- We should pay attention to **minute details** also.

-- **Interpretation** is the **drawing of conclusions** from the actual research work.

-- The value of the research greatly lie on **proper interpretations** and it may be the **hardest** part of research.

Proper interpretation of results is important because it:

-- **Links** the present work to the previous.

-- Leads to identification of **future problems.**

-- Opens **new avenues** of intellectual adventure and stimulates the quest for more knowledge.

-- Makes others understand the **significance** of the research findings.

Based on conclusions, the investigator has to give **suggestions:**

-- These should be **practical** and based on **logic**, **reasoning** and **fact**.

-- The suggestions should be such that they can be **actually implemented.**

-- **Baseless statements** should **never** be made.

Unexpected results

-- While doing research, particularly experiments, one may land up with an **unexpected result** or a finding **contrary** to the underlying theory.

-- Such an observation **should not be ignored blindly**.

-- It may be pursued to some extent to check whether it yields some **useful result**.

-- The history of science records such **fortuitous breaks** that led to many classic discoveries.

Fabrication/ Plagiarism

-- Never yield to the temptation of **fabrication** of results and interpretation.

-- **Plagiarism** in the form of copying data or findings from others' report without acknowledging the source may land you in trouble.

-- Don't attempt to report the **already** reported findings of others **as yours**.

-- Citing the **original sources** actually enhances the credibility of your work.

-- One should note that the observations, claims and the conclusions drawn in a research report are subjected to **evaluation** by the experts in the concerned field.

-- Therefore, the researchers have to be **very careful** before presenting the outcomes of the research in a journal or in a scientific meeting.


Thank You!