



# RESEARCH METHODOLOGY

UANP0013 – SEMESTER 2 2017/2018

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# INTRODUCTION TO RESEARCH

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- Research Definition
- Why Research?
- Scope of Research
- The Differences between Project and Research
- The Differences between Research and Technology
- Research Category
- Research Paradigm (Research Philosophy)



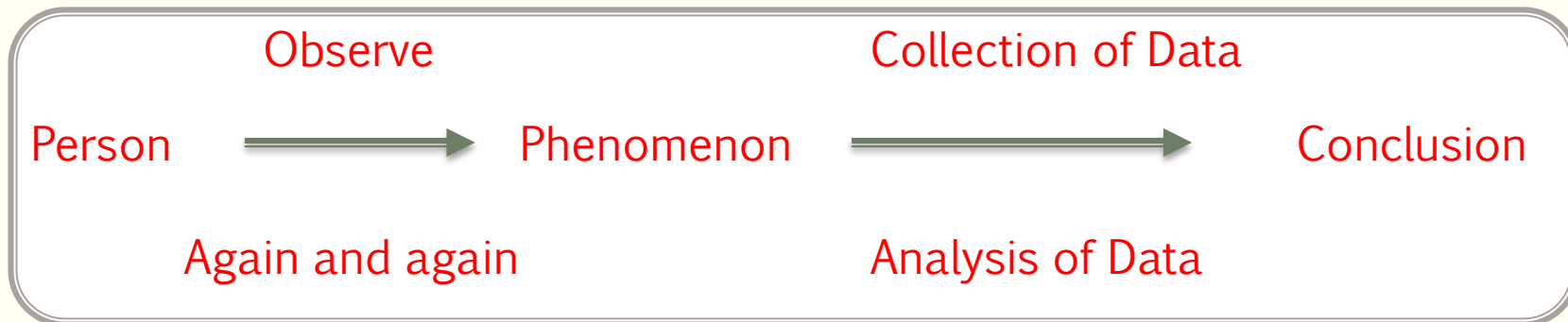
# WHAT IS A RESEARCH?

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RE + SEARCH

Repeat ---- again and again

To find out something



# RESEARCH – THE DEFINITION

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Research is a human activity based on intellectual investigation and aimed at discovering, interpreting, and revising human knowledge on different aspects of the world. Research is the method used to accumulate scientific knowledge.

Roscoe, J.T. (1975)

Research is any conscious premeditated (planned/ intended/ studied) inquiry – any investigation which seeks to increase one's knowledge of a given situation.

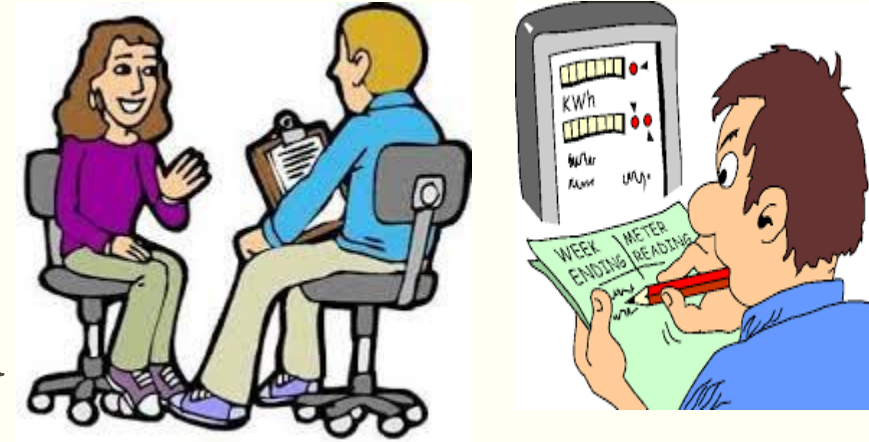
Goldhor, H. (1972)

# RESEARCH – SYSTEMATIC PROCESS

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Planning a  
Research Method



Collecting Data



Explaining the Data

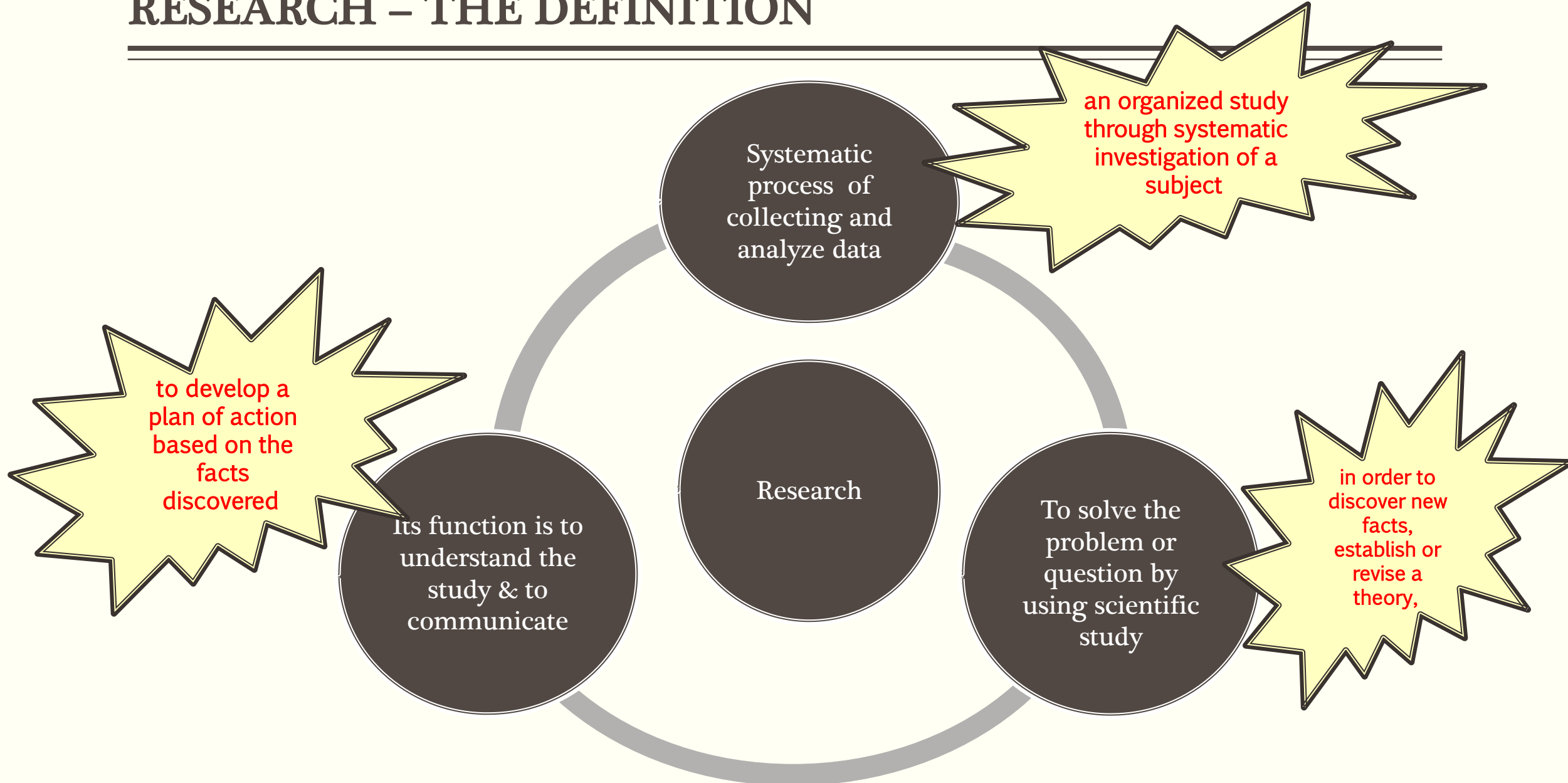
Report the Findings





# RESEARCH – THE DEFINITION

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- [illegible]

# WHY RESEARCH?: THE OUTCOME OF THE RESEARCH

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- A new or improved product
- A new theory
- A re-interpretation of an existing theory
- New or improved research tool or technique
- A new or improved model or perspective
- An in-depth study of a particular situation
- An exploration of a topic, area or field
- A critical analysis
- Unanticipated outcomes





# RESEARCH SCOPE: WHAT ISN'T A RESEARCH

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- Playing with technology
- Book report
- Programming project
- Doing what others have already done



- However, each of these can be done as part of research

# Research is not a simple linear activity!

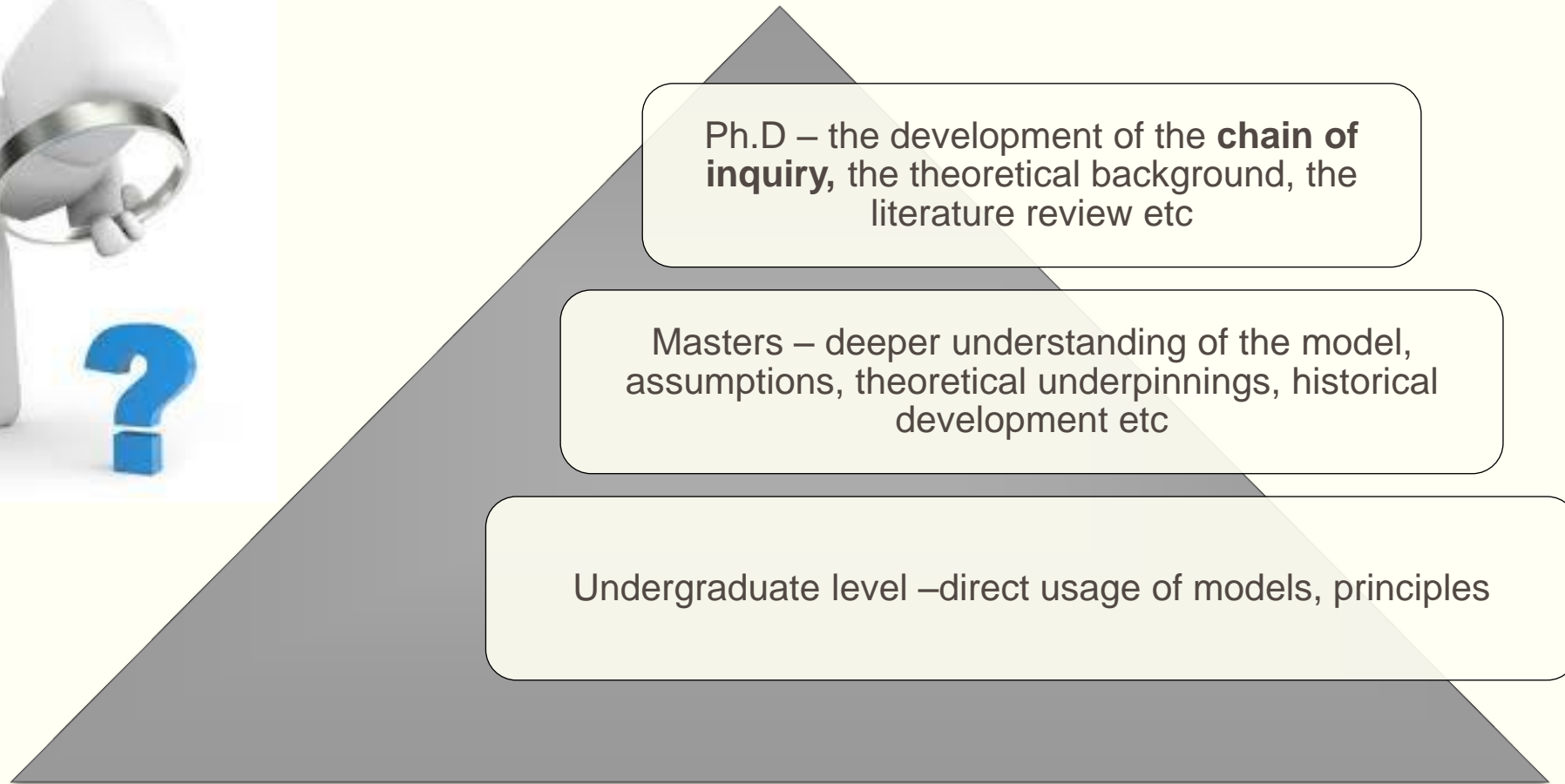
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- ✓ Researchers **never move in a straight line** from beginning to the end of the research process.
- ✓ Research always **loops back and forth**, moving forward a step or two, going back and moving forward again, anticipating stages not yet begun.
- ✓ No matter how carefully you plan, research always follow a crooked path, taking an **unexpected turns**, even looping back on itself – therefore work through step-by-step; *When you can manage the parts you can manage the whole.*
- ✓ Research is not like going through a well marked path to a familiar destination; it is more **like struggling through a thick jungle** searching for something you won't know until you find it.
- ✓ Nobody can solve the world's great problems in a tiny project, but **choosing smaller questions, knowing their answers can lead to great solutions.** A good researcher takes one step further in understanding great problem by making better understanding on the problem.



# RESEARCH SCOPE: DIFFERENCES BETWEEN UNDERGRADUATE VS MASTERS AND PH.D

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# PROJECT, TECHNOLOGY vs RESEARCH

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## PROJECT

- apply the theories (what you've learned) to practice.
- know the path to achieve the goal.
- has guarantee and can be completed within the time frame.

## TECHNOLOGY

- Technology: Development and maintenance of artefact
  - Artifact → physical tool, software, techniques, notation, processes
- Aiming at achieving the goal.

## RESEARCH

- apply these theories but will be **coming up with new theories** or concepts of your own.
- we only know the problem and **over a period of time** we will apply new methods to generate solutions.
- **cannot guarantee that solution will be found** in the given time frame

# RESEARCH VERSUS TECHNOLOGY

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- Research delivers propositions
  - Observing, analyzing, explaining, publishing
- Technology delivers artifact
  - Designing, building, delivering, maintaining



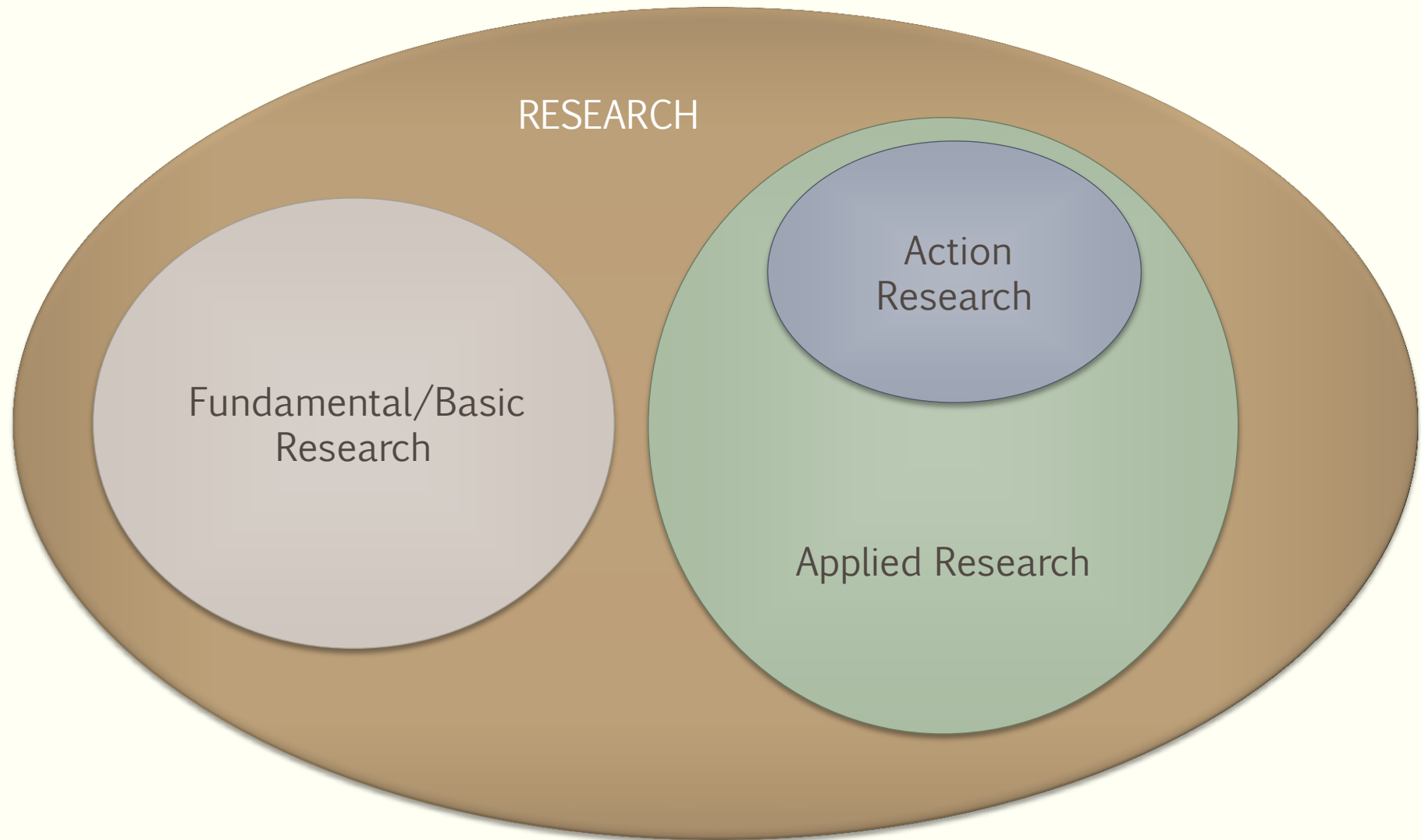
Check list : Research or Technology ?

- |                                    |                                   |
|------------------------------------|-----------------------------------|
| • Rebuilding your house            | • Writing a paper                 |
| • Writing software code            | • Interviewing software user      |
| • Maintaining software             | • Evaluating a maintenance method |
| • Developing a questionnaire       |                                   |
| • Developing a maintenance methods |                                   |



# TYPES OF RESEARCH

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# TYPES OF RESEARCH

CRITERIA	TYPES		
Objectives of the research	Fundamental Research	Applied Research	Action Research
Nature of Data	Qualitative Research (dealing with qualitative data)	Quantitative Research (dealing with quantitative data)	Mixed Method Research (dealing with both data)
Nature of Findings	Explanatory Research	Exploratory Research	Descriptive Research
Experimental Manipulation	Experimental Research	Non-Experimental Research	

Explanatory Research: seeking an explanation for a situation or a problem, mostly but not necessarily, in the form of a causal relationship.

Exploratory Research: finding out what is happening, seeking new insights, and generating ideas and hypotheses for new research

Descriptive Research: portraying the current status of a situation or phenomenon

# TYPES OF RESEARCH

- Fundamental (basic, pure) Research:

Experimental or theoretical work undertaken primarily to acquire **new knowledge** of the underlying foundations of phenomena and observable facts, **without any direct practical application** or use in view



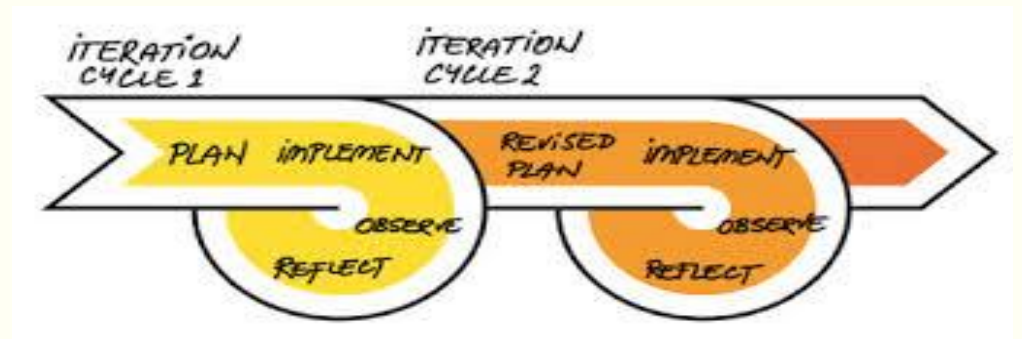
"I was just rubbing sticks together for fun — I didn't realize I was doing basic research."

- Applied Research:

Scientific study and research that seeks to solve **practical problems** and develop innovative technologies/solutions.

- Action Research (Participatory Action Research):

Kind of social research with experimental basis that is conceived and conducted in close association with an **action or a collective problem resolution** where researchers and participants are involved in a **cooperative way**.



# ACTION RESEARCH(AR)

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- Action research is carried out by the practitioners (or by those involved) to study and increase their understanding of a social situation so that the quality of their practices as well as social situation can be improved.
- FOUR phases of action research:
  - Planning
  - Action
  - Observation
  - Reflection
- Often used in the field of education – an effort to raise quality of social environment in educational institution



# CHARACTERISTICS OF ACTION RESEARCH

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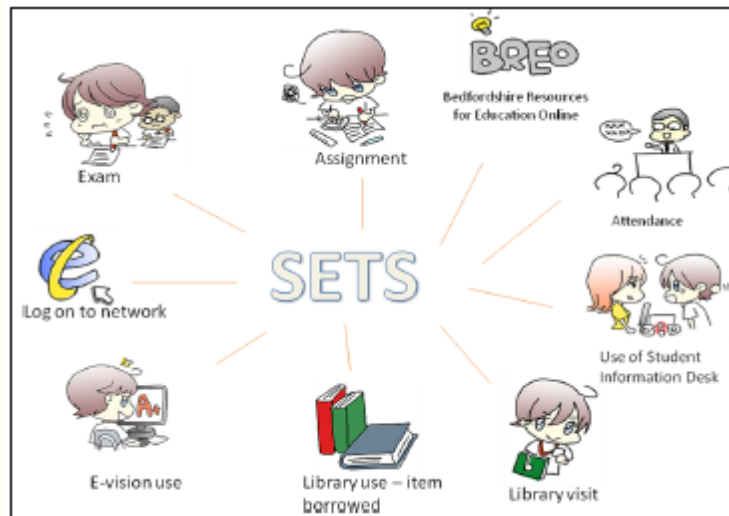
- I. AR is conducted to solve social problem
  - To create awareness
- II. AR is related to social practice
  - Used to study social behavior or action, especially interaction among members in a society
- III. AR is conducted to improve current situation
  - To improve the current situation of the subjects and society
- IV. AR is a reflective process
  - To identify the problem and determine the appropriate action that can be taken into the study.
  - If it is unsatisfactory, an evaluation will be carried out to find out why it is ineffective and plan for the new action
- V. AR is a repetitive process
  - Researchers reflect on every action taken in the first cycle of research before the second cycle begin
- VI. AR is conducted systematically
  - Early reflection -> focus of research -> RO -> R.design -> Planning for action -> Implement the - action -> Observe + Collect data + data analysis -> R. findings -> Reflection



# ACTION RESEARCH: Example

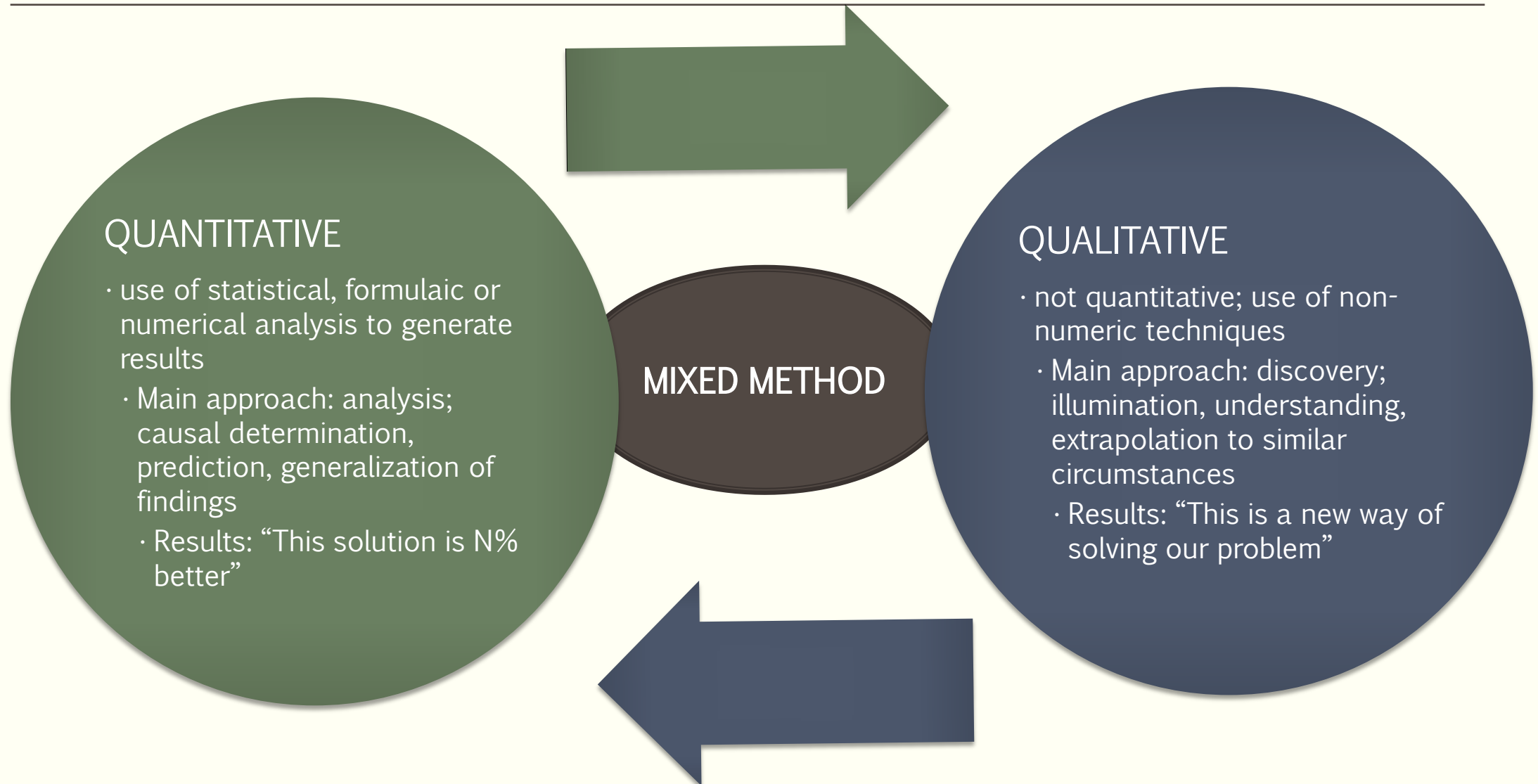
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- Duan, Y., Cao, G., & Woolley, M. (2013). Big data in higher education: An action research on managing student engagement with business intelligence.
  - Aim of the study:
    - To explore the value of Big Data in student engagement management.
    - To utilize the value of Big Data with BI solutions in the context of Student Engagement tracking System (SES) in a UK university and explore the strategic use of the enhanced SES.
  - Contribution of the study:
    - contribute to knowledge on value of Big Data in student engagement management
    - contribute to findings and implications for advancing research in leveraging the benefit of the Big Data in Higher Education from a socio-technical perspective.
  - Respondents:
    - UK University students
  - Grouping



# CATEGORY OF RESEARCH

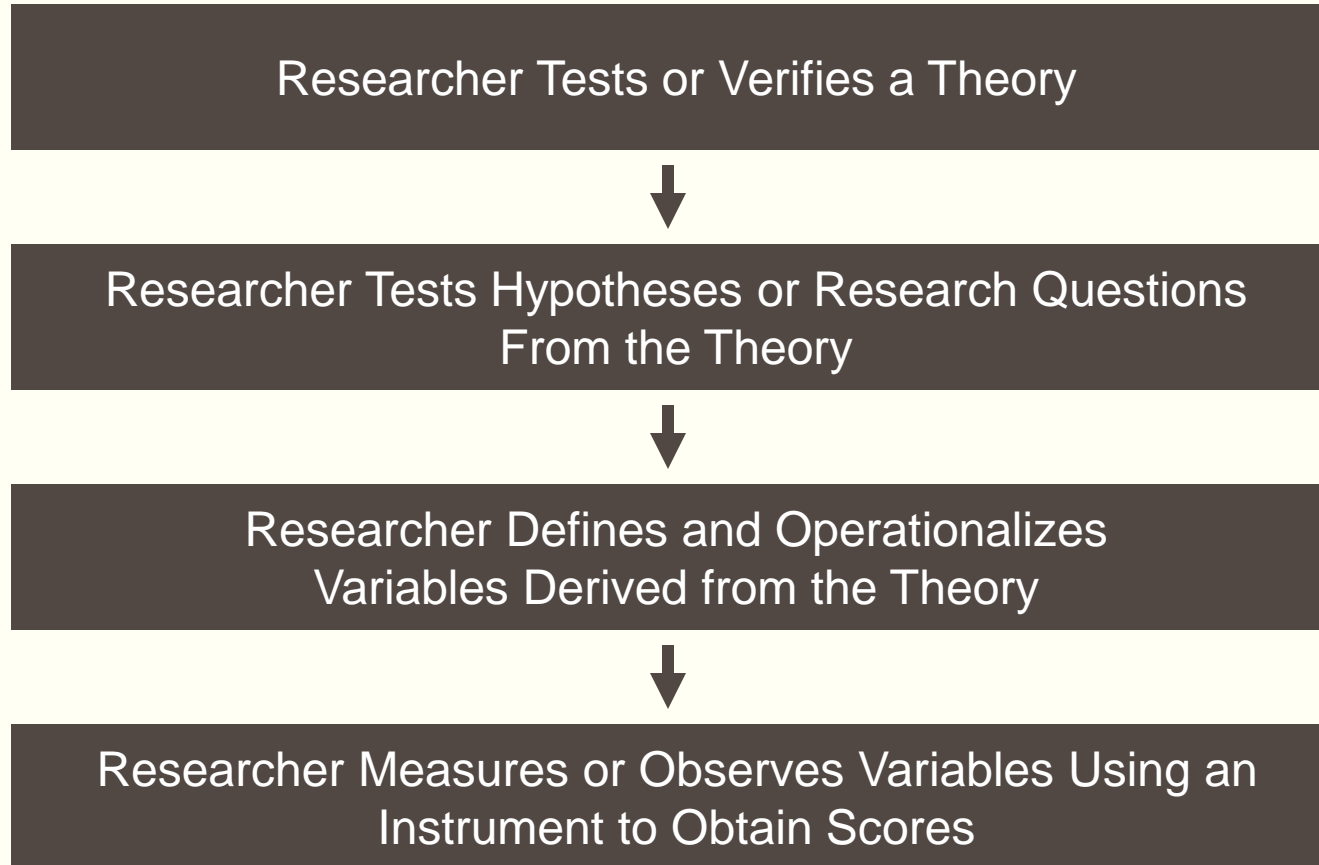
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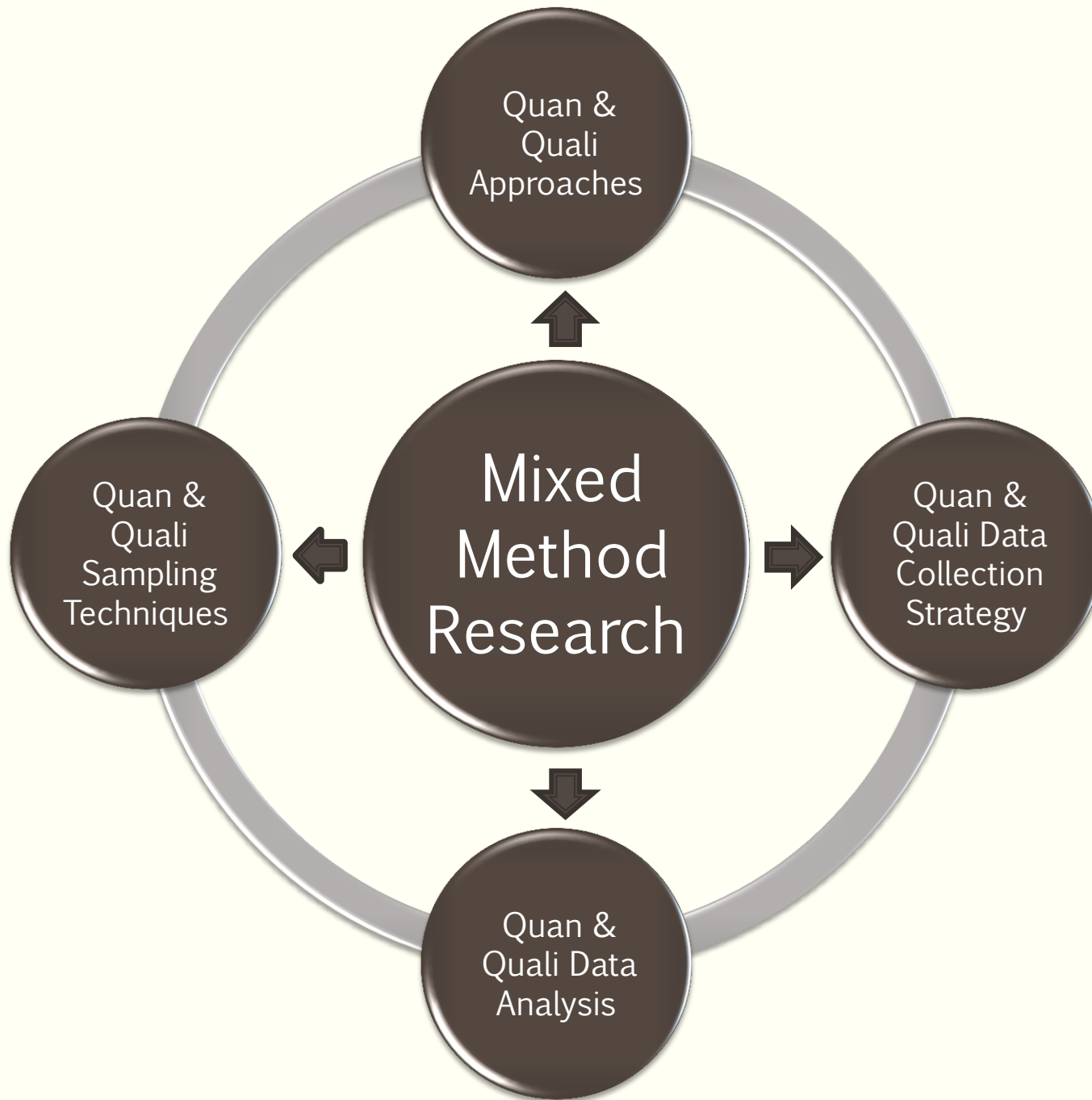


# Research in QUALITATIVE Studies



# Typical QUANTITATIVE Research







# QUIZ

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- Due date: end of the UANP 0013 class
  - Briefly describe other categories of research:
    1. Experimental Research
    2. Survey Research
    3. Field Research
    4. Case Study Research
    5. Historical Research
- \*\* please submit the answer in ONE page only!

# RESEARCH PARADIGM



## RESEARCH PARADIGM

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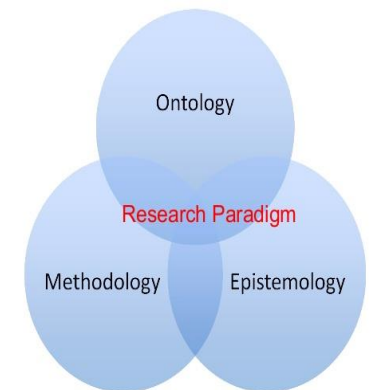
When researchers talk about different approaches to research, they talk about “paradigms.”

- A *paradigm* is a “worldview” or a set of assumptions about how things work.
- Rossman & Rollis define paradigm as “shared understandings of reality”

# RESEARCH PARADIGM: DEFINITION

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- Several definitions mentioned in papers
  - a broad view or perspective of something
  - An example that serves as pattern or model
  - A model of something which explains it or shows how it can be produced
  - A conceptual framework for a scientific discipline
  - A set of assumptions, methodologies and objectives that determine a scientific investigation
  - Set of fundamental assumptions that influence how people think and how they perceive the world
  - A framework of guiding assumptions, theories
  - Methods that define a particular approach to scientific problems



# RESEARCH PARADIGM- main components of research paradigm

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- According to Guba (1990), paradigms can be **characterised** through their:
  - *Ontology* (What is reality?)
  - *Epistemology* (How do you know something?)
  - *Methodology* (OR research strategy) (How do you go about finding out?)





# RESEARCH PARADIGM- main components of research paradigm

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*Ontology* : WHAT IS THE NATURE OF REALITY?

Ways of constructing reality, “how things really are” and “how things really work”. (Denzin and Lincoln, 1998; 201))

*Epistemology* : WHAT IS THE VALID KNOWLEDGE --- HOW DO YOU KNOW SOMETHING?

Different forms of knowledge of that reality, what nature of relationship exists between the inquirer and the inquired? How do we know?

*Methodology* refers to how you go about finding out knowledge and carrying out your research.---- HOW DO YOU GO ABOUT FINDING OUT?

What tools do we use to know that reality?

\*\*\*\*different disciplines have a different view of how research should be conducted. It is important to know how your discipline carries out research

# TYPE OF RESEARCH PARADIGM

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## POSITIVISM PARADIGM --- quantitatively

- Discovery of the laws that govern behavior

## INTERPRETIVIST or CONSTRUCTIVIST PARADIGM --- qualitatively

- Understanding from an insider perspective

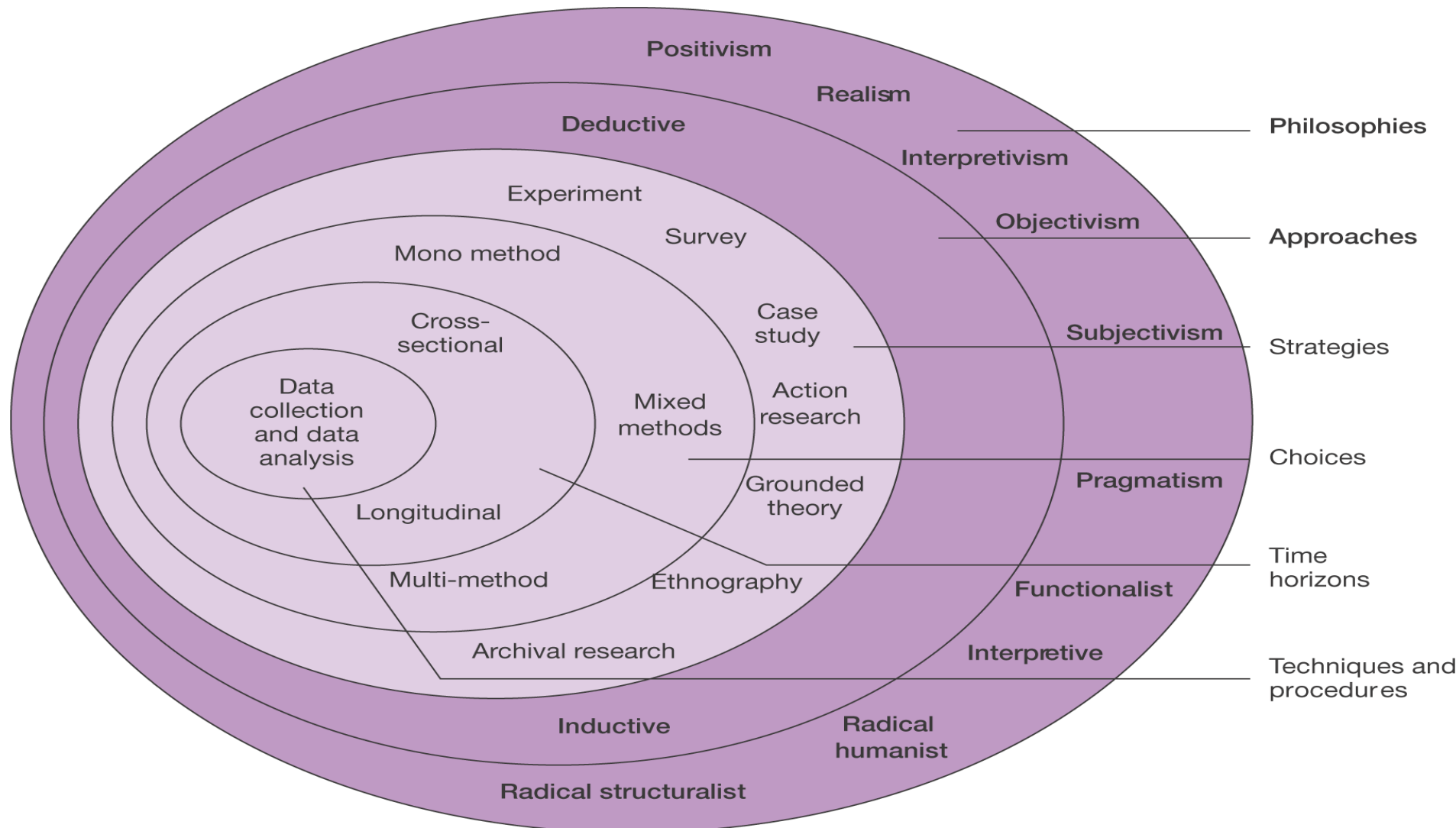
## CRITICAL PARADIGM --- critical and action oriented

- Investigate and expose the power relationship

## PRAGMATIC PARADIGM --- action research

- Interventions, interactions and their effect in the multiple context

# SUMMARY: THE RESEARCH 'ONION' LAYERS



Deductive: theory and hypothesis are developed and tested

Inductive: data are collected and theory developed from the data analysis

Saunders *et al*, (2009)

<https://onion.derby.ac.uk/onion.pdf>



END OF PART 1  
-SUMMARY-