

Approved  
at a meeting of the faculty Academic council  
Protocol No 1, dated September 1, 2023  
Dean of faculty



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## **EDUCATIONAL AND METHODOLOGICAL COMPLEX OF DISCIPLINE**

**97080 Organization and planning of scientific research in the field of maritime and energy law.**

**Educational program 7M04212 Marine and energy law (BSU)**

Course – 1

Semester – 2

Number of credits – 5

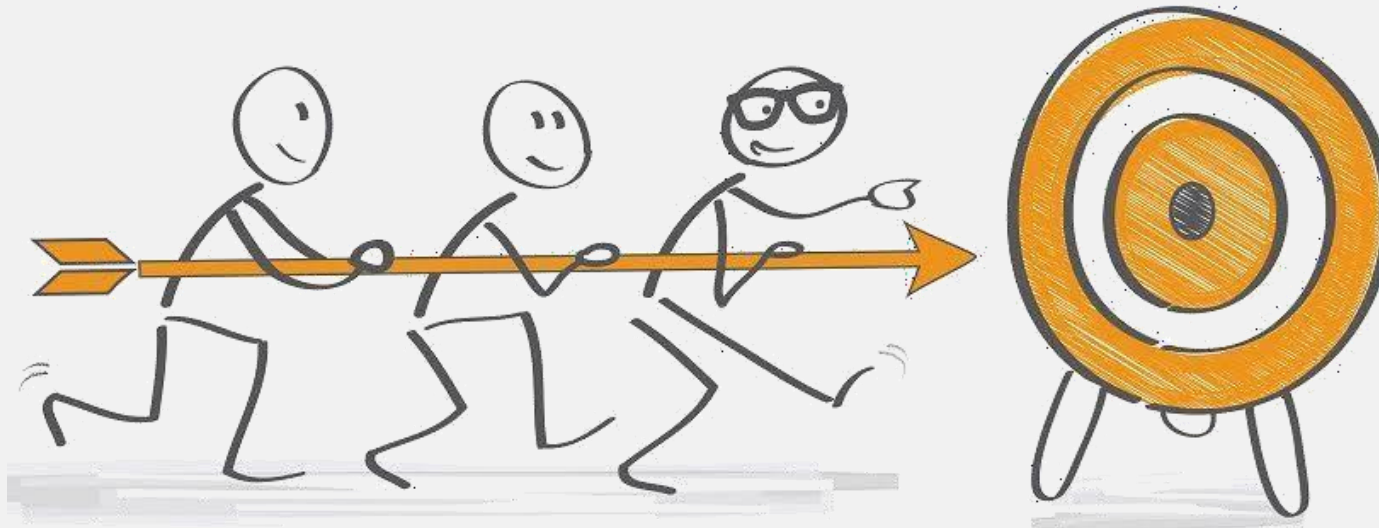
The form of study-full-time, online

# Learning Objectives

**By the end of this session, you'll Know:**

**LO1:** What is "research", Types, & importance?

**LO2:** Steps for Scientific Researching



# LO1

# What is Research?

- **Research** = the **physical** process of gathering information + the **mental** process of deriving the answer to your question from the information you gathered.
- A tool used to find evidence.
- Research writing = the **process of sharing** the **answer to your research question** along with the **evidence** on which your answer is based, the **sources** you used, and **your own reasoning**

# Research Purpose

- To advance one's knowledge about a topic
- To **replicate**, examine and extend previous knowledge claims
- To develop **new knowledge** for humankind
- To create **new interventions**, new applications.



# Types of researches



# Basic Science

# Applied Science

Why is this important?



How can I use this?

**Problem-Oriented research:** These are to understand the exact nature of a problem & to find out relevant solutions.



# Qualitative research:

- It helps create in-depth understanding of problems or issues.
- This is a non-statistical method.





# Quantitative research:

- Is a structured way of collecting data and analyzing it to draw conclusions.
- Statistical (**all about numbers**).



# What Is the Purpose of a Research?



# 1. Exploratory:

- It is conducted to handle new problem areas which haven't been explored before.
- To explore a group of questions. The answers & analytics may not offer a final conclusion to the perceived problem.

Example: The survey poll that can be send to students to understand their opinions about the timing of a weekly conference. Based on such information, decision is taken.

## 2. Descriptive:

- Three main purposes of descriptive research: describing, explaining & validating the findings.
- Focuses on expanding knowledge on current issues through a process of data collection.
- To describe the behavior of a sample population.

Example: A cross-section study planned to include a questionnaire form among medical students in order to know their opinions about continuous medical education.

# 3. Explanatory:

- Can be conducted for a problem that was not well researched before, demands priorities, generates operational definitions.
- They are not used to give us some conclusive evidence but helps us in understanding the problem more efficiently.

Examples: Literature Research, In-depth study of every single problem & a Case Analysis Research.

**LO2**

# Steps for a Research Process?



# 7 Steps of Research Process

- Step One: Define research problem
- Step Two: Review of literature
- Step Three: Formulate hypotheses
- Step Four: Preparing the research design
- Step Five: Data collection
- Step Six: Data analysis
- Step Seven: Interpretation and report writing

# Step 1: Define Research Problem

## “Research Question & Topic”

- Begin from a question to which you don't know the answer & that can't be answered just by going to the appropriate reference source.
- That is, begin from a research question, not a homework question.





## Getting Started: Step 1+2

# How to select Research topic?

5Ws  
& 1H

WHAT

- What (exactly) do I want to achieve?
- What are the facts?
- What would happen if no decision was made or solution found?
- What do I need in order to find a solution?

WHY

- Why do I want to achieve a solution?
- Why did the problem or opportunity arise?
- Why do I need to find a solution or way forward at all?
- Ask 5 Whys

HOW

- How will the situation be different?
- How relevant is the information I am gathering?
- How can I find out more?
- How can I involve relevant people?

WHERE

- Where did the issue arise?
- Where does it impact?
- Is the "where" important?
- If so, why?

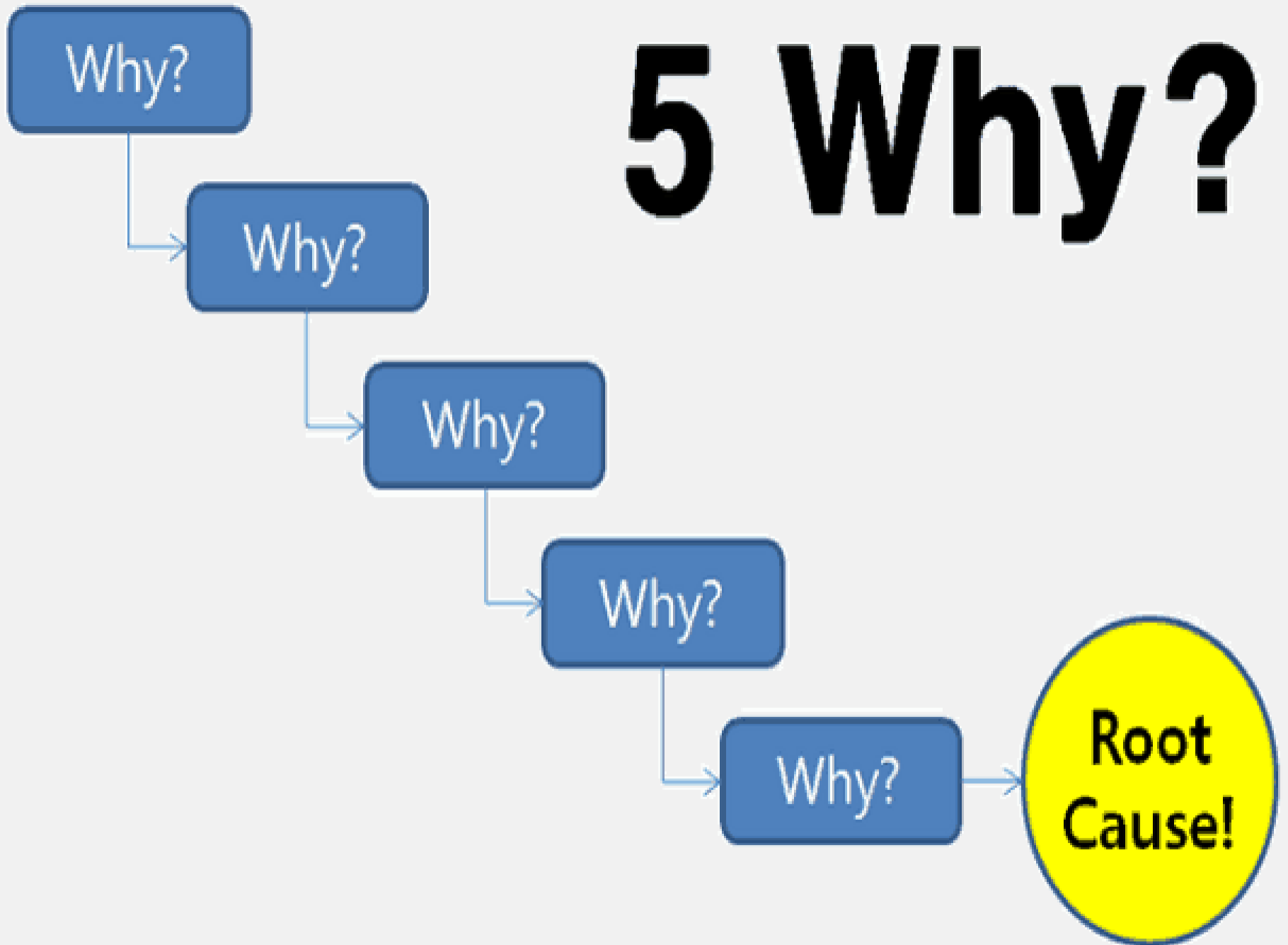
WHO

- Who am I trying to please?
- Who cares about this situation? Who is affected?
- Who is involved (information, help, action)?
- Who needs to be informed?

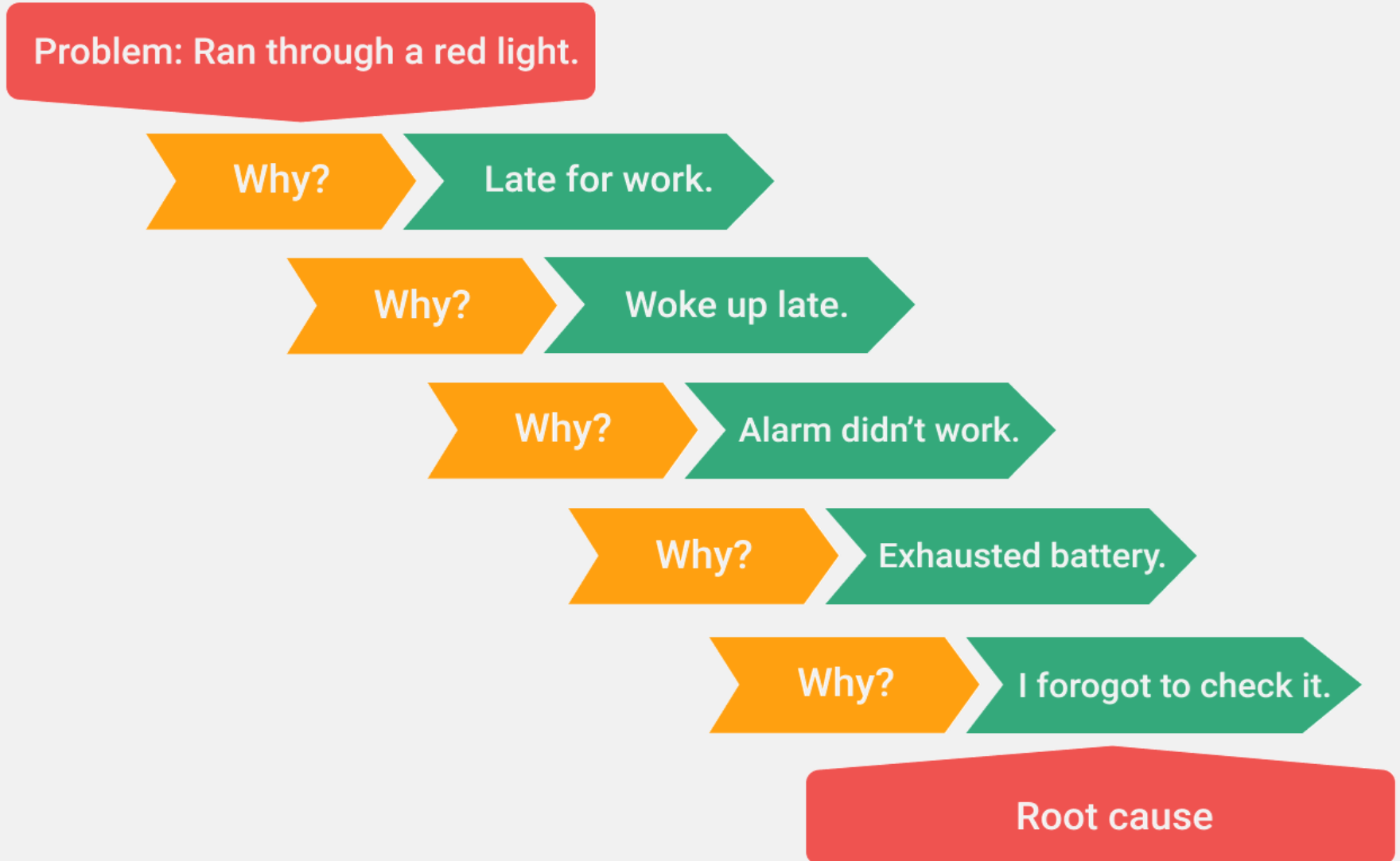
WHEN

- When did the issue arise?
- When do we need to act?
- By when must it be resolved?

# 5 Why?



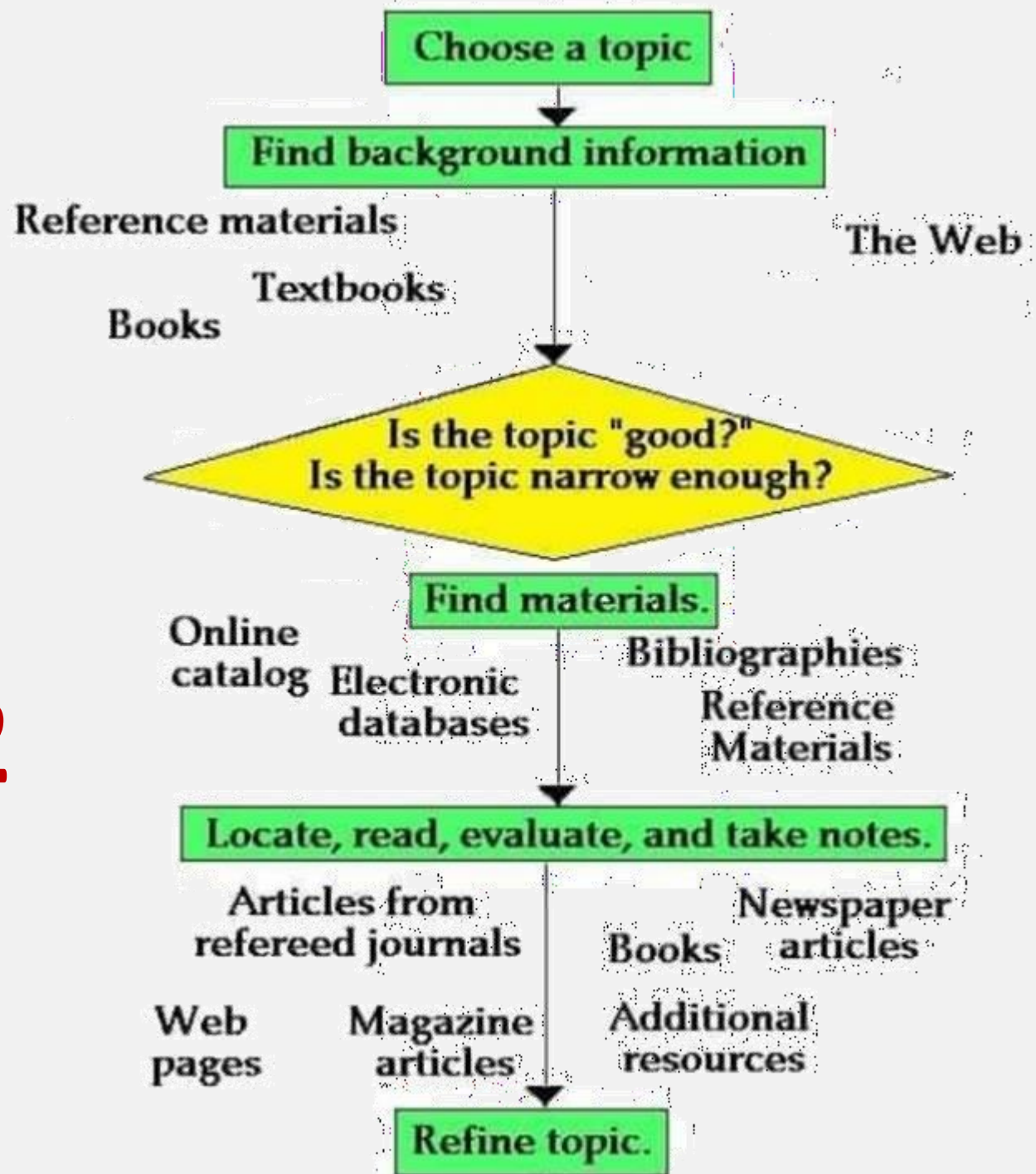
# Example?



# Examples of a research Topic?



# Getting Started: Step 1+2



# Step 2: Review of Literature

## “Gathering information”

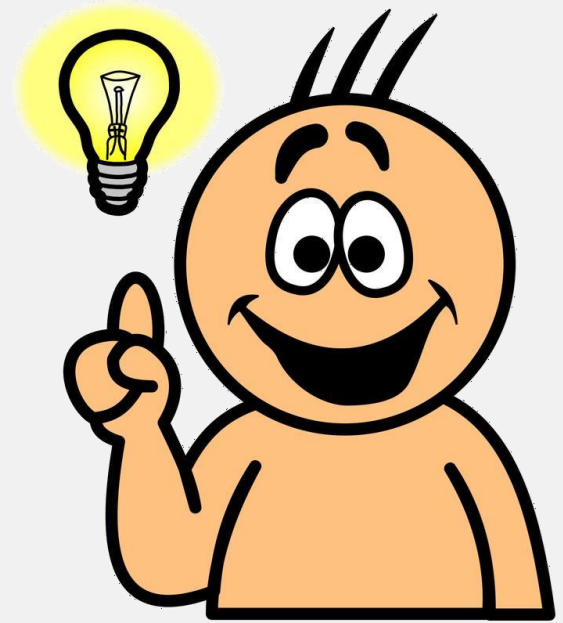
- Decide what kind of information or data will be needed in order to build the answer to the question.
- Gather information &/or collect data.
- Work with the information/data to derive or construct your answer.



# Step 3: Formulate hypothesis

A hypothesis is a statement about the relationship between two or more variables.

It is a specific, testable prediction about what you expect to happen in a study.



# Example

A study designed to look at the relationship between sleep deprivation and test performance

**Hypothesis : ?**





# Example

A study designed to look at the relationship between sleep deprivation and test performance

## Hypothesis :

"This study is designed to assess the hypothesis that sleep-deprived people will perform worse on a test than individuals who are not sleep deprived."

## Example 2:

A researcher might be interested in the relationship between study habits and test anxiety.

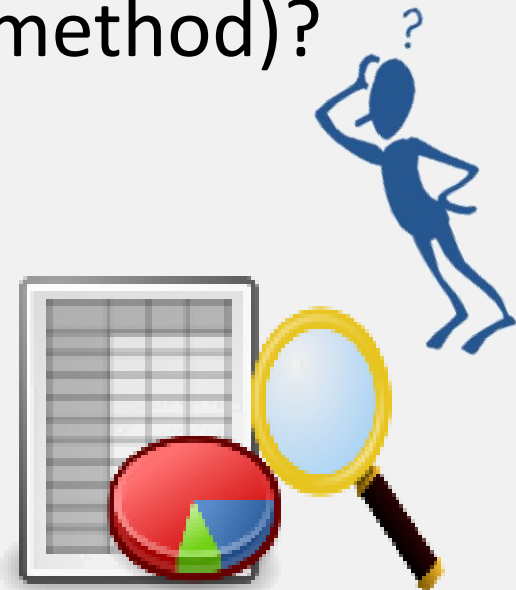
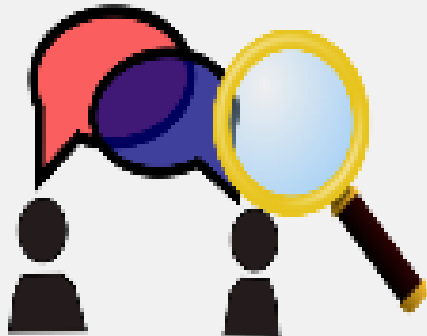


**Hypothesis?**

"Test anxiety decreases as a result of effective study habits."

# Step 4: Preparing the study Design

- Introduce the overall methodological approach for investigating your research problem.
- Is your study qualitative or quantitative or a combination of both (mixed method)?



# Step 5: Data Collection

Describe the specific methods of data collection you are going to use, such as:

- ✓ Surveys
- ✓ Interviews
- ✓ Questionnaires
- ✓ Observation
- ✓ Archival research.



# Step 6: Data Analysis

- Explain how you intend to analyze your results. Will you use statistical analysis?
- Describe how you plan to obtain an accurate assessment of relationships, patterns, trends, distributions, ..ect.



# Step 7: Data Interpretation & Research writing

- Simply state what you found.
- Presented in a logical order.
- Use the past tense to describe your results.



# To Sum Up:

- Research is a systematic inquiry to describe, explain, predict & control an observed phenomenon.
- The research purpose can be either Exploratory, descriptive or explanatory.
- Research can be: Basic, applied, problem oriented/solving, quantitative or qualitative.
- There are 7 Steps for Scientific Researching.