

# INTRODUCTION



# WHAT RESEARCH IS

Research is:

“...the systematic process of collecting and analyzing information (data) in order to increase our understanding of the phenomenon about which we are concerned or interested.”



# CHARACTERISTICS OF GOOD RESEARCH

1. Originates with a question or problem.
2. Requires clear articulation of a goal.
3. Follows a specific plan or procedure.
4. Often divides main problem into sub problems.
5. Guided by specific problem, question, or hypothesis.
6. Accepts certain critical assumptions.
7. Requires collection and interpretation of data.
8. Cyclical (helical) in nature.



# RESEARCH PROJECTS

- Research begins with a problem.
- **Identifying this problem can actually be the challenging part of research.**
- In general, good research projects should:
  - Address an important question.
  - Advance knowledge.



# HIGH-QUALITY RESEARCH

- Good research requires:
  - The scope and limitations of the work to be clearly defined.
  - The process to be clearly explained so that it can be reproduced and verified by other researchers.
  - A thoroughly planned design that is as objective as possible.



# HIGH-QUALITY RESEARCH

- **Good research requires:**
  - Highly ethical standards be applied.
  - All limitations be documented.
  - Data be adequately analyzed and explained.
  - All findings be presented unambiguously and all conclusions be justified by sufficient evidence.



# CRITERIA FOR A GOOD RESEARCH PROCESS

- Research is an extremely cyclic process.
- This isn't a weakness of the process but is part of the built-in error correction machinery.
- Because of the cyclic nature of research, it can be difficult to determine where to start and when to stop.



# STEPS FOR MAKING A GOOD RESEARCH

- Raising a Question.
- **Suggest Hypothesis.**
- Literature Review.
- Literature Evaluation.
- Acquire Data.
- Data Analysis.
- Data Interpretation.
- **Hypothesis Support.**





# STEP 1: A QUESTION IS RAISED

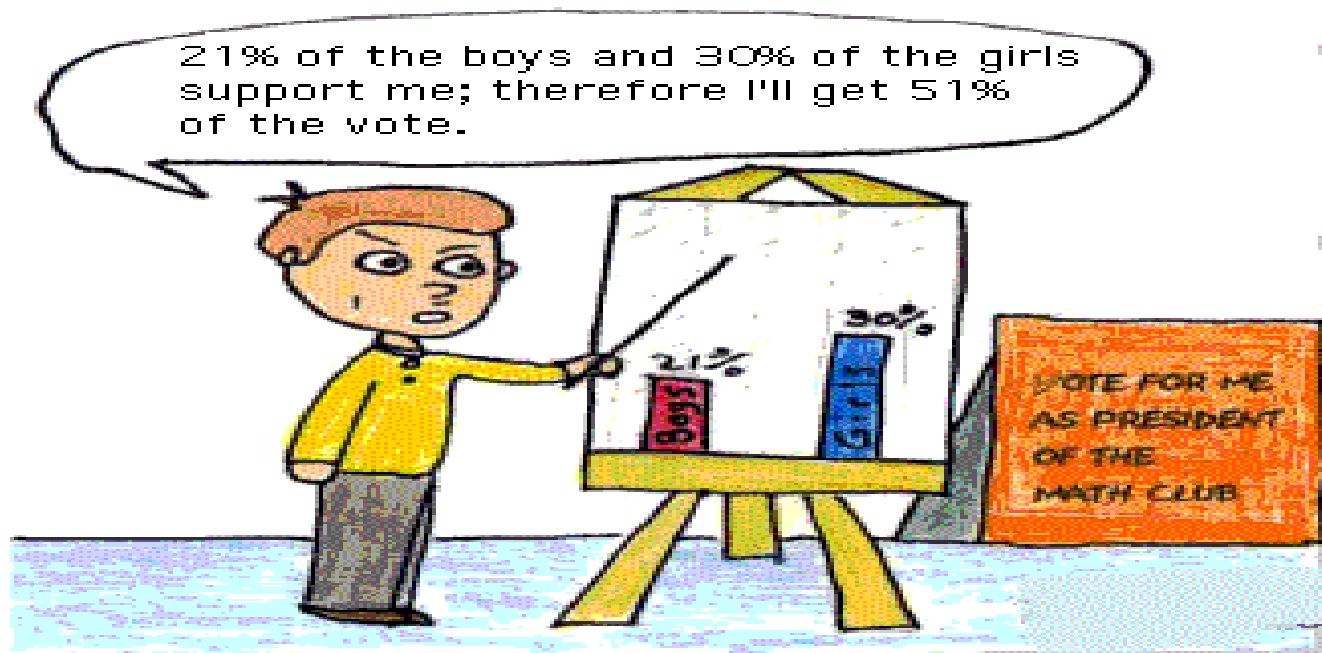


- A question occurs to or is posed to the researcher for which that researcher has no answer.
- The question needs to be converted to an appropriate problem statement like that documented in a research proposal.



## STEP 2: SUGGEST HYPOTHESIS

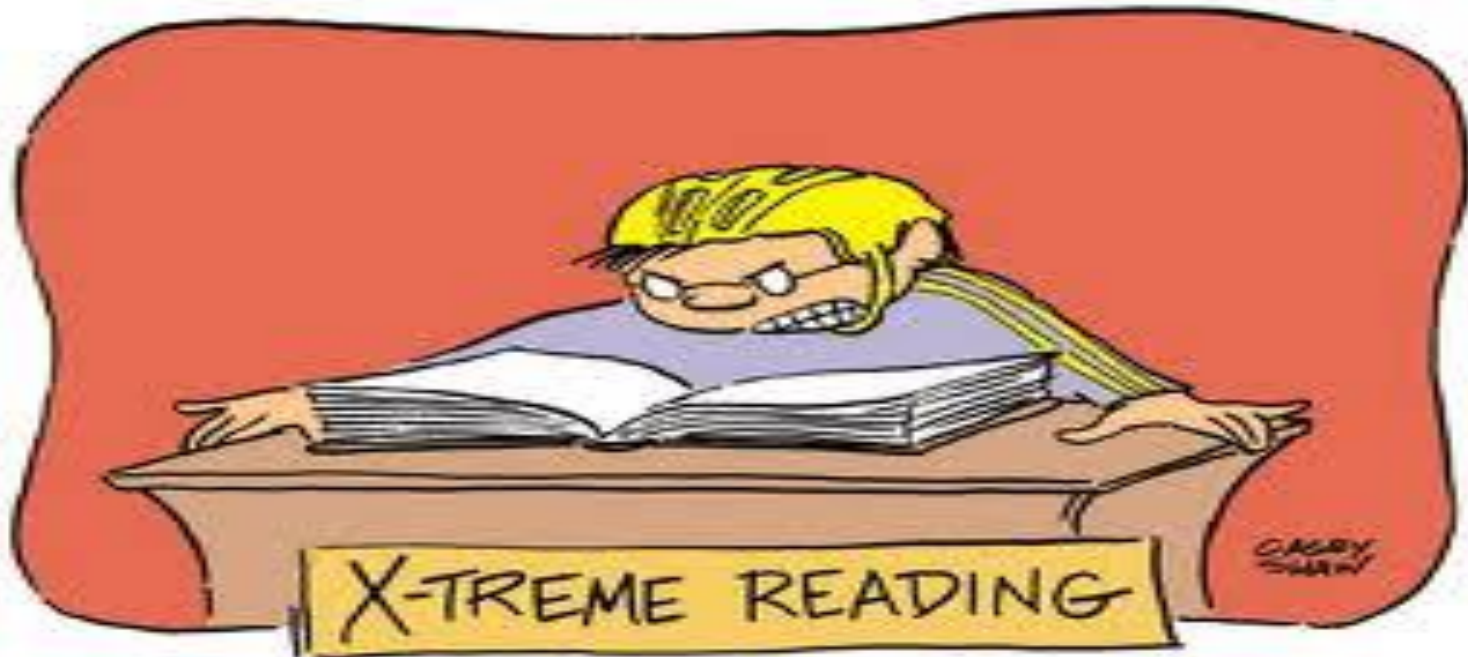
- The researcher generates intermediate hypotheses to describe a solution to the problem.
  - This is at best a temporary solution since there is as yet no evidence to support either the acceptance or rejection of these hypothesis.



# STEP 3: LITERATURE REVIEW

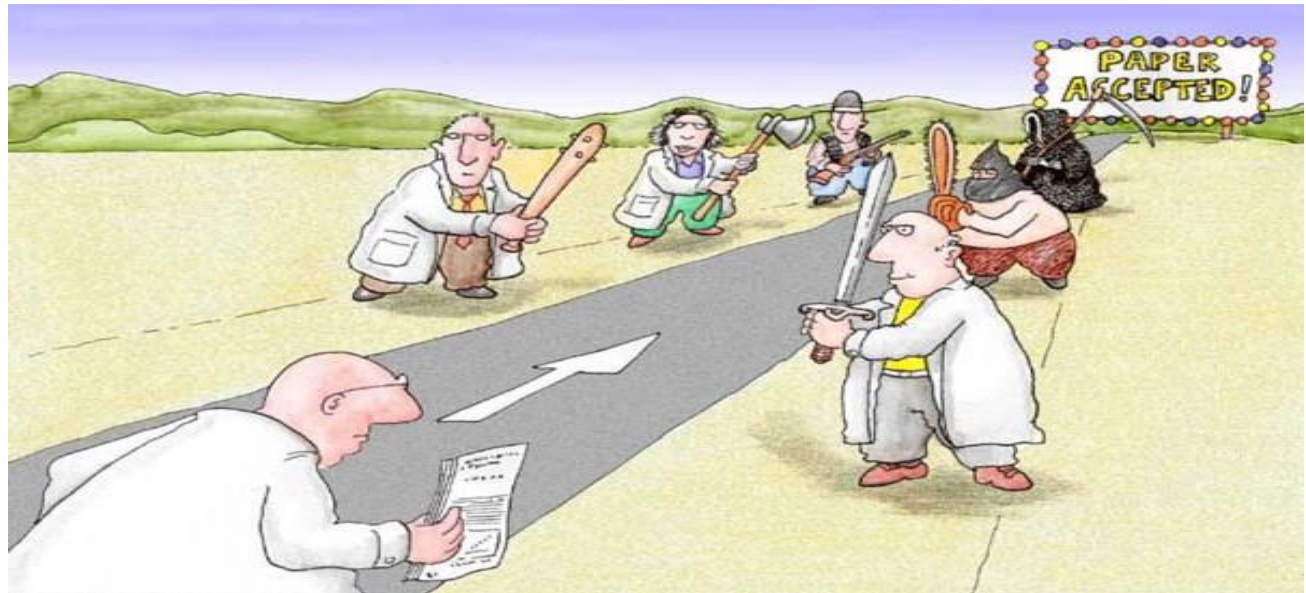
The available literature is reviewed to determine if there is already a solution to the problem.

- Existing solutions do not always explain new observations.
- The existing solution might require some revision or even be discarded.



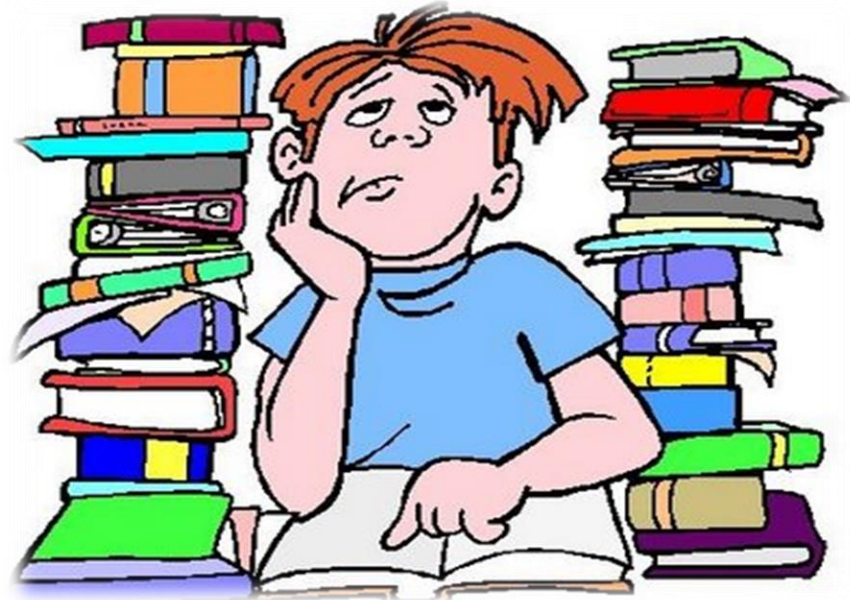
# STEP 4: LITERATURE EVALUATION

- It's possible that the literature review has yielded a solution to the proposed problem.
- On the other hand, if the literature review turns up nothing, then additional research activities are justified.



# STEP 5: ACQUIRE DATA

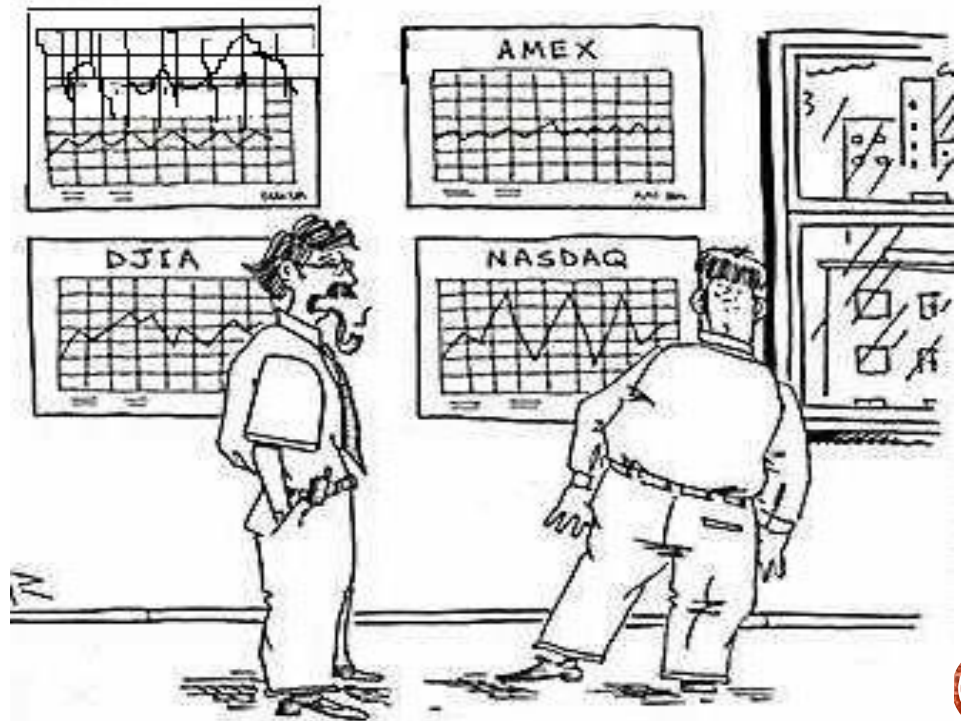
- The researcher now begins to gather data relating to the research problem.
- The means of data acquisition will often change based on the type of the research problem.





# STEP 6: DATA ANALYSIS

- The data that were gathered in the previous step are analyzed as a first step in ascertaining their meaning.
- As before, the analysis of the data does not constitute research.



# STEP 7: DATA INTERPRETATION

- The researcher interprets the newly analyzed data and suggests a conclusion.
  - This can be difficult.
  - Keep in mind that data analysis that suggests a correlation between two variables can't automatically be interpreted as suggesting causality between those variables.



# STEP 8: HYPOTHESIS SUPPORT

- The data will either support the hypotheses or they won't.
  - This may lead the researcher to cycle back to an earlier step in the process and begin again with a new hypothesis.
  - This is one of the self-correcting mechanisms associated with the scientific method.





# **DEFINING RESEARCH OBJECTIVES AND HYPOTHESIS**



# CLASS OBJECTIVES

- Have a basic knowledge of different types of studies.
- Define the term “research objectives”
- Define and describe the difference between general and specific objectives
- Understand why research objectives must be specified in the research proposal
- Assignment



- End is the objective
- The means is the work plan



# WHAT IS A RESEARCH OBJECTIVE

- The objectives of a research project summarize what is to be achieved by the study
- Should be closely related to the statement of the problem
- General objectives states what is expected to be achieved by the study in general terms



# **SPECIFIC OBJECTIVES**

- These are a breakdown of the general objective
- Systematically address the various aspects of the problem
- Should specify
  - What will you do in study- “it”
  - Where you will do it
  - Why will you do “it”



# HOW SHOULD YOU STATE OBJECTIVES

Use words that are specific enough to be evaluated

- to determine,
- to compare,
- to verify,
- to calculate,
- to describe,
- to establish.



# HOW SHOULD YOU STATE OBJECTIVES

Avoid use of vague non-action verbs  
such as

- to appreciate
- to understand
- to study



# OBJECTIVES MUST BE SMART

- Specific
- Measurable
- Achievable/attainable
- Realistic
- Time bound





# HOW TO WRITE SMART OBJECTIVES

An objective is a clear statement of something that needs to be accomplished over a period of time.

SMART objectives are:

- Specific – states exactly what you need to achieve
- Measurable – includes a quality or quantity measure
- Achievable – able to attain the objectives(knowing the resources and capacities at the disposal of the community);
- Realistic– can be challenging but must be achievable
- Timebound – with a clear end date or timescale



# WHY SHOULD RESEARCH OBJECTIVES BE DEVELOPED?

The formulation of objectives will help to:

- Focus on the study activities
- Avoid collection of data that are not strictly necessary for understanding and solving the problem you have identified.
- Organize the study in clearly defined parts or phases.



# WHY SHOULD RESEARCH OBJECTIVES BE DEVELOPED (CONT..)

- Properly formulated, specific objectives will facilitate the development of your research methodology
- Help to orient data collection
- Facilitate data analysis
- Facilitate interpretation and utilization of results



# **HYPOTHESIS**

- A statement of the problem which is said in a testable form
- This will help us develop an analysis plan
- It also helps to develop your variables (questionnaire.)
- Should be explicitly stated
  - include study design,
  - population, study factors and
  - outcomes to be measured etc in one sentence

