INTERACTIVE WORKSHOP ON

12-02-2019 onwards

MEDICAL EDUCATION UNIT
C. U. SHAH MEDICAL COLLEGE
SURENDRANAGAR

INTRODUCTION TO MEDICAL RESEARCH

12-02-2019

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SURENDRANAGAR

???

- Discovery
- Invention
- Intervention
- Innovation
- Systemic
- Systematic
- **Research**

A **discovery** is recognizing something that already exists for the first time, that nobody has found before, e.g. how Christopher Columbus discovered the Americas

An **invention** is creating something totally new with one's own ideas and development. ... e.g. how Thomas Edison **invented** the light bulb.

???

- Discovery
- Invention
- Intervention
- Innovation
- Systemic
- Systematic
- **Research**

The act of interfering with the outcome or course especially of a condition or process (as to prevent harm or improve functioning - Intervention

Innovation is a "new idea, creative thoughts, new imaginations in form of device or method".

However,innovation is often also viewed as the application of better solutions that meet new requirements, unarticulated needs

???

- Discovery
- Invention
- Intervention
- Innovation
- Systemic
- Systematic
- **Research**

Systemic **is an adjective which describes something that *affects an entire process or organization*.. Mainly used to talk about body systems**

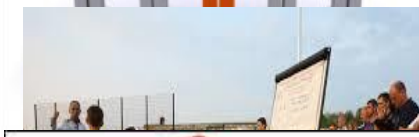
Systematic **is also an adjective. It refers to something that is carried out *in a methodical, organized manner*, like a records audit or a police investigation. Eg your research should be SYSTEMATICALLY planned**

Research

- **Research is a systematic collection, analysis, and interpretation of data to answer certain question/s or solve problem/s.**

Why To Do Research?

- Add to scientific knowledge
- Improve medical and health practices
- Benefit patients and community
- Personal and professional development
- Complete the requisite of a course /study
- To satisfy MCI rules regarding promotion



Types of Research

- **Primary vs**

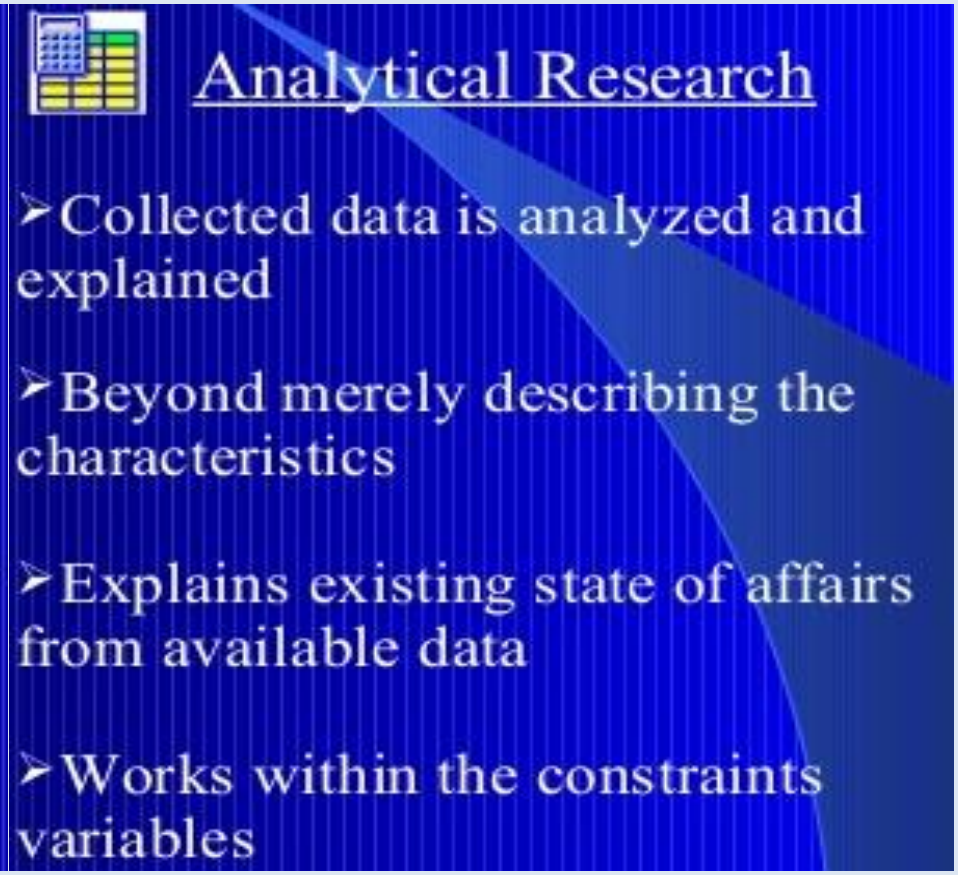
Secondary Research

Primary research is one that involves the gathering of fresh data, i.e. when data about a particular subject is collected for the first time, then the research is known as primary one.

Secondary Research is one that involves use of information gathered originally by primary research.

Types of Research

- **Descriptive vs**
- **Analytical Research**



Types of Research

- **Qualitative vs Quantitative Research**

Qualitative research is a method of inquiry that develops understanding on human and social sciences, to find the way people think and feel.
To explore and discover ideas used in the ongoing processes.
Words, pictures and objects

Quantitative research is a research method that is used to generate numerical data and hard facts, by employing statistical, logical and mathematical technique.
Numerical data

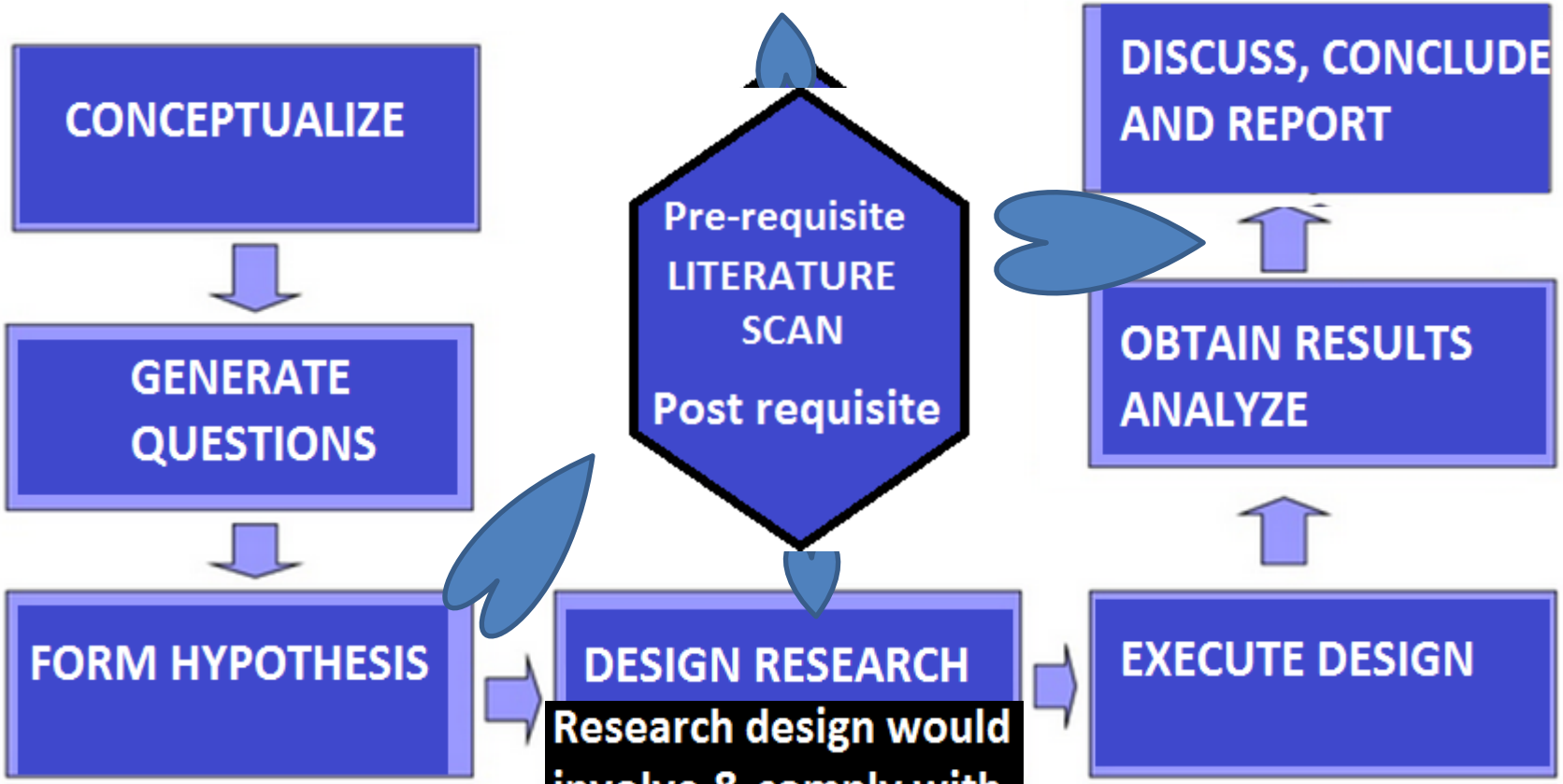
Types of Research

- **Fundamental vs Applied Research**

BASIC	APPLIED
• Expand knowledge • Curiosity driven • Answer why, what or how • No commercial objectives	• Based on basic research • Commercial /clinical objectives • Answer specific questions

RESEARCH PROCESS-CHARACTERISTICS

Flow Chart of Research Process



BASIC INITIAL STEPS IN RESEARCH

PRE-INVESTIGATION STEPS:

The preparation and plan for the investigation would be as critical, possibly, as the actual investigation

STEP - 1	CONCEPTUALIZATION OF A RESEARCH PROBLEM
STEP - 2	GENERATION OF RESEARCH QUESTIONS
STEP - 3	FORMATION OF A RESEARCH HYPOTHESIS


Research Methodology
CONCEIVING
A
PROBLEM

MOST IMPORTANT ASPECTS OF A RESEARCH PROBLEM

- **"Unknown segment of the universe is much larger than the known segment"**

- **For selection, match the research area to**

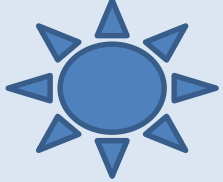
(i) relevance and applicability

(ii) interest and expertise of you and your collaborators, and

(iii) the feasibility of completing the work with available resources, time, subjects, tools, etc

Consider the RESTRAINTS and CONSTRAINTS.

THE PRACTICALITY. …



Conceive a problem that deserves to be considered

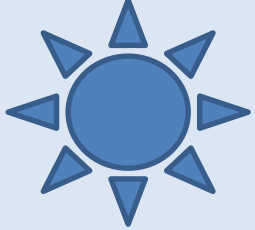
*** ANY METHOD**

*** ANY TYPE**

*** ANY SOURCE**

Provided it is

RELEVANT, PRACTICAL AND IN NEED OF AN EXLANATION.



LET US DO IT !!!!

GROUP ACTIVITY – SEGMENT 1

Brain storm and conceive a Research Problem

Time : 05 Minutes

WHAT IS YOUR PROBLEM ?

LET US KNOW AND

DISCUSS ABOUT IT

8 MINUTES

Analyse for:

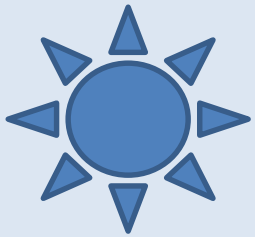
***Relevance**

***Feasibility**

*** Expertise**

***Appicability**

Do it Now Now



Breakup the problem into specific questions that require answer

STEP - 2 GENERATION OF RESEARCH QUESTIONS

RESEARCH QUESTION/S

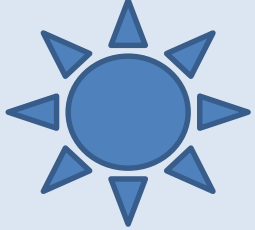
BASED ON CONCEPTUALIZATION -

WHAT THE RESEARCHER WANTS TO KNOW

WHAT IS THE FOCUS OF THE PROJECT ?

DOES IT PROJECT THE IDEAS AND INTENTIONS OF THE RESEARCHER,CLEARLY ?

WHETHER THE ANSWERS WILL HELP TO SOLVE THE PROBLEM AND BRING CLARITY ?

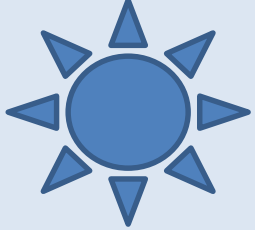


LET US DO IT !!!!

GROUP ACTIVITY – SEGMENT 2

Develop four Research questions From Your CONCEPT / PROBLEM

Time: 05 minutes



GIVE US A PREVIEW OF YOUR QUESTIONS

Let us discuss them

08 minutes

RESEARCH HYPOTHESIS

- A hypothesis is a formal tentative statement of the expected relationship between two or more variables under study.

It indicates proposed outcome of the study

RESEARCH HYPOTHEIS

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It provides a bridge between THEORY and REALITY.

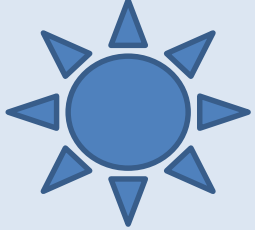
With out a HYPOTHESIS, Research would be like AIMLESS WANDERING.

(Except in types of research where You may not need a Hypothesis)

IS HYPOTHESIS MUST FOR ALL RESEARCH ?

- EXPLORATORY RESEARCH
- SCIENTIFIC REVIEWS
- META ANALYSIS
- CASE REPORTS ETC

MUST IN PROBLEM ORIENTED RESEARCH WHERE CAUSAL RELATIONSHIP/S AND/OR COMPARATIVE EFFECT/S ARE EVALUATED

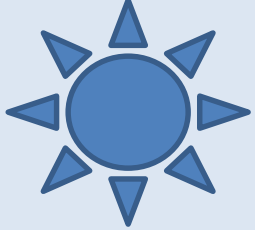


LET US DO IT !!!!

GROUP ACTIVITY – SEGMENT 3

FORM A RESEARCH HYPOTHEIS FROM PROBABLE ANSWERS TO YOUR QUESTIONS

Time 05 minutes



LET US DO IT !!!!

GIVE US A PEEK IN TO Your HYPOTHESIS

NULL HYPOTHESIS ?

- The starting point is by forming the NULL HYPOTHESIS.
- i.e. Assuming that your hypothesis is WRONG
- When you have evidences and facts to show that NULL HYPOTHESIS is not TRUE
- indirectly proves that YOUR HYPOTHESIS COULD BE RIGHT.
- Even if you find NULL HYPOTHESIS to be right, that also is an important finding.

NULL HYPOTHESIS ?

- **TO AVOID BIAS OF INTENTION IN RESEARCH**

All your objectives & methods will be primarily aimed at proving your hypothesis **WRONG.**

What is a good Research?

- **Clear statement of the problem**
- **Meticulously planned**
- **Clear and detailed study design**
- **Actual and Factual reporting of observations**
- **Appropriate data analysis**
- **Systematic, Logical, Empirical, Replica**ble **results**

“F I N E R” RESEARCH

- F = Feasible (Practicable)
- I = Interesting (Involvement)
- N = Novel (New)
- E = Ethical (No conflicts)
- R = Relevant (applicable)


Research Methodology
Thank You