



INTRODUCTION TO RESEARCH

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Research method (Bio 417)

7

Week 1

1-5/10/2023



Outline

- Course evaluation criteria
- Meaning of research
- Objectives of research
- Characteristics of research
- Criteria of a good research
- Significance of research
- Problems in research
- Types of research
- Overview of research process

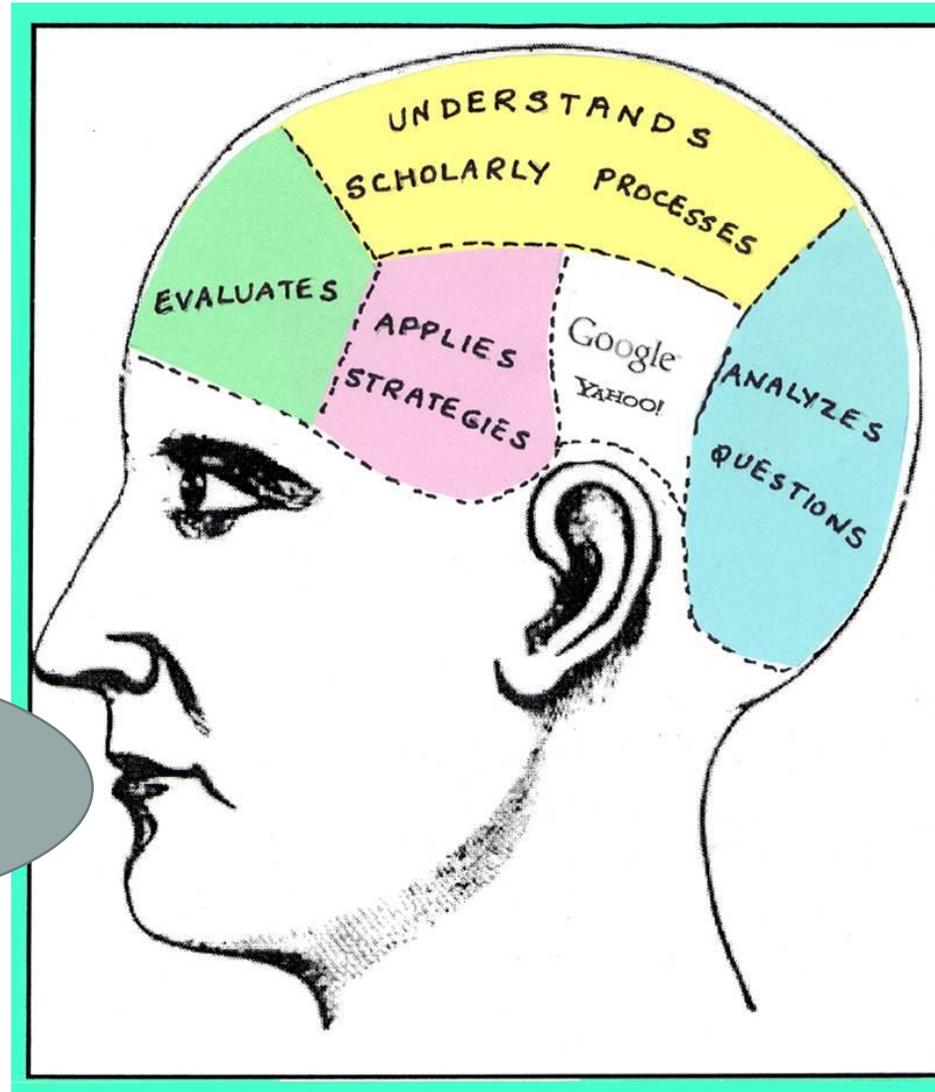
Objectives

- By the end of the class: The students will be able to;
- Define research
- Understanding research methodology
- Types of research
- Process of research



COURSE EVALUATION CRITERIA

Method	Quantity	Percentage (%)
Quiz	3	15
Homework	1	5
Midterm Exam	1	20
Presentation	1	10
Term Paper	1	10
Final Exam	1	40
Total		100



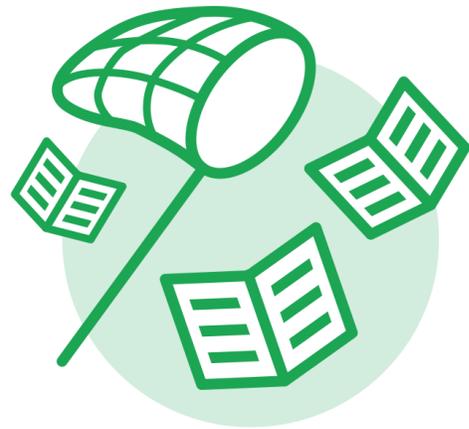
Research

Meaning Research

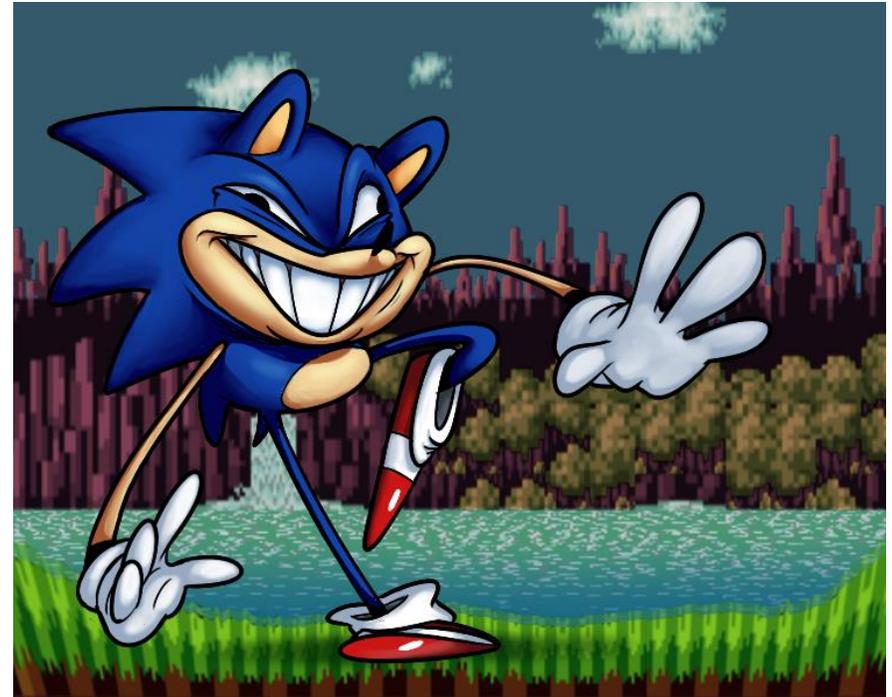
- ❖ Research is the *systematic* process of collecting and analyzing information (data) to increase our understanding of the *phenomenon* about which we are concerned or interested.
- ❖ Research is an endeavor to discover answers to intellectual and practical problems through the application of scientific method.
- ❖ Research is a systematized effort to gain new knowledge
- ❖ Research is the process of finding solutions to a problem after a thorough study and analysis of the situational factors.



identification



COLLECT & CAPTURE





Objectives of Research



- To discover answers through the application of scientific procedures.
- To gain familiarity with a phenomenon or to achieve new insights into it.
- To portray accurately the characteristics of a particular situation.

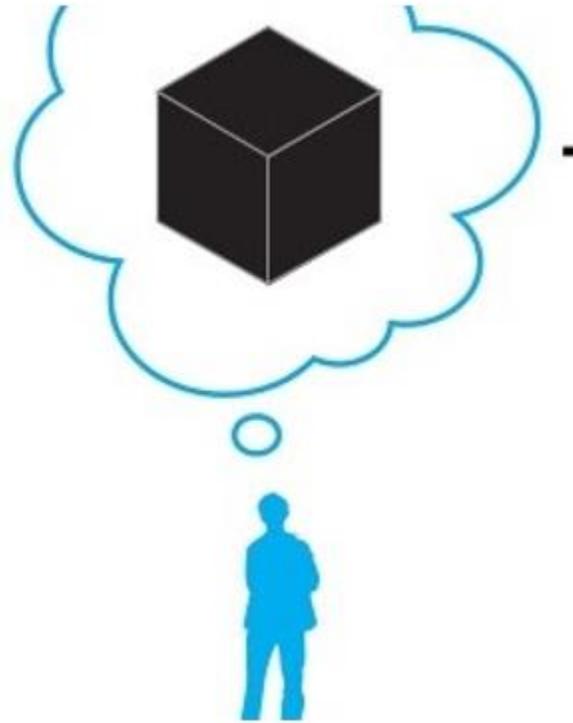
Characteristics of Research



- Research is directed towards the solution of a problem.



➤ Research is based upon observable experience



or



- Gathering new data from primary sources or using existing data for a new purpose



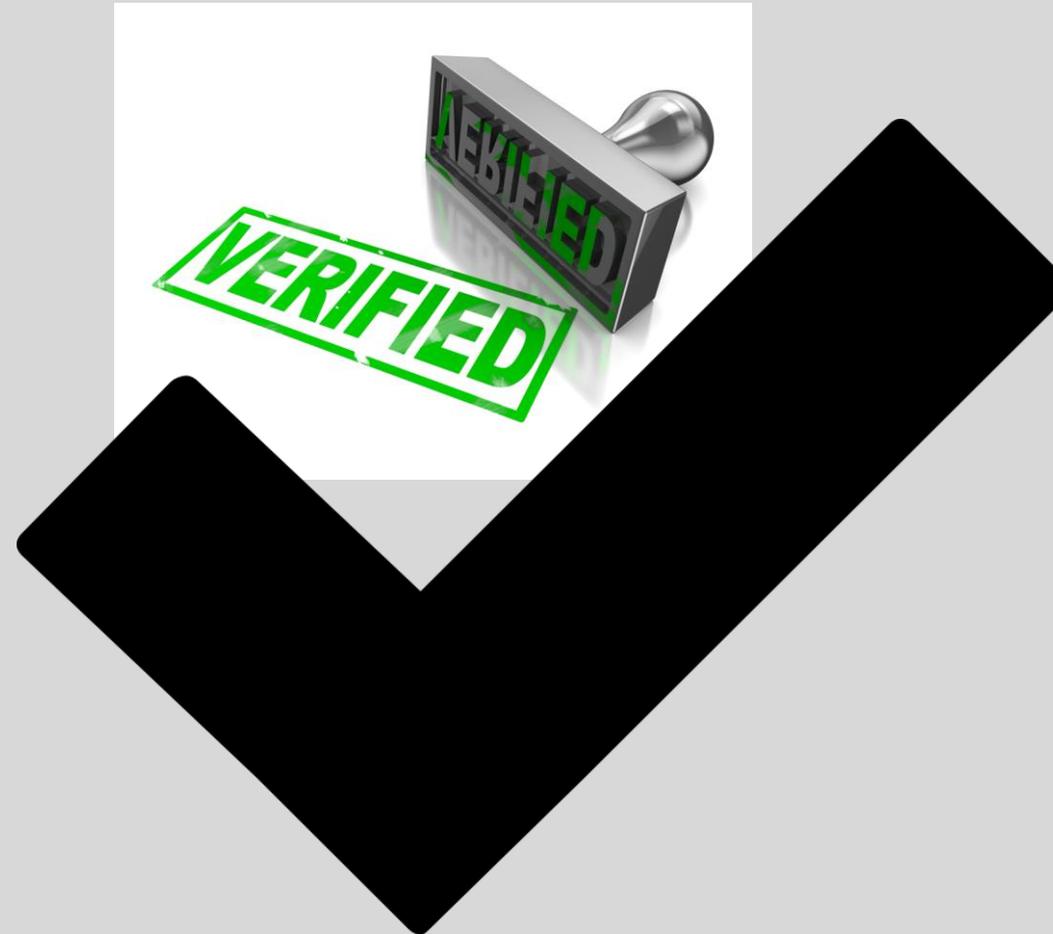
or



- Characterized by carefully designed procedures.



- Applying every possible test to validate the data collected and conclusions reached.



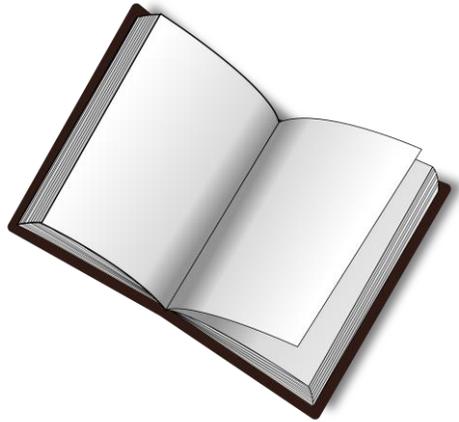
➤ Research requires courage.



- Research is characterized by patient and unhurried activity.



- Research is carefully recorded and reported.



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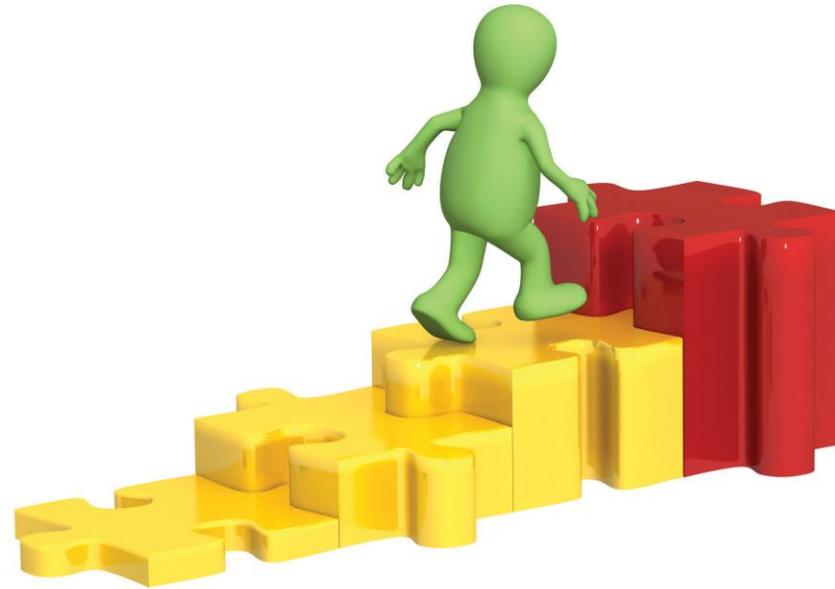
Criteria of a Good Research



- Purpose clearly defined



- Research design thoroughly planned



➤ Research process detailed

THE RESEARCH PROCESS



- High ethical standards applied



- Limitations frankly revealed.



Significance of Research



- Throws light on risks and uncertainty
- Identify alternative courses of action
- Helps in economic use of resources
- Helps in project identification
- Solves human problems
- Solves animal problems
- Solves plants problems



Problems in Research

- Uncontrollable variables
- Human tendencies
- Time and money
- Lack of computerization
- Lack of scientific



Types of Research

Research can be divided into 3 major groups

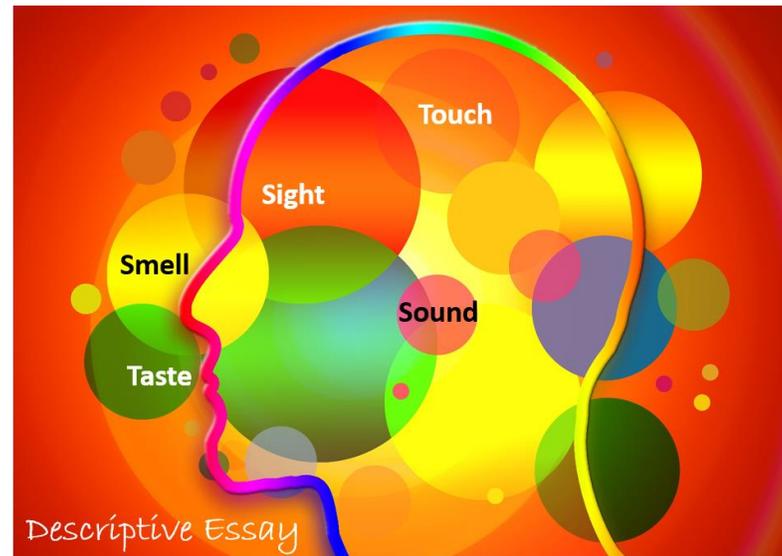
- 1. Based on Application

- 2. Based on Data Collection

- 3. Based on Area of Research

1. Based on application

Descriptive Research: is a fact-finding investigation which is aimed at describing the characteristics of individual, situation or a group (or) describing the state of affairs as it exists at present.



1. Based on application

Analytical Research is primarily concerned with testing hypothesis and specifying and interpreting relationships, by analyzing the facts or information already available.





Applied Research or Action Research is carried out to find solution to a real-life problem requiring an action or policy decision.

Fundamental Research which is also known as basic or pure research is undertaken for the sake of knowledge without any intention to apply it in practice. It is undertaken out of intellectual curiosity and is not necessarily problem-oriented.

1. Based on data collection

- 1. *Quantitative research:*** Is a research method that focuses on collecting and analyzing numerical data to answer research questions and test hypotheses.

- 2. *Qualitative research:*** Is a research method that focuses on exploring and understanding the complexities or phenomenon. Qualitative research emphasizes the collection of non-numerical data, such as words, images, and observations.

- 3 *Mix mode Research:*** Also known as mixed-methods research, is an approach that combines both quantitative and qualitative research methods within a single research study or project. It involves collecting and analyzing both numerical data (quantitative) and non-numerical data (qualitative) to provide a more comprehensive understanding of a research question or phenomenon.

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1. Based on area of research

1. Animal
 2. Plants
 3. Microbes
 4. Molecular biology
 5. Bio-informatiques
 6. Tissue culture
- etc

Overview of Research Process



- 1) Identification of research problem
- 2) Broad literature survey
- 3) Preparation of research design
- 4) Data collection
- 5) Analysis of data
- 6) Data interpretation
- 7) Discussion of the results
- 8) Preparation of the report or presentation of the results
- 9) Publication of findings



Review the Available Literature

Formulate a Question

Research Process

Select an Appropriate Research Design

Collect *Relevant* Data

Publish Findings

Interpret Findings





References

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