

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

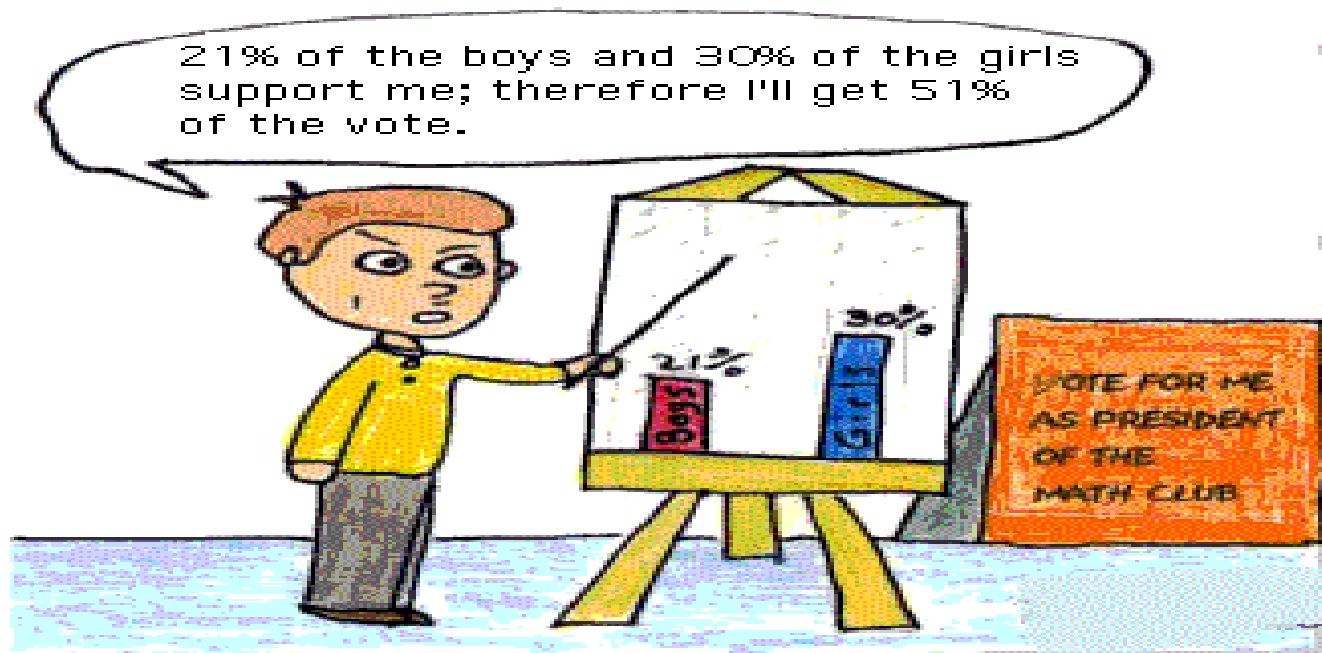


- A question occurs to or is posed to the researcher for which that researcher has no answer.
- The question needs to be converted to an appropriate problem statement like that documented in a research proposal.



STEP 2: SUGGEST HYPOTHESIS

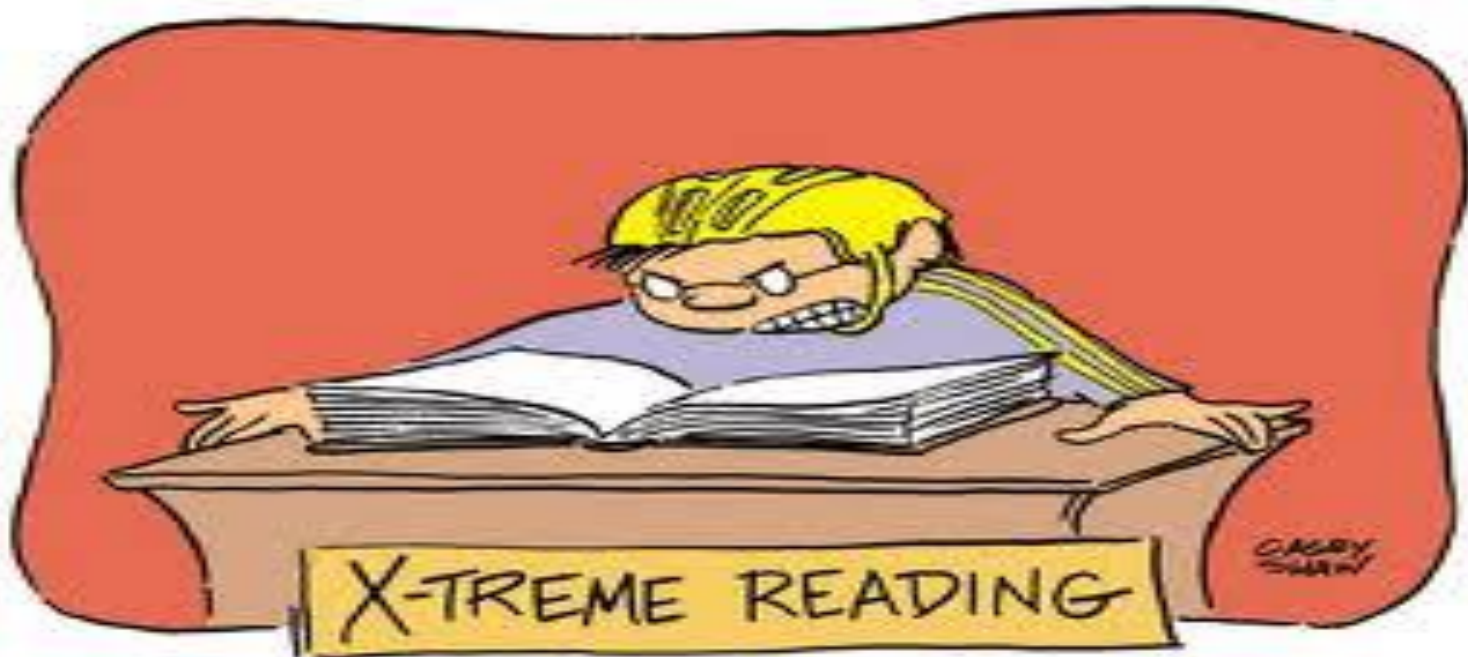
- The researcher generates intermediate hypotheses to describe a solution to the problem.
 - This is at best a temporary solution since there is as yet no evidence to support either the acceptance or rejection of these hypothesis.



STEP 3: LITERATURE REVIEW

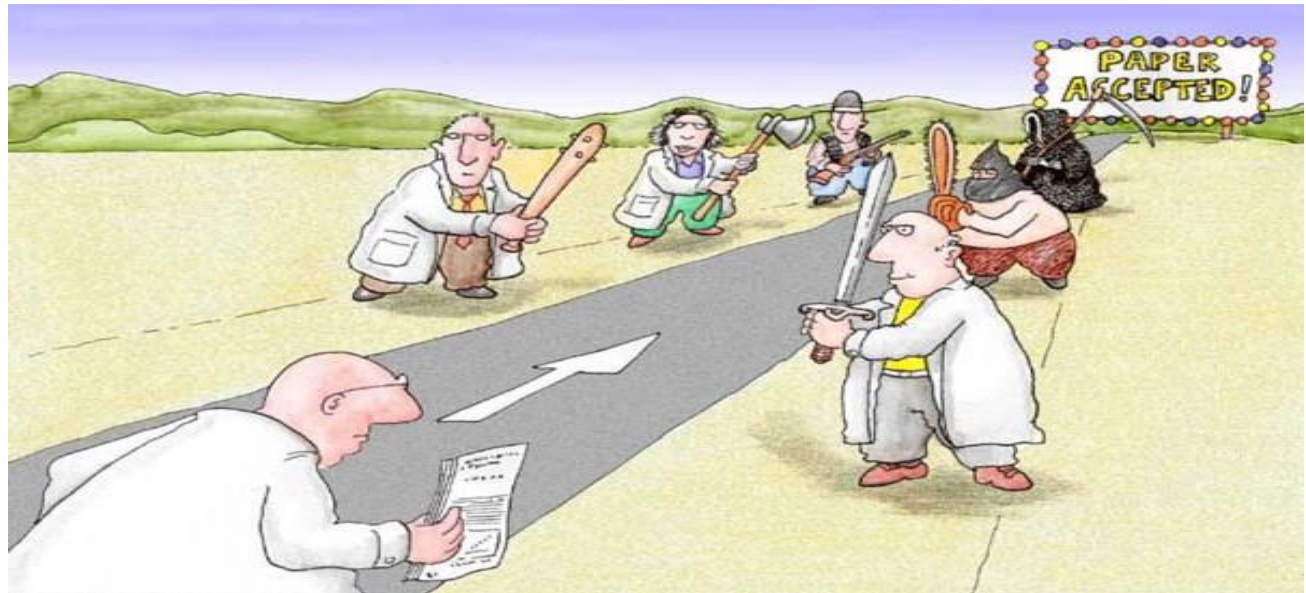
The available literature is reviewed to determine if there is already a solution to the problem.

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



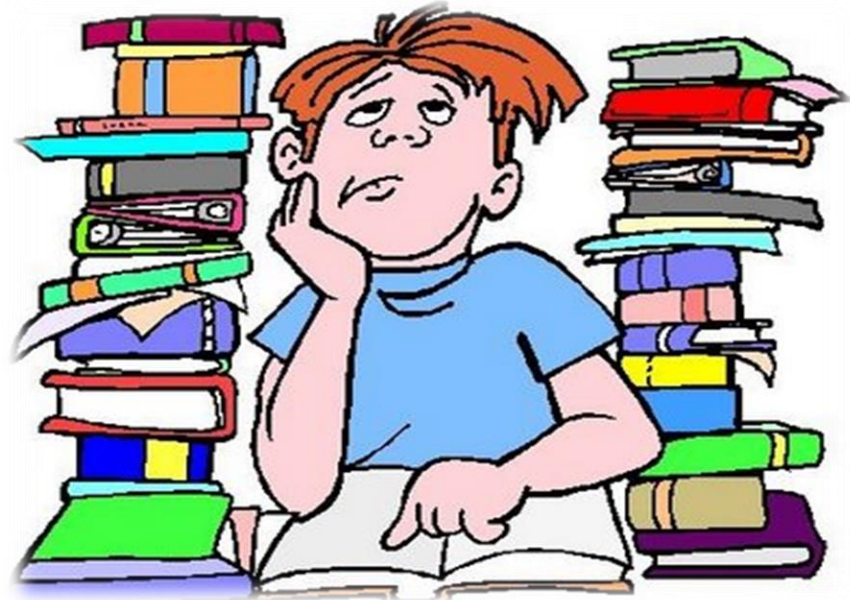
STEP 4: LITERATURE EVALUATION

- 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.



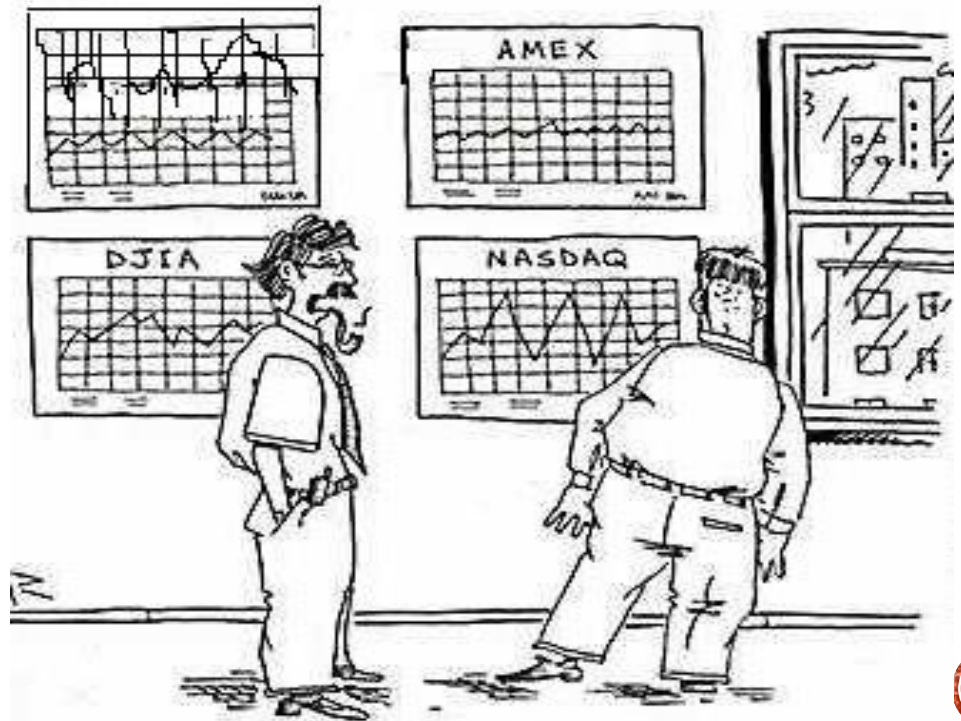
STEP 5: ACQUIRE DATA

- 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.
- GO tells you:
 - The Big Picture: What general area of knowledge will you be exploring? Maybe it's understanding human behavior, uncovering historical facts, or testing a new medical treatment.
 - The Tools You'll Need: What research methods will you use to navigate this new territory? Will you be conducting interviews, analyzing data, or observing social interactions?
 - The Skills You'll Develop: As you conduct your research, what abilities will you hone? You could learn critical thinking, data analysis, problem-solving, and even communication skills.
 - The Treasure You'll Seek: Ultimately, what knowledge or understanding are you hoping to gain from your research expedition? Will you answer your initial question, contribute to a larger field of study, or even challenge existing theories?



WHAT IS A RESEARCH OBJECTIVE

- Why are these guideposts important?
 - **They keep you focused:** Understanding the general objectives helps you prioritize what to learn and how to apply your research skills.
 - **They make research meaningful:** You see how your specific tasks and assignments connect to the bigger picture of research.
 - **They motivate you:** Reaching smaller goals within the general objectives keeps you engaged and excited about your learning journey.



SPECIFIC OBJECTIVES

- These are a breakdown of the general objective
- Systematically address the various aspects of the problem
- Should specify

Desired outcome: Objectives should clearly define what you want to achieve. This could be a tangible result, like to explore the technological interventions in managing post-partum depression in MCH. Being specific about the desired outcome helps track progress and measure success.

Key action or area of focus: Objectives should pinpoint the specific action or area you'll focus on to achieve the desired outcome. This could be developing a module to improve an existing system, launching a new marketing campaign, implementing a new training program, or improving communication within a team. Identifying the key action or area helps guide your efforts and resources.



HOW SHOULD YOU STATE OBJECTIVES

1. Choose verbs that represent specific actions:

- Instead of using general verbs like "learn" or "understand," aim for verbs that show what you plan to do to achieve your objective. For example, instead of "Learn about persuasive writing," try "Analyze 10 persuasive essays to identify key techniques used to influence readers."

2. Focus on observable outcomes:

- Choose verbs that describe actions with observable results. This makes it easier to track your progress and measure your success. For example, instead of "Improve communication skills," try "Deliver a presentation"

3. Align verbs with Bloom's Taxonomy:

- Bloom's Taxonomy categorizes different levels of learning, from remembering facts to creating new knowledge. Consider the depth of understanding you aim for and choose verbs accordingly. For example, if you want to analyze information, use verbs like "compare," "contrast," or "interpret." If you want to create something new, use verbs like "design," "propose," or "construct."

4. Use concise and active language:

- Avoid passive voice constructions and wordy phrases. Keep your sentences clear and direct, focusing on the action you will take. For example, instead of "It is desired that I will analyze research findings," try "I will analyze research findings to draw conclusions."



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

What to avoid when stating a Research Objective

1. **Vagueness:** Using ambiguous verbs like "understand" or "explore" doesn't tell your reader what you actually aim to achieve. Instead, opt for strong action verbs like "analyze," "identify," or "test," which specify the action you'll take to reach your goal.
2. **Unmeasurable outcomes:** Objectives should have measurable outcomes. Avoid phrases like "gain a greater understanding" or "increase awareness." Instead, define how you'll measure success, e.g., "identify three distinct factors influencing decision-making through statistical analysis."
3. **Unrealistic goals:** Setting objectives that are beyond your resources or timeframe is a recipe for disappointment. Make sure your objectives are challenging but achievable.
4. **Excessively long lists:** A laundry list of objectives can be overwhelming and difficult to focus on. Aim for 3-5 concise and well-defined objectives that encompass your research focus.
5. **Redundancy:** Don't repeat the same meaning with different phrasing. Ensure each objective adds unique value and avoids overlapping with others.



HOW SHOULD YOU STATE OBJECTIVES

6. Ambiguous timeframe: Objectives should be time-bound to provide a sense of urgency and direction. Specify a timeframe for achieving each objective, e.g., "identify key research gaps within the first three months."
7. Biased language: Avoid pre-conceived notions or biased language. Use neutral and objective terminology that reflects the intent of your research, not your desired outcome.
8. Overlooking ethical considerations: Ensure your objectives align with ethical research principles. Avoid objectives that may harm participants or raise concerns about data collection or dissemination.
9. Ignoring feasibility: Consider the resources and limitations available to you when formulating objectives. Choose objectives that you can realistically achieve within your constraints.
10. Forgetting the big picture: Remember, your objectives should guide your research journey. Ensure they align with your research question and contribute to the overall understanding of your chosen field.



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

