

PEOPLES' DEMOCRATIC REPUBLIC OF ALGERIA
MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH
AHMED SALHI UNIVERSITY CENTER-NAAMA
INSTITUTE OF LETTERS AND LANGUAGES
DEPARTMENT OF ENGLISH LANGUAGE



RESEARCH METHODOLOGY:

Second (2nd) Year Master's Degree



Prepared by:

Dr. Anissa MBATA



Academic Year : 2024-2025

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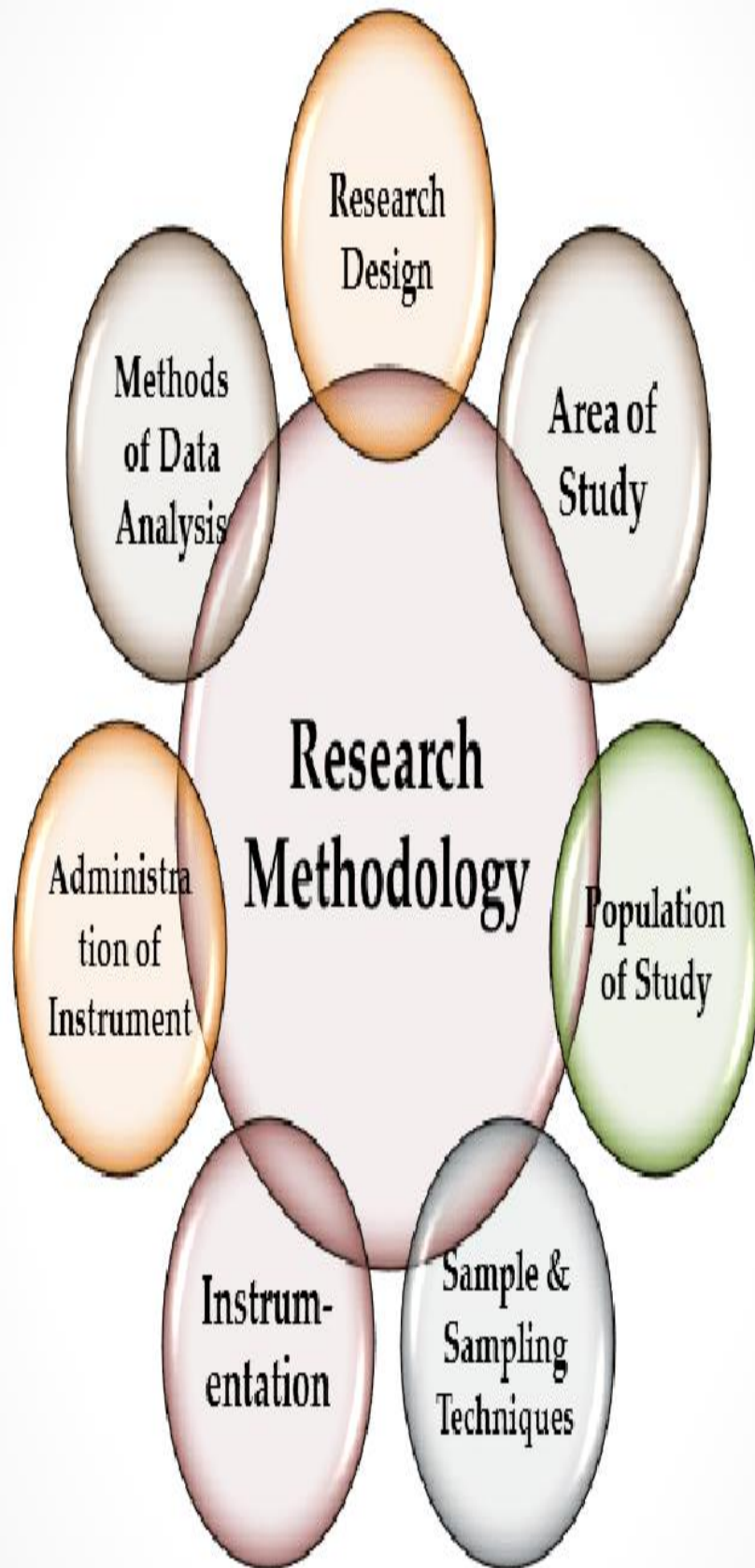
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TIME SCHEDULE

Unit	Unit one	Unit two	Unit three	
Time				
The average number of weeks	4 weeks	4-5 weeks	4-5 weeks	From 11 to 14

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OBJECTIVES AND LEARNING OUTCOMES OF THE COURSE

At university, research methodology is regarded as the crucial groundwork of all fields, tasks and achievements. However, students need to conduct different types of research for the sake of having knowledge, passing academic exams or attaining higher degrees. Yet, the academic requirement is not merely a matter of carrying out a study but rather a task of understanding its nature and how to apply its techniques and tools.

Hence, this booklet provides the students with a comprehensive explanation of research. It can help in understanding research principles, components and methodologies used to address a particular research question or ‘problematics’. Therefore, it is divided into three basic units according to the flow of needs and requirements of the student-researcher and the research as well. The first unit is concerned with introducing research as a process, it represents the way how to conduct an academic research in terms of phases within methodology. On another hand, the second unit stands for philosophical thinking towards research including the choice of some paradigms, methods and theories rather than others.

In addition, the third unit testifies for the tight compilation between the two aforementioned units which denote the overall theoretical background. In addition, it can help students in completing their dissertations through the selection of appropriate methods, design and area of research which facilitates an adequate evaluation to hypotheses, data and findings.

The present document may target a significant proportion of the students, since it provides them with a step-by-step guidance to conduct research.

INTRODUCTION

Research methodology refers to the collection of methods, techniques and procedures used to carry out a study. It provides the rational process guiding researchers in selecting appropriate tools, in sequencing research activities, and in ensuring that inquiry is systematic and firmly rooted in scholarly standards.. Accordingly, the academic research requires a set of aspects and characteristics for its accomplishment, thus, for students and novice researchers is not definitely an easy task. These aspects cover the clear identification of a problem, the formulation of coherent questions or hypotheses that are to be answered or tested, the selection of suitable designs, and the proper analytical techniques. Beginners often find these decisions difficult because each must be methodologically and philosophically justified.. However, the completion of research is finally undertaken through underlying steps, basics and principles. Such steps typically relate to planning, reviewing the literature, defining concepts, data collection, analysis of the results, and developing well-founded interpretations. These latter principles ensure not only rigor but also credibility, transparency, and reproducibility of the study.

For different specialists in different disciplines, research is a problem-solving activity to seek for answers and add to knowledge. Whether in the social sciences, natural sciences, humanities or professional fields, research serves as a structured avenue to address gaps, test ideas, challenge assumptions, and generate new insights that help disciplinary advancement. In summary, research leads society and

individuals to progress through creating evidence-based knowledge. Research informs policy-making, drives innovation, improves decision-making, and fosters personal and professional development. In this sense, research functions not just as an academic exercise but as a driver of social and intellectual transformation.

UNIT ONE:
ACADEMIC RESEARCH

How to conduct an Academic Research

Learning goals:

After completing the following unit, the students should be able to :

- recognize the technical terms in research
- identify the research scope and steps
- write and explain the problem statement
- list sources and questions for research problem
- understand and classify variables according to the research
- use the terms in context

How to Conduct a Research

The current unit intends to put forward a broad understanding to research. It gives an overview about the terms used in research methodology. Besides, it provides definitions of concepts to facilitate identification, understanding and use of the different terms according to the field of interest.

The following lectures overcome some conceptual barriers, such as the relationship between research and knowledge, human needs and pursuit of reality and/or truth and other issues related to the process.

Section one: Defining Concepts

Ask the students some questions about their pre-requisites to build their pre-knowledge of basic terms in this field such as

How do we know that water has boiled? the sky is blue?

These ordinary, day-to-day questions attempt to trigger students' prior knowledge and inspire them to reflect upon the processes by which human beings acquire information and make judgments. By linking familiar observations, the teacher invites students to consider the underpinning competencies required in all inquiry-from daily life to research.

Through the answers of the students, the teacher will identify the concepts used to get knowledge: to search, to observe, to read documents, to discover... etc During the students' responses, the teacher can emphasize important cognitive and methodological steps in the making of knowledge: for example, the

realization that "water boils at 100°C" requires observation; to know that "the sky is blue due to scattering of light" probably involves reading or study; to form conclusions about events that are not familiar requires questioning, comparing, or investigation. These reflect the core elements of research: observation, inquiry, verification, interpretation, and evidence gathering.

Thus, the discussion naturally leads to an exploration of how these everyday acts of knowing relate to formal research processes. The teacher can easily move from the simple observations to academic concepts like data collection, measurement, analysis, and reasoning. It would be a very good starting point for introducing the main themes of the lesson: research skills, scientific thinking, methodological choices, and the principles guiding systematic inquiry. In doing so, the students are already in a better position to understand how research methodology formalizes ways humans learn about the world.

Accordingly, the following points will be tackled:

I. What is research ?

Booth *et. all* (2003, p. 10) say "In the broadest terms, we do research whenever we gather information to answer a question that solves a problem". This definition explains research as being an inquiry to seek for new information.

According to L.R Gay (1992) 'research is a formal, systematic method to solve the problem'.

As Walliman (2001, p.6) intends to differentiate between the two meanings of research, from the academic viewpoint and the popular connotation of everyday use, he says, research **"is a term loosely used in everyday speech to describe a multitude of activities, such as collecting masses of information, delving into esoteric theories, and producing wonderful new products"**

Accordingly, research is a **systematic** operation or **process** which intends to solve a practical **problem** through **collecting**, **analyzing** and interpreting data.

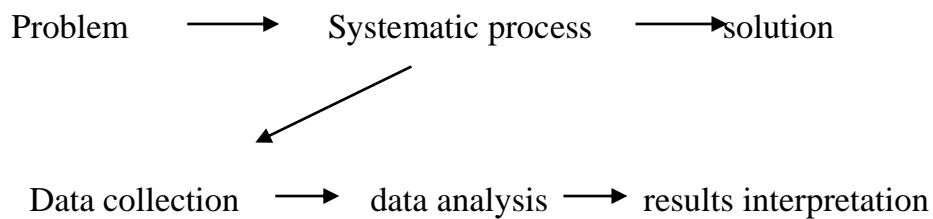


Figure 1: Meaning of Research

Research is an organized way to seek for new knowledge, or add to existing knowledge, at this level, one may ask the following question:

- **How do /did we know what we know?**
- **What are the sources of our knowledge?**
- **How do we approach knowledge?**

There are five ways through which we can know something,

a) **Method of tenacity:** realities and human assumptions that have no real proof as they are taken for granted. You believe in something with no arguments only because you have always found it like that.

Examples:

- Believing that “cold weather causes the flu” simply because this idea has been repeated for generations, even though it is not scientifically accurate.
- Thinking that “black cats bring bad luck” because one has always heard this growing up: → Superstitions

b) ***Experts and authorities:*** realities that are through experts and authorities relies on accepting the insights, interpretations, and judgments of recognized individuals or institutions. These authorities may be scholars, religious leaders, scientists, policy-makers or established organizations whose credibility is widely accepted.

Examples:

- Following safety rules and standard practice because government or institutional guidelines declare them, as the constitution

c) ***Insightful observation:*** is a way of acquiring knowledge by relying on intuition, insight, or an immediate understanding of reality, rather than through systematic measurement, experimentation, or logical deduction. It involves perceiving truth and reality directly, often through reflection, personal experience, or a sudden realization, rather than through formal scientific or empirical methods.

Examples:

- Simply by observing facial expressions or tone of voice, you can notice one's temper.
- Following established protocols, guidelines, or legal precedents issued by practitioners in Law or medicine.

d) ***The rationalist approach:*** reasonable conclusion made through logical inferences. The rationalist approach to knowledge relies on reason and logical thinking rather than sensory experience or intuition. Knowledge is acquired through careful reasoning, analysis, and structured thought, allowing the researcher or thinker to draw conclusions that are consistent and logically sound. (Logic -*Inductive –Deductive*)

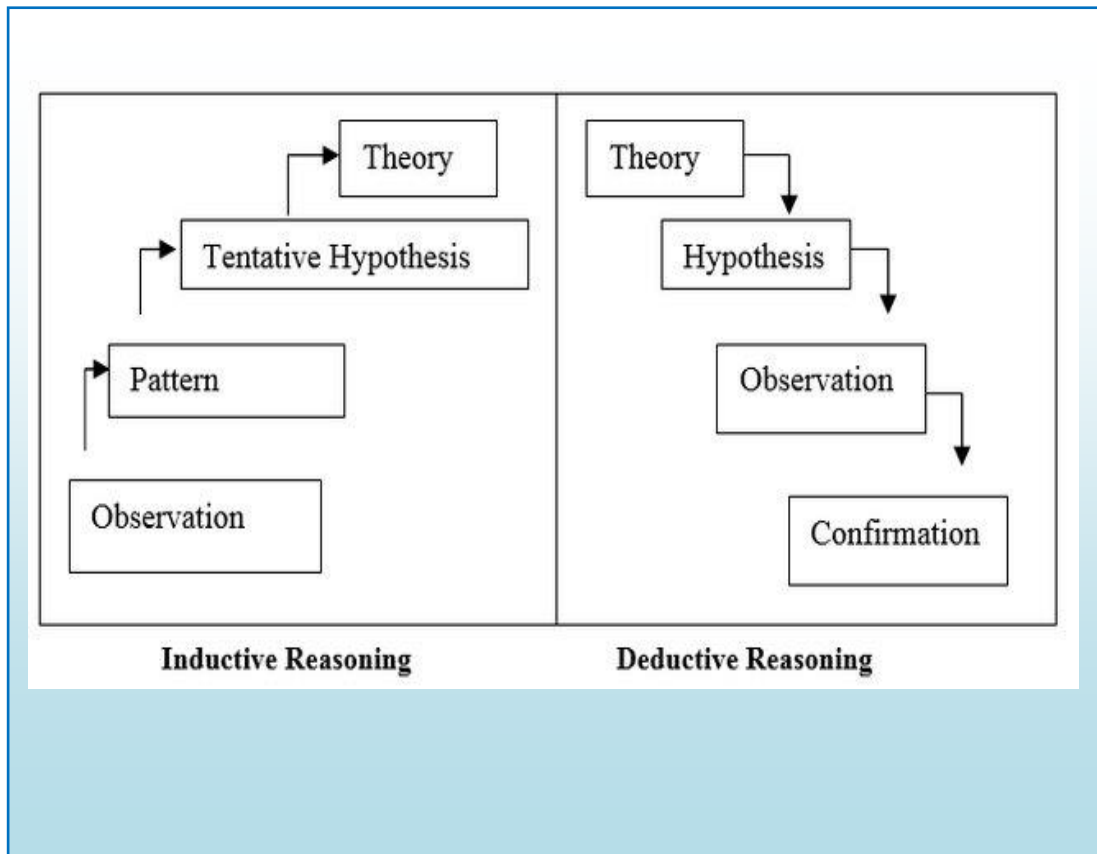


Figure 2: Inductive and Deductive Reasoning Processes

e) ***The scientific method:*** the systematic collection and evaluation of evidence.

Examples:

- A researcher observes that students using digital flashcards seem to memorize vocabulary faster. They form a hypothesis, test it with control and experimental groups, collect data, and analyze whether the improvement is statistically significant.

I.1. Objectives of research

Regarding Booth *et al.* (2003, pp. 4-5), for novice researchers, research may provide the following immediate and practical benefits:

- a. Learning to do research will help students to understand better the material they cover.
- b. Doing research is an experience that enables students to evaluate carefully what they read through a process full of discoveries.
- c. . Writing the report of one's own work will help them to understand what is behind what they read as books and what other people (experts) tell through these books.
- d. Research gives students insights into the nature of knowledge, i.e. the kind of knowledge which results from asking proper questions and offering pertinent answers.
- e. Research offers students the opportunity to learn skills which they need now and in further studies. These skills are said to persist when students leave the university or institution they are studying or working in.
- f. One more practical benefit of research is the pleasure it offers in solving puzzles and discovering things that other people do not know, and which contributes to the prosperity of human knowledge.

I.2. Characteristics of the researcher:

As a student-researcher, some characteristics are required to achieve the goal of the investigation in academic way. Hence, researcher needs:

- ✓ To plan: the researcher must design a priori a detailed proposal for how should the study begin, progress and end.
- ✓ To organize: There should be an arrangement of an organized steps and expectations.

- ✓ To reason: to think and to be able to find the logical relationship between theories, concepts and ideas.
- ✓ To scrutinize : to examine/study
- ✓ To synthesize : to form an idea or a conclusion from the data at hand
- ✓ To contrast and to compare : to find differences and similarities between variables, data in addition to literature. In addition, there should be a real connection between the primary and the secondary data
- ✓ To evaluate: to assess the existing knowledge and think of the next step, from the beginning of research till the end since the research is a continuous process (*see fig. 3*)

e.g. in order to evaluate sources of information as secondary data, for instance, you should consider the following points:

- Currency: your references should be recent (if they are available), some topics need to vary between dated and updated sources as Anthropology and History...etc
- Objectivity: your sources, choices and decisions must be free of partiality; it is not professional to show your own point of view in a subjective way.
- Relevance: there must be a tight relationship between what you state in the theoretical phase and the practical one. All the theories, views and concepts you have chosen to include in your literature review must be of a strong significance to what you are studying.
- Authority: the set of the basic standards, assumptions and ideas you collect must be obtained from famous figures in the field, published works, academic documents...etc

II. Research method and methodology:

Any research requires the collection and the analysis of data through various tools which are called research *methods*. The latter are defined as “**all those methods which are used by the researcher during the course of studying his research problem**” (Kothari, 1990, p.8). On another hand, research methodology is defined as:

a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them. It is necessary for the researcher to know not only the research methods/techniques but also the methodology (ibid)

Research methodology is defined as the scientific examination of how research is conducted in a systematic and logical way. It entails an understanding of the different steps a researcher takes during the process of studying a research problem, and also an understanding of the reasoning associated with these different steps. The above quote clearly explains that it is important for a researcher to understand research methodology because, by understanding it, they will understand reasons associated with different research methods and techniques that are involved. It ensures that all research conducted is valid and reliable.

Furthermore, “methodology builds up an explanation as to why the research method (s) under discussion have been chosen” (Paltridge, & Starfield, 2007, pp. 118-119). Whereas, “**Methods refer to the actual research instruments and material used. The chosen methodology informs the choice of methods and what counts as data**” (ibid, p. 119).

Conclusion

Methods are the *practical techniques* and *tools* used during the data collection and data analysis processes. These include instruments such as questionnaires,

interviews, observations, experiments, tests, coding procedures, and statistical software. While methods operate at a practical level, they are guided by the methodology, which sets the principles and logic behind their use. In this sense, methodology determines what the researcher considers valid data (numbers, narratives, behaviors, documents, etc.) and which method is most suitable for capturing it. Thus, if the methodology is quantitative, numerical instruments such as surveys or experiments are typically used; if qualitative, interviews, focus groups, or observations may be chosen. Methods therefore implement the strategy defined by the methodology.

Self-Assessment task

- ✓ Some scholars argue that research seeks to answer questions.....
- ✓ In social sciences, research is
- ✓ Give examples on logical premises, inductive and deductive. Explain
- ✓

Section two:
Research Process

In the academic research, students might simply know that methodology includes a range of research methods which are organized in step-by-step process.

Step-by-step process:

Research is a dynamic activity. All types of research share some elements in common, these elements that are interplayed and interact with each other incorporate the research process, as it is shown in the diagram below:

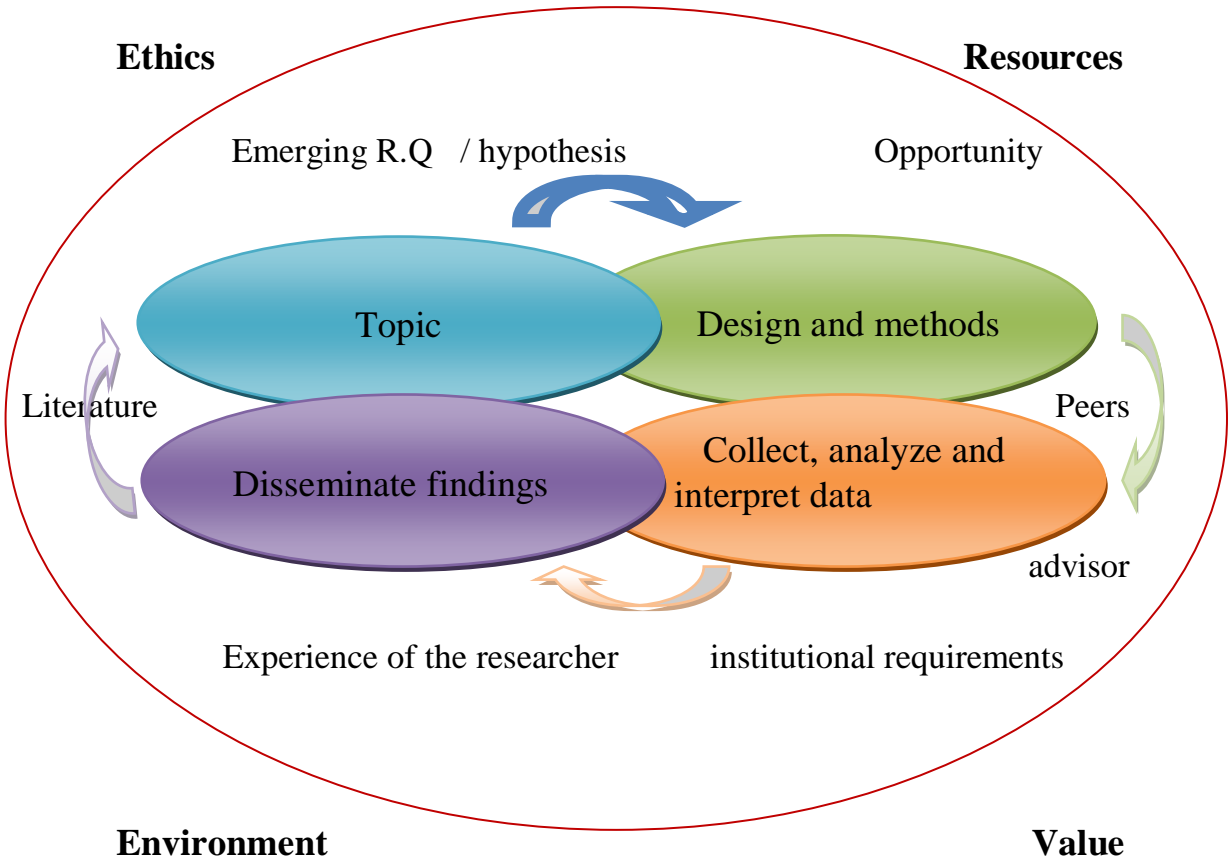


Figure 3: Research Process and Forces Involved

The diagram above illustrates the major components of the research, these elements are interactive (which is demonstrated by the arrows). Hence, the research process is affected by different factors, which are categorized in terms of micro and macro forces.

I. Topic

The choice of the topic may be motivated by personal or professional reasons. When the topic is identified, the research question (s) and sub-questions developed.

1) Problem statement:

The research problem statement **comprises one or more sentences that indicates the goal, purpose, or overall direction of the study ... the research problem implies the possibility of empirical investigation. It provides a focus for the researcher and is an essential first step in the investigation. It also... by providing an overview makes the research much easier to understand**" Mc Millan, (2012, p. 32)

The research topic is the focus of the study in which a phenomenon in a specific field is at the center; whereas, the research problem serves as a link between what is actually happening and what would happen in the ideal situation. Ultimately, the research problem statement explains why the study is really important and worthy to tackle; in addition, it should clarify the way in which there will be a clear bridge between what we know and what the study intends to know . Thus, the meaning of the problem statement can be described as follows:

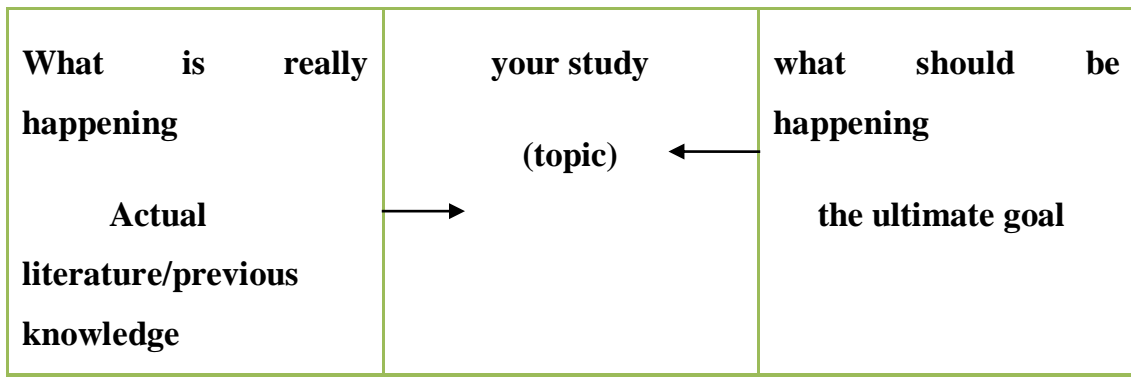
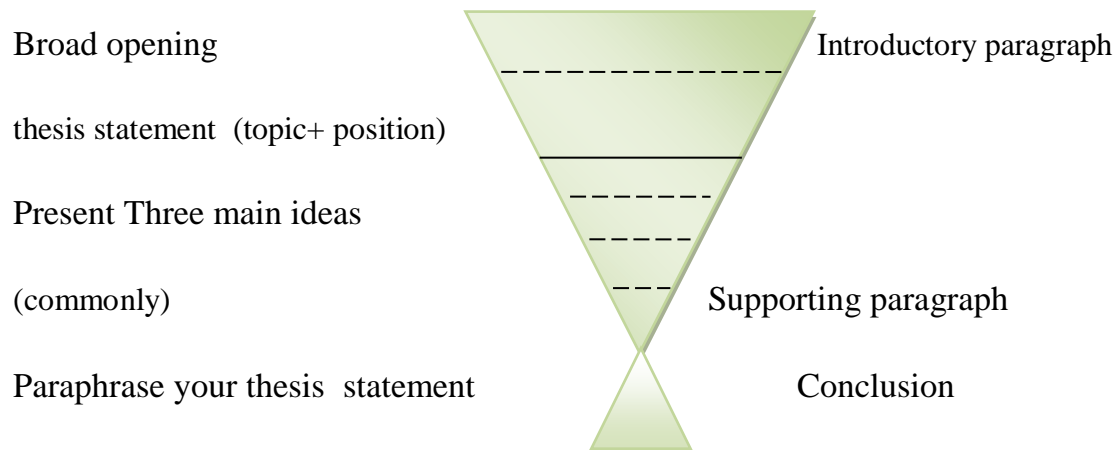


Figure 4: Problem Statement



➤ **Components of the problem statement:**

- a) Title: it should be stated clearly in order to convey your aim of study.
- b) Rationale: in order establish the legitimacy of your topic in the field of inquiry, you have to mention the common previous knowledge through authoritative references.
- c) Purpose: try to communicate the significance of your topic
- d) Research Question: ask the most appropriate question in terms of meaning and scope.

When you tend to write the problem statement to represent the topic, you should consider the following points:

- **Problem definition:** we all know if there is no problem there is no research, thus, you should give a clear description of the problem at hand through introducing the overall field and the area of research.
- **Topic significance:** provide the reader with arguments about the importance of your topic, its crucial role in the field in order to convince the reader and reduce potential criticism.
- **Hypothesis (es):** your hypothesis must be grounded, that is why, it is preferable to work in a field that you are acquainted with to have enough previous knowledge and a solid background to start. It is a tentative or temporary answer put forward to the questions (sub-questions) addressing the practical problem. Therefore, hypotheses are formulated at the start of research and the activities included in the research aim to verify the variables stated in the hypotheses (Singh, 2006, p. 54).

For that reason, organizational groundwork is required as a start:

a) preparatory reading

Commonly, students are strongly encouraged to conduct their research in a familiar field, A field of research which are acquainted with its figures, technical terms and way s of study.

Effective reading and note – taking: When students engaged in some form or type of study or research, they will probably need to read carefully and take in a lot of information. There are several ways to take notes, both in terms of the tools you use (pen and paper or computer, for instance), and the style of notes. Some of these may be more effective, and some may be a matter of personal choice and individual preference.

b) From ideas to questions

In order to generate valuable ideas from what you have read during the period of preparation, you have to pick up the right field of interest . Indeed, ideas and problems are not separable in a way that once you think about something you are thinking about what is not going on correctly, i.e. a problem.

e.g. to be strategic when developing your ideas into questions, try to:

+ Find (a) fact (s), through asking the following questions:

- what are the facts that we do not know in this phenomenon?
- What are the different aspects and dimensions of this problem?
- What are the outcomes that we are looking after?

+ Identify your objective reaction, attitudes, and personal choices, through the following questions:

- What can make my problem so hard to overcome?
- What can make it easier to work with?
- What are the challenges that can face me?

+ Extract meanings, implications and significance by asking the questions such as:

- What makes it worthy to study?

+ Classify the future resolutions, solutions and strategies by asking the following questions

- What may be the possible solutions to the problem ?
- What may be the changes we are recommending?
- +jWhat is the first next step?
- Who will do what when and where?

✚ **Well stated problem is half-solved**, some important characteristics you need to consider when you chose the problem to study:

- 1- It should relate one or more academic fields
- 2- It must be stated clearly and precisely.
- 3- It has a significance
- 4- It must be manageable (can be studied at all levels)
- 5- Data availability.
- 6- It should be new /or not sufficiently answered

When you want to generate the questions and develop the hypotheses, you need to identify the *variables*.

2) Definition of variable:

A variable is something that varies either within the same individual (or entity) such as motivation, or from one to another such as, age and gender. It is any measured characteristic or attribute that differs among subjects

i. Types of variables:

It is important at your level to distinguish between variables on the basis of the role they play in the study, such as:

- a) Independent variable: it is also called experimental, active and stimulus variable. It is the pivot of the topic, it is the cause in the cause-effect relationship.
- b) Dependent variable: it is also called criterion, passive and response variable. It indicates the actual phenomenon the researcher wants to investigate. It designates the effect and the consequence.

- c) Extraneous variable: it may affect the research (the independent variable precisely) but it has no direct relationship with the purpose of research.
- d) Intervening variables: They are abstract aspects which exist in the closest environment of the researcher, population and setting such as participants 'mood, place, climate , time and others.

ii. Research question (s)

Thus, there are three basic types of questions that research projects can address:

- ✚ **Descriptive question:** the study is designed primarily to discuss what happens /what is going on/ what exists.
- ✚ **Co-relational question:** the study is designed to look at the relation between two or more variables or elements.
- ✚ **Causal question:** the study is designed to determine whether one or more variables cause one or more outcome.

These types stated above are the broader ones and they are interactive and integral in the one research.

A variable is never dependent or independent by itself. It is the role it plays in a given relation that gives its characteristics and value.. consider the following example: in which the variable in the research question is ' method of teaching'

- What influence does the personality of teachers have on their method of teaching? (*dependent*)
- In what measure do school results depend on the method of teaching? (*independent*)

II. Design and Methods of data collection

Data are classified into two types according to their sources, primary and secondary data. The researcher collects data through different methods the chart stated below describes the most common methods used to gather information:

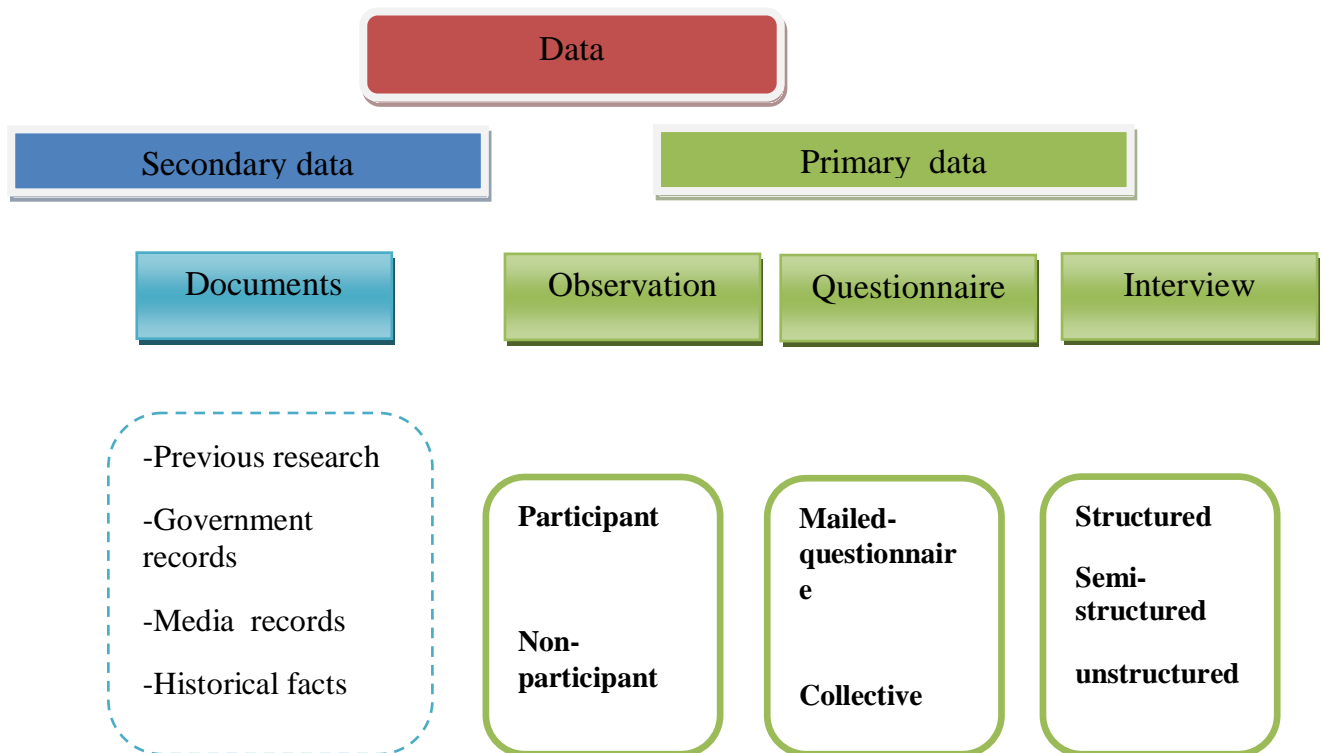


Figure 5: Types of Data Sources

Consequently, the researcher needs to consider the following questioning:

- What type of data is required?
- Who will provide these data (the sample of population)?
- what are the appropriate instruments?
- what are the sources at your disposal ?
- How are the data analyzed?

Research methods can be put into three categories:

- a) Technique: the specific behavior and instrument we use in performing research operation
- b) Processes
- c) Approaches

Those terms can be used interchangeably as synonymous terms throughout the research, but the distinction between them is preferable and professional even though is not compulsory.

i. Definition of design:

A Research design is a procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically.

This definition testifies for the importance of specifying a design that

- ✓ claims for validity of instrument, data and results
- ✓ seeks for objective and reasonable interpretation which is free of personal judgment.
- ✓ asserts the absence of errors.
- ✓ respects time limitation and financial capacities. (of the researcher and the stakeholders as well).

Therefore, research methodology, according to Cresswell (2014) refers broadly to the philosophical and theoretical perspectives that frame research methods, approaches, and designs. Somekh and Lewin (2005, p. 346) also argue that research methodology is **“the collection of methods or rules by which a particular piece of research is undertaken”** as well as the **principles, theories, and values that underpin a particular approach to research.** Mackenzie and Knipe (2006, p. 5), also state that **“methodology is**

the overall approach to research linked to the paradigm or theoretical framework while the method refers to systematic modes, procedures or tools used for collection and analysis of data.” These views suggest therefore, that a theoretical framework is part of the broader research methodology which should be used to guide, frame, and explain the entire research study.

ii. Remember:

Research design refers to the overall plan or structure of a study, outlining how the research will be conducted.

Research methods are the specific tools and procedures used to collect and analyze data.

Methodology, on the other hand, provides the theoretical justification for choosing particular methods and explains how the research aligns with broader philosophical assumptions.

Thus, Research methodology is the study of how research is carried out in a clear and logical manner. It involves knowing the various steps a researcher follows while investigating a research problem. It also includes understanding the reasoning behind these steps. The quote above highlights the importance of researchers grasping research methodology. By understanding it, they can comprehend the reasons behind different research methods and techniques. This knowledge helps ensure that all research conducted is valid and reliable.

III. Disseminate findings

At this stage, your research results are formally presented for the scientific and professional community for scrutiny and validation. This is particularly valued because it ensures that new knowledge is added on to the existing literature. There are many ways that have been adopted for the validation of results for the scientific community, including:

- a) **Publication:** Research can also be published through peer-reviewed journals, book publications, book chapters, or institutional repositories. Publication enables study findings to be shared with a broader audience and scrutinized for evaluation and confirmation of study authenticity and reliability.
- b) **Conference presentations:** Results might be presented at an academic or professional conference through an oral presentation, poster session, or workshop. At this time, there is an opportunity for discussion, feedback, and networking with other researchers.
- c) **Viva voce (oral examination/defense):** In an academic environment, especially when it comes to writing or submitting a thesis or a dissertation, an oral examination or defense referred to as viva voce is done. This is an oral defense of the research done before an audience.

Effective dissemination, therefore, ensures increased awareness and accessibility of the results for the better effect and contribution of knowledge to society and the field in question.

Section three:
Research Concerns

I. Forces Affecting the Core of research Process

There are numerous factors that influence the process of the research, either positively or negatively. They are classified in terms of the tight relation to research into two classes, micro and macro forces. the former includes the following factors:

- 1) Opportunity: the world is competitive, you must to seize every occasion which may not repeat a second time
- 2) Peers and mentors: your friends and colleagues, on one hand, and your advisor on the other hand have a great impact on the research activities,
- 3) Institutional requirements: it refers to the specific standards of the university/institution. They must be respected as formal approvals. Among those requirements, time and deadlines are the most critical conditions that the students must consider .
- 4) Researcher's experience: on the one hand, researcher's past experience can impact the research at many levels of progress such as the preferences. On the other hand, the amount of experience itself makes a large difference between an expert and a novice investigator in terms of intention, novelty of methods
- 5) Literature review: it is considered as the major force that affects the research since it guides the study. It provides its relevance to the previous works, it gives authoritative argumentations and it introduces the basic terminologies used in the practice. Additionally, It helps refine the topic.
- 6) Emerging research question: As we have already seen, this step is the most significant one in the process.

Moreover, as external factors, the macro-forces are mentioned as follows:

1) **Resources:** this means the human and material resources. It is concerned with the availability of data as the sample of population, funds and documents. The availability or shortage of these resources directly shapes the scope, feasibility, and quality of the research. The limitation in human resources may restrict access to knowledgeable participants or trained research assistants, thus lowering the depth of data collection. Insufficient material resources (like funding or access to libraries, labs, or digital tools) are likely to force the narrowing of research questions or the use of simpler methods. On the other hand, rich and diversified resources allow for more comprehensive sampling, more advanced analysis techniques, and stronger overall research outcomes. Thus, resources determine not only what can be researched but also how rigorously and effectively it will be done.

2) **Environment:** it involves all the levels of environment, social, economic, and political level. For example, many studies are affected by the pandemic crisis and wars. Environmental factors shape the research context and affect the availability of data, behaviors expressed by participants, ethical issues, and methodological options. The social context, like cultural norms or community attitudes, can influence participants' answering behaviors. Economic difficulties can result in a lack of access to technology or transportation modes, affecting response rates. Political turmoil, crisis, pandemic, and war situations interrupt fieldwork, limit mobility, and impose new risks related to ethics or time. In some cases, environmental pressure might even impact the relevance of a research question or call for adaptation of a research design to new realities. Thus, environmental aspects can facilitate or hinder the whole research process, influencing its direction and outcomes.

3) **Ethics:** are taken into consideration in different contexts and fields as social sciences, usually brings up questions of ethics because the study design involves human subjects, some of whom are under age.

The degree of attention towards ethical considerations in research should be revealed throughout the phases of research, among the ethical concerns:

- Risk of Harm, Anonymity and Confidentiality: it is essential in any research that the identity of the subjects must be anonymous, and the data pertained confidential, this is why many educational institutions do not permit the researcher to collect data without '*informed consent*' or 'signed approval'. The researcher must ensure 'doing no harm' during the collection of data to the participant and the total community, the institution and the researcher. The harm can range from psychological, physical, emotional, loss of resources (such as time), and reputational. (the students must be careful when developing the questionnaire and the interview through the use of the informed consent) (see appendix1, Mbata, 2019, p. 220)
- The role of the researcher as being *overt* or *covert*: this issue is often encountered in ethnographic field of research. When collecting data, does the researcher plays an announced or secret role? Especially during observational phase.



Figure 6: Key Ethical Issues in Research

4) Values: it means the moral, personal and social values that are found to play a salient role, but other values also influence the ethical decisions that are taken throughout the research process. The philosophical worldviews and intrinsic beliefs will be seen in the next unit.

Self-Assessment task

- ✓ Distinguish between the terms: method, design and methodology.
- ✓ State some different research tools

PRACTICE

- I. Identify (Method, Design, Methodology) and explain why:
 - A. “I will use interviews and classroom observations to collect data.”
 - B. “This study follows a qualitative case-study approach to explore teacher–student interaction.”
 - C. “A constructivist worldview informs my choice of qualitative methods because I aim to understand participants’ meanings.”

- II. Discuss the following statement,

“Research is a systematic, methodical and ethical process to solve practical problems”

- III. On what basis will you choose your research design?

UNIT TWO:
**RESEARCH PHILOSOPHY AND
METHODOLOGY**

How to Think of Research

Learning Goals

After completing this unit, students should be able to:

- Reflect on and articulate their own philosophical position in relation to their research.
- Identify and explain the philosophical worldview underpinning their research.
- Understand the relevance of epistemology and ontology to research.
- Explain the validity and reliability of their methodological choices.



How to Think of Research

Through the scientific research, the researcher aims at reaching reliable, feasible and accurate findings. Thus, the research is ultimately built upon methods, methodology and design choice. Indeed, the robustness of any scientific inquiry depends on the clarity and coherence of these foundational elements, as they determine the extent to which the outcomes can be validated, replicated and trusted within the academic community.

Thereof, since research is a decision-making process and a problem-solving activity, the researcher has to select a better choice among several different possible options. In addition, he/she needs to decide upon every detail in his/her own research beginning by the topic itself. Such decisions require systematic reflection to ensure that each methodological and procedural choice aligns with the aims of the study, adheres to established scholarly standards, and contributes to the overall logical structure of the research.

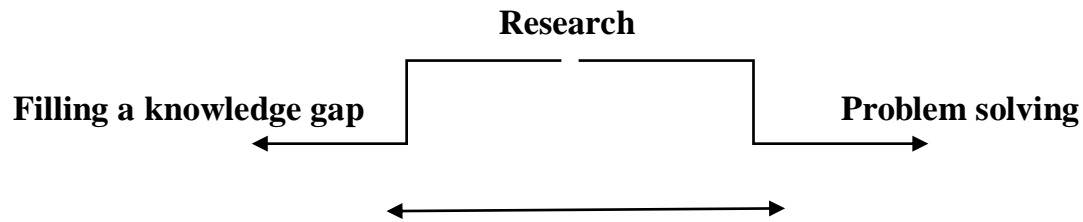
Accordingly, as a researcher you need to ask yourself the following questions:

- How did/shall I choose my topic?
- How shall/did I choose this rather than that?
- Does my choice reflect any degree of subjectivity, and if so, how can it be minimized to enhance rigor and credibility? If elements of subjectivity are detected:
- What strategies can be employed to mitigate their influence and thereby enhance the objectivity, transparency and academic rigor of the research process?

Consequently, research is fundamentally grounded in appropriate methods, a coherent methodology and a suitable research design.

Section one:
Philosophy and Methodology

Research as a dynamic operation aims at



Based on these objectives; the research needs

- (a)research question(s): what do you want to find out/study?
- Methodology: how will you find/study it?
- Paradigm: which worldview you follow to find/study it?

Asking the right question is the most intricate step in research, since all the next steps will be based upon your first decision at the very beginning.

Therefore, when you ask questions to reflect, to formulate, to decide, and evaluate arguments \implies you are doing *philosophy*.

I. What is Philosophy?

Each individual in the society has a specific philosophy, even though ne may not aware of it i.e., we all have our own assumptions and views towards life, nature, and beliefs. Those ideas are acquired in a variety of ways (as it is explained in the first unit). This broad common meaning of philosophy indicates the personal formal sense of having philosophy; whereas, the critical reflective sense which is doing philosophy will be explained as follows:

a. Etymology:

The word philosophy is derived from Greek language, it is divided to

- *Philia*: which means ‘love’
- *Sophia*: which means ‘wisdom’

i.e. Love of wisdom, it is a strong desire for a correct application of knowledge.

b. Traditionally:

It is the science that studies beings (all existing things, material and immaterial) in their ultimate causes, reasons and principles through the aid of human reason alone.

It attempts to understand things in a critical and logical manner.

It is a discipline in which questions are more imperative than answers, because answers themselves will turn into questions since curiosity is a human-nature quality.

From another perspective, ‘*Philosophy is a process of reflecting on and criticizing our most deeply held conceptions and beliefs*’. Thus, it also means the various theories or systems of thought developed by the great philosophers, such as Socrates, Plato, Aristotle.

1. Major Branches of Philosophy

Historically, philosophy matters have been treated under its four broad categories, they are:

a) Metaphysics: it meant firstly for Aristotle in many references ‘first philosophy’ and it came to men later “comprehensive thinking about the nature of things.”

It is the study of things beyond the physical concepts or things that cannot be experienced. In Aristotle’s work *Metaphysics*, the term refers to the investigation of being, substance, cause, and the first principles underlying reality. Later philosophers expanded metaphysics to include inquiries into

existence, time, space, mind, identity, and the nature of reality as a whole. In research philosophy, metaphysics influences the researcher's ontological assumptions—what is considered “real” and what exists to be studied. Thus, metaphysical positions shape whether a researcher views phenomena as objective and measurable, or subjective and socially constructed.

b) Epistemology: in its general meaning, epistemology is the branch of philosophy that studies the nature, sources and validity of knowledge. It is concerned with the following questions:

- What are the sources of our knowledge?
- How do we know what we know?

Epistemology plays a crucial role in determining how knowledge is acquired, justified, and evaluated (Audi, 2011). Philosophers like Descartes, Locke, and Kant questioned whether knowledge could be generated by reason, experience, or a combination of both. In research methodology, epistemology determines the perceptions of the researcher with respect to valid knowledge and whether the pursuit of this knowledge goes through empirical observation, logical reasoning, subjective meaning, or social interpretation (*see section one*). These perceptions directly influence the selection of qualitative, quantitative, or mixed-methods approaches.

c) Logic : it is the systematic study of the rules for the correct use of these supporting reasons, rules we can use to distinguish good arguments from bad ones . It is the science of correctness

Logic gives the criteria for argument assessment, making sure that the argument is in valid and consistent patterns (Copi, Cohen, & McMahon, 2014). Classical logic, in its origins from Aristotle, concentrates on deductive validity, and modern formal logic examines the structure of statements. The logical

argument in research is the foundation of forming research hypotheses, constructing arguments, interpreting data, and ensuring the unity of the research effort. It is impossible to justify research claims without the guidance of logic.

d) Value theory: generally, it is the branch of philosophy that studies values. It can be subdivided into *ethics*, *aesthetics*, and social and political philosophy. Value theory examines what humans consider to be good, right, beautiful, or socially desirable (Frankena, 1973). Ethics explores moral values and principles guiding human conduct; aesthetics deals with judgments of beauty and artistic value; political and social philosophy consider justice, equality, and the organization of societies. In research, value theory influences ethical decision-making, such as respect for participants, fairness in sampling, consent procedures, and the societal implications of the study. Thus, values guide what researchers choose to study, how they conduct their work, and how they use their findings.

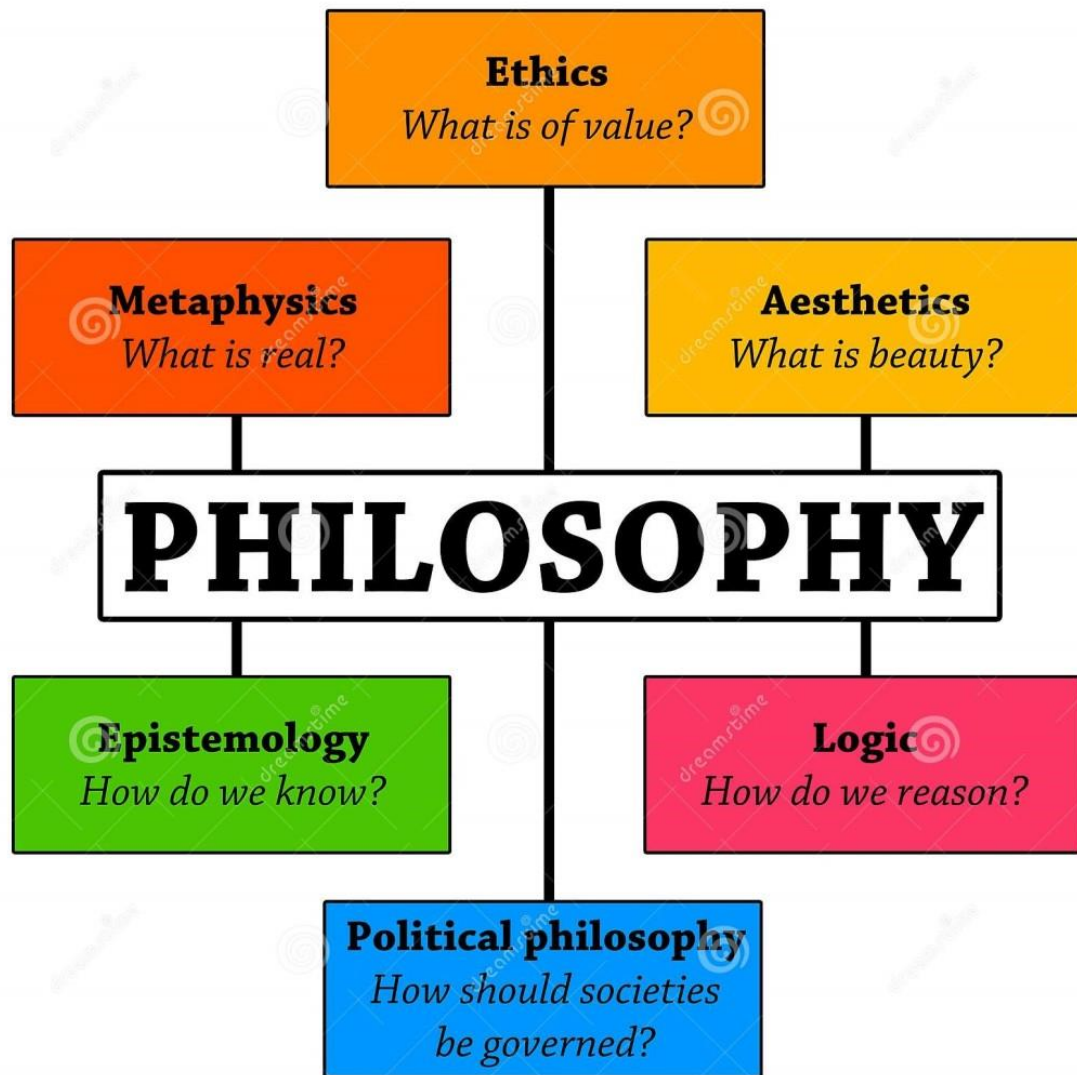


Figure 7: Branches of Philosophy

II. Philosophy Vs Methodology

The basis of research methodology is fundamentally philosophical in nature, with philosophical assumptions underlying the way that researchers perceive reality, construct knowledge, and justify the methodology adopted. This influences ontology-what exists, epistemology-how we know, logic-how we reason, and value theory-what we consider important or ethical-which in turn influences the choice of research approaches, designs, and methods. As

such, methodology spans abstract philosophical positions and concrete research practices: it translates a researcher's worldview-positivist, interpretivist, constructivist, or critical-into practical strategies for collecting, analyzing, and interpreting data. In this sense, methodology operationalizes philosophy to ensure coherence, justification, and alignment of every step in the research process with the underlying assumptions about truth, knowledge, and inquiry.

To sum up, the term 'methodology' refers to the overall perspectives, approaches and methods included in the research process as a whole. In another word, it reflects the philosophical position that portrays our decision-making phases to generate knowledge, it is concerned with the following questions:

- What?

Those types of questions are concerned with the problem, the phenomenon, the field, the area of research.

- Why?

Those types of questions are concerned with the general aim of the study, the objectives behind each question (sub-questions), the arguments behind your choices of the tools,

- Who?

This question is concerned with the sample of population, the subjects, in addition to the researcher himself/herself; his experience, knowledge, level ..

- Where and when?

It is concerned with the characteristics of the sample through depicting the sampling procedure, the settings of data collection, such as time and place of the interview.

- How?

Those questions are asked to find out the overall design, the methods and the techniques of data collection and analysis, specifically, decide upon the *paradigm* and the *approach* followed.

Self-Assessment task

- ✓ Explain: having and doing philosophy.
- ✓ The relationship between Philosophy and Methodology
- ✓ What is research Paradigm ?

Section two :
Research paradigms

Some Basic Terminologies in research must be explained and illustrated in order to be used adequately throughout any research papers in terms of theoretical argumentation and/or practical application. Thus, some of those terms are briefly described in the following points.

I. What is paradigm?

The term paradigm is derived from Greek meaning pattern (Kivunja & Kuyini, 2017) and has been broadly defined by several academics. For instance, paradigm is perceived as **“a way of seeing the world that frames a research topic”** and impacts the way that researchers think about the topic (Hughes, 2010, p. 35). In essence, paradigms represent the researcher’s worldview and beliefs which have a great impact on the way the research is undertaken.

Furthermore, Fraser and Robinson (2004) further claim that a paradigm is **“a set of beliefs about the way in which particular problems exist and a set of agreements on how such problems can be investigated”** (p. 59). Paradigm is also described as **“sets of beliefs that guide action”** (Guba, 1990, p. 17)

II. Research paradigms

Research philosophy is concerned with the assumptions of human knowledge (epistemological assumptions), assumptions about realities you encounter as a researcher (ontological assumptions) and assumptions regarding how will you find realities (methodological assumptions).

Positivism argues that reality must be examined by utilizing the “rigorous process of scientific inquiry” (Guba, 2014, p. 20).

Guba and Lincoln (1989) further stated that the following dimensions are essentially related to portray a research paradigm: *ontology, epistemology and methodology*. These views reflected the opinions from Hitchcock and Hughes (1995, p. 21) who stated that, **“ontological assumptions will give rise to epistemological assumptions which have methodological implications for the choice of particular data collection techniques”**.

i. *Ontology*

Ontology is concerned with the nature of existence (Crotty, 1998), or social entities (Bryman, 2012) or reality (Hammersley, 1992). It is concerned with the question, “What is the nature of reality”. It is referred to the researcher’s definition of reality.

ii. *Epistemology:*

Epistemology establishes the relationship between the inquirer and the inquired, it is concerned with the questions such as: **“Is knowledge something which can be acquired on the one hand, or, is it something which has to be personally experienced?”** (Kivunja & Kuyini, 2017, p. 27).

iii. *Methodology:*

Methodology has been described as “the method used in conducting the investigation” (Antwi & Hamza, 2015, p. 218). It has also been defined as, “How should we study the world” (Kawulich, 2015, p. 1). The elementary question related to methodology as we have seen in the precedent unit is “How does one go about acquiring knowledge?” (Lincoln & Guba, 2013, p. 39). The methodological features of a research must agree with the ontological and epistemological stances of the research design.

Research paradigms are classified on the basis of Guba's work (1990), into the categories of post positivism, constructivism, transformative and pragmatism. Several papers explain salient principals and features of these four world views.

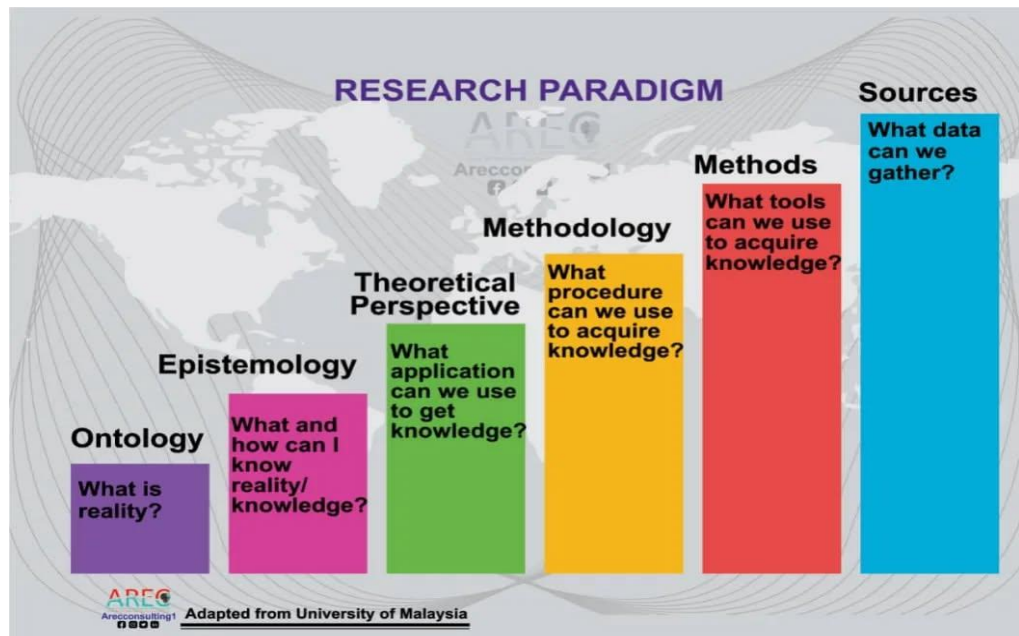


Figure 8: Research Paradigm

The most important paradigms are stated below.

✚ Positivism and Phenomenology /interpretivism

Positivism gives a great emphasis on 'absolute truth' to be found experimentally using correct and exact measurements, which is challenged in social science domain. Positivism only suits to physical sciences. Whereas, Post-positivism is an appeal to probability and variation of results in terms of difference in context, situation and environment. Thus, post positivism challenges the notion of absolute truth. It can be used for both physical sciences as well as social sciences.

The constructivist paradigm is alternatively known as a naturalistic (Guba & Lincoln, 1989) and interpretive paradigm (Guba & Lincoln, 1989; Merriam & Tisdell, 2016). The interpretive paradigms within the social sciences stand in juxtaposition to the positivist approach (Brooke, 2013, p. 431). The interpretative perspective is a theoretical orientation based on two approaches. Firstly, there is phenomenology, an approach that emphasizes the understanding of events and personal interactions.

Secondly, there is the symbolic interactionism approach, which states that human experience is mediated by interpretation, since it is people who ascribe meanings to goals, situations and events.

Table 1: Positivism Vs Phenomenology

	Positivism	Phenomenology
Basic beliefs	<ul style="list-style-type: none"> - the world is external to the researcher: -objective: it is free of bias - Observer is independent - science is value-free 	<ul style="list-style-type: none"> - the world is socially constructed: society is a major source of data Subjective: ideas are built upon peoples' views - observer is a part of research --Science is driven by human.
Researcher should	<ul style="list-style-type: none"> - focus on facts - look for causality and fundamental rules 	<ul style="list-style-type: none"> - focus on meaning - understand to explain phenomena.

	<ul style="list-style-type: none"> - analyze and divide phenomena into simple elements. - use deduction 	<ul style="list-style-type: none"> - study the totality of each situation. - develop ideas through induction.
Method	<ul style="list-style-type: none"> - Operationalization of concept. - use a large sample: it is manageable since the data are in numbers. - quantitative methods 	<ul style="list-style-type: none"> - use distinct ideas to establish opinions. - Small sample: since the data are words and ideas. - Qualitative methods

Note. Adopted from Creswell (2014, p. 06)

Consequently, the following questioning refer to the relationship between research methodology and philosophy (*see section one*):

What?

These types of questions are concerned with the problem, the phenomenon, the field, or the area of research. In terms of research methodology, the “*what*” question helps define the object of inquiry, which is the foundation upon which all subsequent methodological decisions depend. From a philosophical standpoint, it relates to ontology (the nature of the phenomenon that exists and is being investigated). A clear understanding of *what* is being studied allows the researcher to determine whether the phenomenon is measurable, observable, or interpretive, which in turn guides the choice between quantitative, qualitative, or mixed-methods approaches.

• **Why?**

These questions address the purpose of the study, the general aim, and the **objectives** behind each research question or sub-question. Methodologically, the “*why*” helps justify the selection of particular tools, instruments, and procedures by linking them to the research purpose. Philosophically, it reflects the researcher’s epistemological stance, i.e., how the researcher believes knowledge is generated and what counts as valid evidence. By clarifying why certain tools or methods are chosen, the researcher demonstrates alignment between the research aims and the methodological framework, ensuring coherence and internal validity.

- **Who?**

This question concerns the sample or population, the participants, and also the researcher. Methodologically, the “*who*” question defines the unit of analysis and the sampling strategy, which influence reliability, transferability, and generalizability of the findings. In relation to research philosophy, it recognizes the role of the researcher’s positionality (their background, experience, and assumptions) and how these may shape data interpretation. This is particularly emphasized in interpretivist and constructivist paradigms, where the researcher is considered part of the research context, not an external observer.

- **Where and when?**

These questions describe the contextual characteristics of the study, including the sampling procedures, field settings, and the specific time and place of data collection. Methodologically, such details help establish the research boundaries, ensuring transparency and enabling replication. In qualitative research, the *where and when* are crucial for understanding the contextual embeddedness of data, while philosophically they relate to assumptions about whether knowledge is context-dependent (interpretivist view) or context-independent (positivist view). The setting influences not only data generation but also the interpretation of results.

• **How?**

These questions are used to determine the overall research design, the methods, and the techniques of data collection and analysis. They also involve deciding upon the research paradigm (positivist, interpretivist, constructivist, critical, etc.) and the approach (deductive, inductive, or abductive). Methodologically, the “*how*” provides a detailed plan of research execution, ensuring that the chosen methods are logically aligned with the research objectives and philosophical stance. Philosophically, it reflects the methodological coherence between what the researcher believes about reality (ontology), how knowledge is understood (epistemology), and which methods are appropriate for generating that knowledge (methodology).

These worldviews collectively give rise to three broad research approaches: quantitative, qualitative, and mixed methods. The quantitative approach is commonly associated with positivist and post-positivist paradigms, which emphasize objectivity, measurement, and the search for generalizable laws. The qualitative approach, on the other hand, is grounded in constructivist and transformative worldviews, which prioritize subjective meaning, contextual understanding, and the role of power and social change in shaping knowledge. The mixed-methods approach is typically linked to pragmatism, a worldview that values methodological flexibility and the use of multiple forms of evidence to address complex research problems.

Self-assessment task

- ✓ Research paradigm is
- ✓ Distinguish between the terms: research method, technique, paradigm
- ✓ Positivism is

Section three:
Research Approaches

On the basis of different world views we have already discussed, there are approaches that seem to be regarded as independent approaches. Consequently, there could be only three approaches: Quantitative (Positivism and Post positivism): approach of numerical measurements and numbers. Qualitative (Constructivism & Transformative): approach of concepts and images. Mixed Methods (Pragmatism) which is an approach of measurements, numbers, definitions and images. These three approaches are represented below.

Consequently, the positivist paradigm is often associated with the *quantitative* research approach. Qualitative approach is **“an approach for exploring and understanding the meaning individuals or groups ascribe to a social or human problem”** (Creswell, 2014, p. 32). Whereas, quantitative study is utilized to determine **“cause and effect, predicting, or describing the distribution of some attribute among a population”** (Merriam & Tisdell, 2016, p. 5). The data in a quantitative study is then analyzed numerically and statistically to produce the results of the study (Creswell, 2014).

According to Merriam and Tisdell (2016), a qualitative approach incorporates many salient characteristics. First, the aim of the study is to understand the experiences that people live and have. Second, the instrument for data collection and data analysis is primarily the researcher. Third, the data from the study is analyzed inductively. In other words, based on the data the researcher will generate interpretation and explanations in the form of hypotheses, concepts, or theories. Finally, rich and thick description will be

obtained from multiple sources of data such as documents, field notes and interviews. The distinction between quantitative and qualitative approaches is stated in the following table:

Table 2: Quantitative Vs Qualitative Approach

	Quantitative	Qualitative
Aim	The aim is to count things in an attempt to explain what is observed.	The aim is a complete, detailed description of what is observed
Purpose	Generalisability, prediction, causal explanations	Contextualisation, interpretation, understanding perspectives
Tools	Researcher uses tools, such as surveys, to collect numerical data.	Researcher is the data gathering instrument
Data collection	Structured	Unstructured
Output	Data is in the form of numbers and statistics.	Data is in the form of words, pictures or objects.
Sample	Usually a large number of cases representing the population of interest. Randomly selected respondents	Usually a small number of non-representative cases. Respondents selected on their experience.
Objective/ Subjective	Objective – seeks precise measurement & analysis	Subjective - individuals' interpretation of events is

		important
Researcher role	Researcher tends to remain objectively separated from the subject matter.	Researcher tends to become subjectively immersed in the subject matter.
Analysis	Statistical	Interpretive

Note: Adapted from MacDonald & Headlam, (2014, p. 9)

Furthermore, Pragmatism as the third paradigm combines between different approaches, it:

- Arises from actions, consequences and situation: this approach focuses on actions and consequences rather than cause and effect as in case of post positivism. It is contextual.
- Focuses on “what works”: when theories fail pragmatism begins. The methods and techniques may be traditional or personal self invented.
- Focuses on problem more than methods: solving the problem is in itself an issue and a priority over how we solve it. More than one approach, and techniques could be combined to achieve solutions.
- is flexible as far as use of methods is concerned. Creativity and innovation are strongly allowed

Finally, it is important to emphasize that these research approaches should be viewed as complementary rather than strictly opposing. Although each approach is grounded in distinct philosophical assumptions, contemporary research increasingly recognizes that complex phenomena cannot always be fully understood through a single methodological lens. Therefore, combining or integrating different approaches may be necessary to produce more comprehensive, valid and reliable insights. This integrative perspective reflects the growing acceptance of methodological pluralism within research

methodology. The key concepts associated with these approaches will be examined in detail in the next unit.

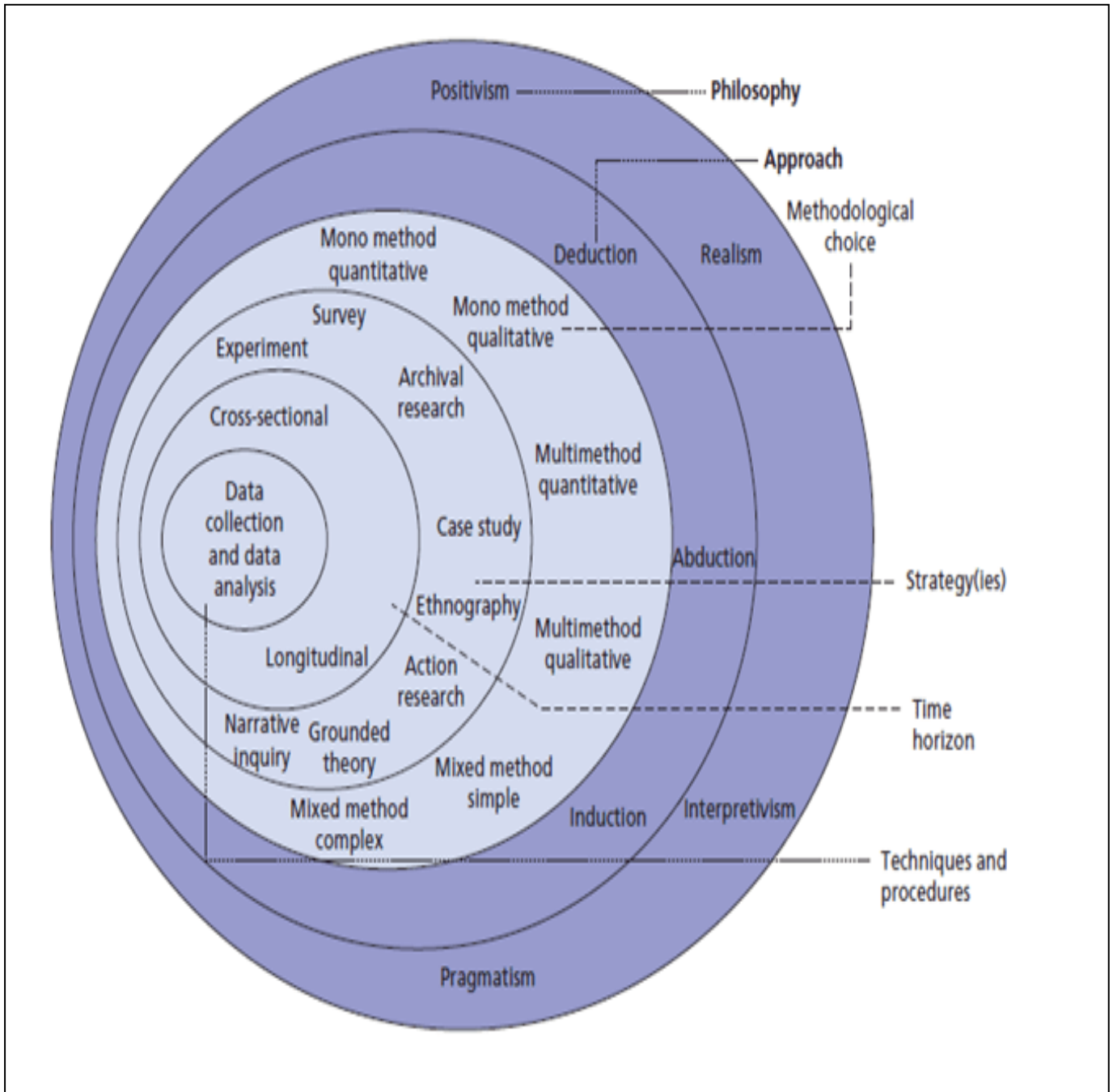


Figure 9: Research Philosophy in the ‘Research Onion’¹

¹ <https://research-methodology.net/research-philosophy/>

Self-assessment task

- ✓ Compare between quantitative /qualitative approach
- ✓ Operationalization of concepts is

PRACTICE

I. A research paradigm is a worldview or philosophical framework.

Discuss

II. Regarding your topic of dissertation/thesis:

a. Which philosophy fits your topic? (positivism, interpretivism, or pragmatism)

b. Which paradigm fits it? (post-positivist, constructivist, or pragmatic)

c. Which methodology would you use? (quantitative, qualitative, or mixed)

Explain why your choices (philosophy, paradigm, methodology) match your research topic.

UNIT THREE:
PRACTICAL IMPLICATIONS:

How to apply

Learning Goals

After completing this unit, students should be able to:

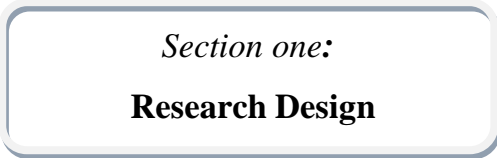
- Reflect on and articulate their own philosophical position in relation to their research.
- Identify and articulate the philosophical worldview underpinning their research.
- Understand the relevance of epistemology and ontology to research.
- Explain the validity and reliability of their methodological choices.
- Assess the related findings.



How to Apply

The researcher starts with three central components of a research approach namely philosophical world view, research design, and research methods.

The research design is planned to provide an appropriate framework for a study. A very significant decision in research design process is the choice to be made about research approach, methods and procedures since they determines how relevant information for a study will be obtained; . The assessment of the methods of data collection and analysis is conditioned by two important elements which any researcher seeks to achieve, they are validity and reliability.



Section one: **Research Design**

In fact, the term methodology and theoretical paradigm can sometimes be used interchangeably by researchers (students). It stands for an idea of the stance in which the investigator is undertaking.

In recognition of the important common designs used for small-scale research, Blaxter, Hughes and Tight (2006, pp. 66-79) suggested the four-type classification as follows:

I. Action Research

Action research is a qualitative approach aimed at addressing issues within social systems, including schools and other organizations. It focuses on solving specific problems by creating knowledge and taking action within the context of the social system where the problem exists. The objective is to produce shared understanding on how to tackle the issue, bridging the gap between theory and practice (Bourner & Brook, 2019). In general terms, action research is described as: “Action research brings together action and reflection, as well as theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern” (Bradbury, 2015, p. 1). Action research integrates action and reflection, as well as theory and practice, through collaboration with others, to find practical solutions to significant challenges.

The following image summarizes the nature of action research²:



Figure 10: Action Research

² <https://www.interaction-design.org/literature/topics/action-research#:~:text=Action%20research%20is,of%20traditional%20methods.>

Typically, action research is undertaken in educational settings as the classroom, In the context of education, Johnson (2019) defines action research as “the process of studying a school, classroom, or teacher-learning situation with the purpose of understanding and improving the quality of actions or instruction” (p. 255).

“It is a type of research in the field of education, which is undertaken by educational practitioners to understand or solve the problems of the local school and community”

Educational action research may be engaged in by a single teacher (researcher), by a group of colleagues who share an interest in a common problem, or by the entire faculty of an academic institution, in which the emphasis is more on action or practical work than on theory. Thus action research is similar to applied research in many ways.

- Action research is carried out by teachers, head masters of education institutions, supervisors, administrators.
- Action research is limited to classroom practices. Teacher faces a number of problems in the classroom environment that need immediate solutions.

For example: The problem may be: misspelling of the students English Language production

b. Features of action research

Some characteristics of the action research are stated:

- The studied problem is very real.
 - It is flexible.
 - It does not endeavour to generalize findings of any type.
 - It deals with situational and practical problem.
- -Its goal is to bring about improvement in the classroom situations .

- The use of Action Research is direct and immediate.
- The methods used in the action research are multiple, such as: Interview – focus group – field note – questionnaires – self-assessment – and case studies... etc

The following figure can summarize the whole process of action research:

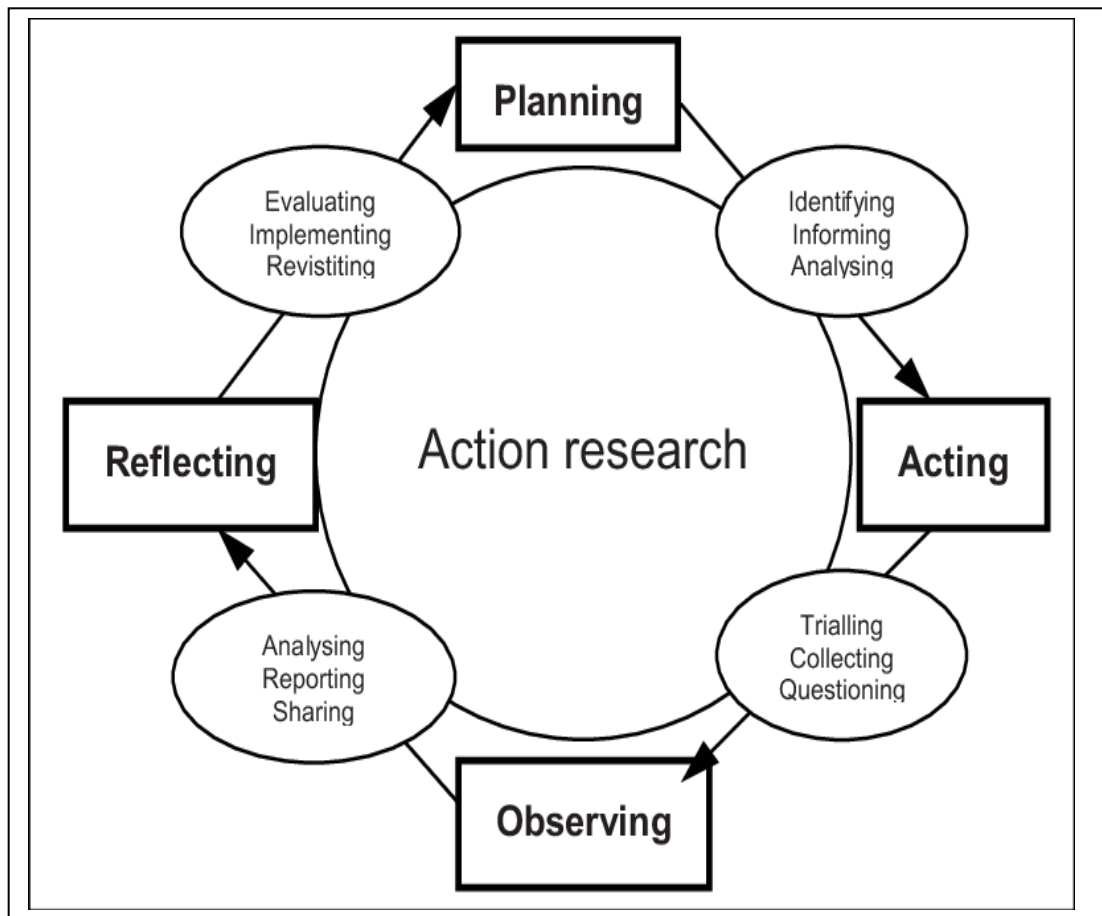


Figure 11: Action Research Process

c. Example:

- Select the data that are most suitable for the problem being studied.
- Ask yourself the following:

Are the data easy to collect? Are there sources available for use? How structured will the collection be?

- Use at least three sources (triangulation) of data for the basis of actions.
- Organize the data in terms of useful categories to identify trends and themes.
- Data can be arranged by social variables such as gender, classroom, grade level, school, etc.

II. Case study research

The case study approach is often used in educational research, either by experienced researchers or novice students. It is an approach that allows the in-depth analysis of a specific phenomenon, condition or problem. Case study answers the research questions with “why” and “how”, and facilitates the understanding of social phenomena, through the detailed analysis of the target context. It usually tends to be interpretive.

a. Features of Case study

The case study approach has several features as follows:

- It is a descriptive study concerned with rich descriptions.
- It is narrowly focused.
- It combines objective and subjective data.
- It is process-oriented.

The following chart summarizes the advantages and disadvantages of case study research³:

³ <https://helpfulprofessor.com/case-study-advantages-and-disadvantages/>

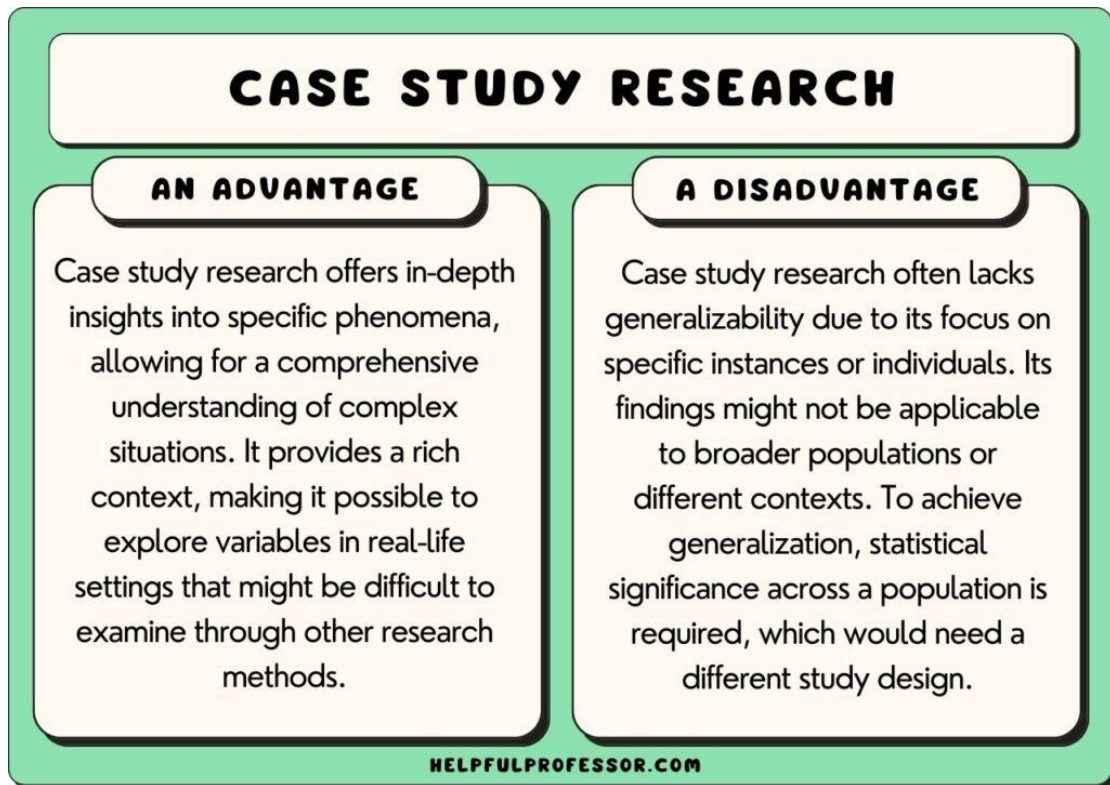


Figure 12: Case Study Features

III. Experimental research

Experimental research is research that involves using a scientific approach to examine research variables. It includes manipulation of one or more variables to determine their effect on a certain outcome or identify their role in cause-effect relationship.

The following chart introduces the important categories of the experimental design⁴:

⁴ <https://pubrica.com/academy/experimental-design/experimental-study-design-research-types-of-design-methods-and-advantages/>

A Classification of Experimental Design

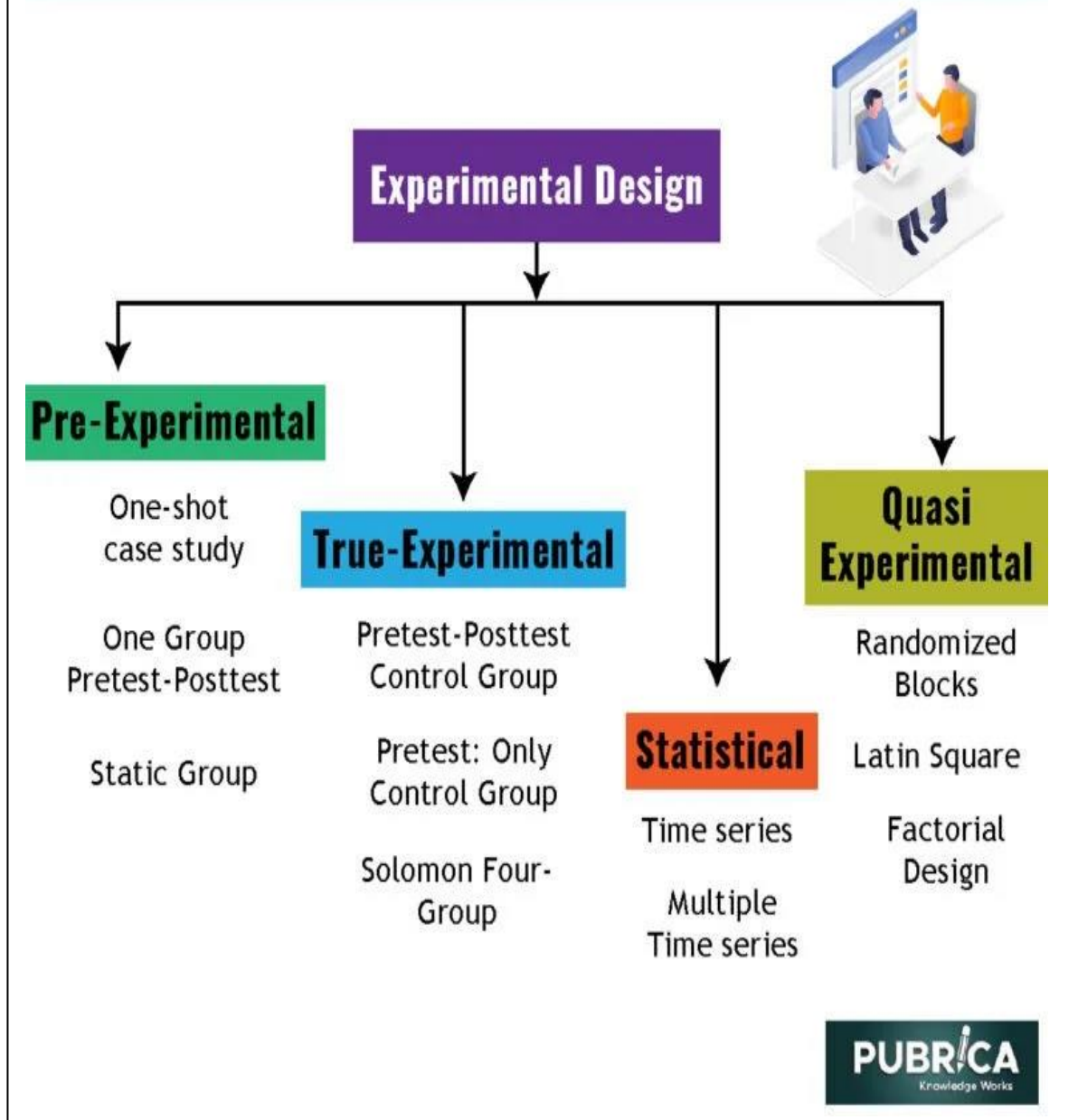


Figure 13: Experimental research Design

IV. Surveys

The major feature of a survey is to find reliable and regular answers to consistent questions, such as in questionnaires and interviews.

Among other research designs, with reference to time, the following designs are stated:

1) Longitudinal Research

This design is concerned with the research process in which the data collection phase takes a long period of time. Examples of this category are historical, Case study and Genetic research.

2) Cross-Sectional Research

It is used for research that collects data on pertinent variables one time only from a variety of groups of people, subjects, or phenomena. It gives a detailed description of (a) variable (s) at one particular point in time. Cross-sectional designs generally use survey techniques.

3) Time Series Design

It collects data on the same variable at regular intervals in the form of aggregate measures of a population.

4) Panel Design

It collects repeated measurements from the same sample over time. It studies and reveals changes at the individual level.

Many other types of research have been mentioned in (Walliman, 2001, pp. 88-96). Some of these types are stated as follows:

1) Descriptive Research: Descriptive research utilizes observation to collect data. It attempts to establish rules and norms through examining situations, i.e. it enables researchers to predict what might happen again under similar circumstances e.g. evaluation research . In this type of research, interviews, questionnaires, and visual records can be used.

2) Correlation Research: Correlation research is primarily quantitative. It is used to measure the association or the relationships between two phenomena or variables. Statistics are used to analyze the numerical data, and the greater the number of cases is, the more reliable results are attained.

3) Historical Research: It has as a major concern the exploration of the relationships of events, relying on primary historical data such as records and writings. It tries to investigate why and how some events took place.

4) Comparative Research: In this type of research, researchers may compare people's experience in the past or in the present. They may conduct studies on classes or groups of people, or on individual experiences. This type of research is based on the belief that phenomena are best understood when they are compared with other similar phenomena because it becomes easy to reveal their origins and development.

The aforementioned types and designs of research underline a set of instruments and tools which reflect the researcher's decision and positioning which is introduced in the following chart:

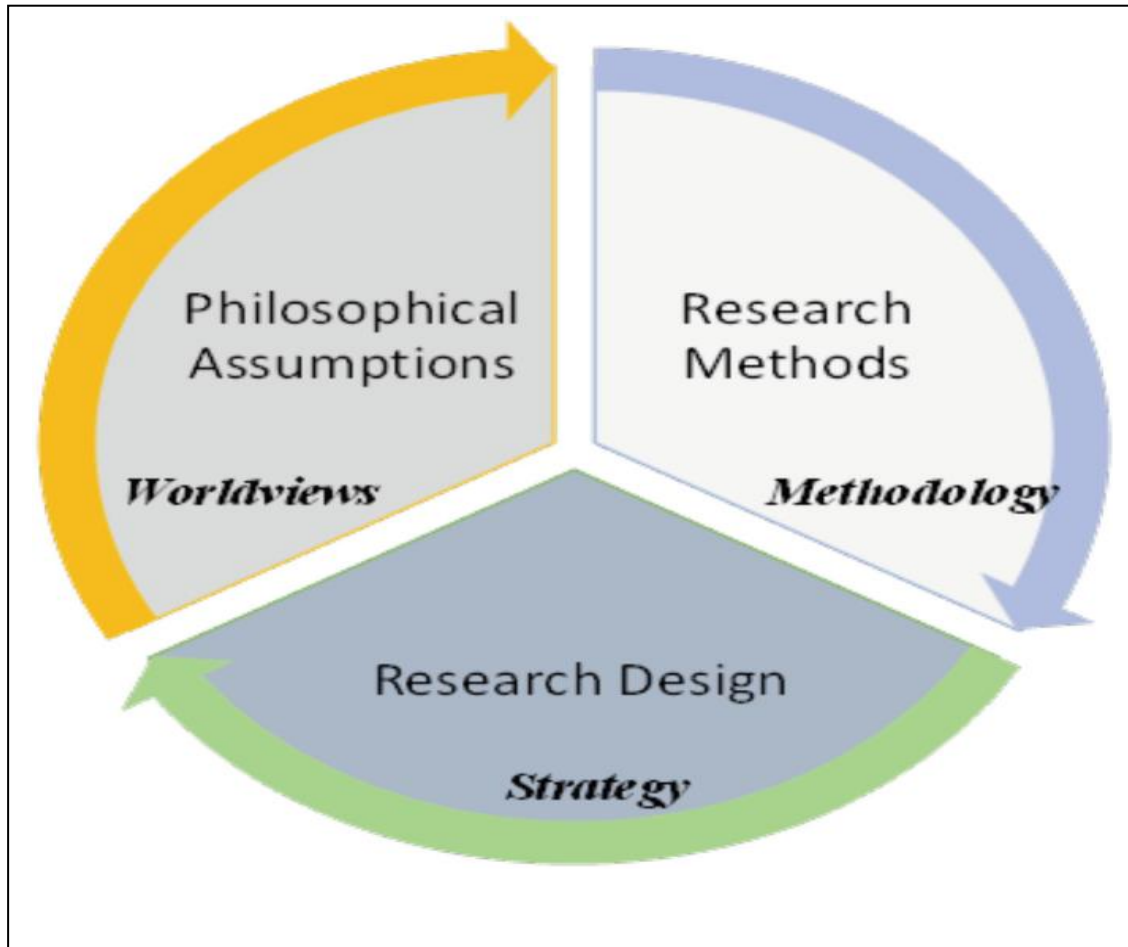


Figure 14: Research Core Elements

Philosophical assumptions shape the researcher's worldview, which in turn influences the choice of methodology used to guide the inquiry. This worldview and methodology together determine the research design, which serves as the structural plan of the study and outlines the overall strategy for conducting it. Finally, this strategic design dictates the specific methods selected for collecting and analyzing data. In this way, philosophical assumptions flow into worldviews, which inform methodology, shape design and strategy, and ultimately guide the practical methods used in research.

I. Self-assessment task

- ✓ What are the advantages of action research
- ✓ Explain one of the types of research

III. Group Task : The students are divided into groups :

Each group will:

1. Choose a real-world research problem (e.g., online learning effectiveness (Moodle), social media advantages/disadvantages...)
2. Answer the following questions (each one tied to the philosophy–methodology content we taught):
 - **What** is the phenomenon or problem?
 - **Why** is it important to study it?
 - **Who** will you study (participants), and how might the researcher’s identity matter?
 - **Where and when** will the data be collected?
 - **How** will you investigate it (approach, design, methods)?
3. **Identify the worldview** (positivist, constructivist, transformative, etc.) that best fits their design, and explain **why**.

Section two:
Research Methods/Tools

The researcher opts for many data-collection tools which may differ in design, complexity and administration. Therefore, the choice is made from the available set of methods namely:

- Survey and Questionnaire Instruments
- Interview-Based Instruments
- Observation Instruments and Techniques

I. Questionnaire

This type is the most commonly used among researchers, Goode & Hall said about, **“In general, the word questionnaire refers to a device for securing answers to questions by using a form which the respondent fills in himself.”** . it includes a range of different questions in terms of structure and type, meaning and objectives, yet they all fulfill the research purpose, they can be as follows:

- **Questionnaires** (open-ended, closed-ended, mixed)
- **Sociodemographic information sheet**
- **Opinion scales (Likert scale, semantic differential)**
- **Attitude or perception scales**

II. Interview-Based Instruments

This type is based on a participant-researcher social interaction, but within a limited plan of purpose. The questions can be prepared earlier in a structured interview, or they can be modified during the process (interaction). Thus, the researcher can use:

- **Interview guide** (structured, semi-structured, unstructured)
- **Life history/oral history interview schedule**
- **Focus group protocol**
- **Expert interview checklist**

III. Observation Instruments/ Techniques:

It is a highly used technique of evaluation in research. It is concerned with aspects such as performance, attitudes, application, interests, behaviours and others to assess the target variables through the inclusion or exclusion of the researcher through participant and non-participant observant respectively. It can be done in checklists. Therefore, the researcher can use:

- **Observation checklist**
- **Field notes notebook**
- **Participant observation guide**
- **Non-participant observation grid**
- **Video/audio observational recording sheet**

IV. Document and Text-Based Instruments

Document and text-based instruments are a variety of devices used to obtain information from a&written or other non-verbal materials as opposed to directly from people. That is particularly crucial in the humanities, as a

majority of research is concerned with such things as language and culture, history, literature and social meaning. They enable researchers to systematically investigate texts, documents, and other rhetorical features as they analyze patterns, themes, ideologies or historical significance, such as in :

- **Document analysis guide** (for letters, diaries, reports, historical archives)
- **Textual analysis rubric**
- **Content analysis coding sheet**
- **Discourse analysis framework**
- **Literary analysis protocol**

Characteristics of questions

When developing questions in a questionnaire or an interviews, researchers intend to (should):

- Avoid leading questions (i.e. questions that influence the participant's answer)

e.g., “**don't you think A is better than B*” → “*What is your opinion about A compared to B*”

- Avoid poorly worded response options that can limit the findings, restrict the data and invite subjectivity

e.g., “**How often do you..*”

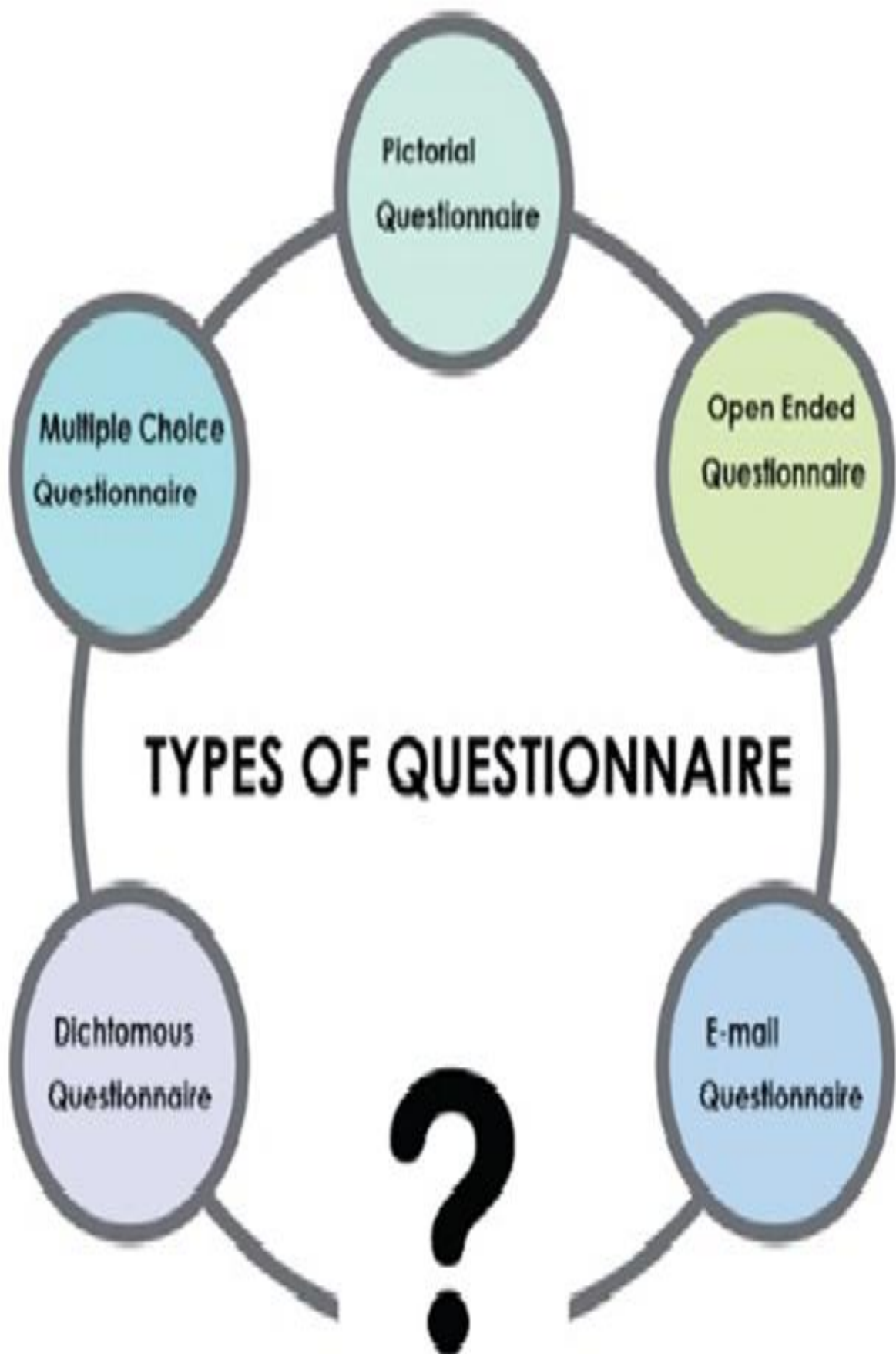
- a. a lot
- b. a little

-
- a. never
 - b. b

- Avoid questions that cause the social desirability bias which are not necessarily related to the research purpose (e.g. embracement, taboos...) e.g. *“Do you always behave honestly in your studies?”*
- Avoid double-barreled and long questions e.g. *“Do you find the teacher’s methodology helpful and the content easy?”*
- Avoid ambiguous words & phrases (e.g. unfamiliar technical terms) e.g. *“Do you engage in metacognitive strategies regularly?”*
- Avoid negations (to ensure the participant’s freedom to answer) e.g. *“Do you not agree that teachers should not give extra homework?”*
- Avoid irrelevant questions (i.e. not needed or appropriate) e.g. *“Age?”* is irrelevant in comparison with *“ years of experience?”*

Types of Questionnaires

Questionnaires can be classified in several ways: by question type, administration method, or purpose.



TYPES OF SURVEY QUESTIONS

1. Open-ended questions
2. Closed-ended questions
 - Dichotomous questions
 - Rating questions
 - Likert scale questions
 - Multiple-choice questions
 - Picture choice questions
 - Demographic questions

Open-ended questions:

Open ended questions require respondents to answer in their own words, providing more detailed, qualitative insights. These types of questions often provide qualitative data and therefore allow for vastly more detail than other types of questions. Respondents have the opportunity for creative thinking as there are no fixed responses, but rather have to think creatively to come up with a response.

Closed-ended questions:

Closed ended questions provide respondents with a list of possible answers to choose from (as multiple choices, Yes/No, Scales... etc.). Therefore, they are more suited for collecting quantitative data and more direct to specific questions.

Rating questions:

Rating questions ask the respondent to rate the level of satisfaction or agreement with a statement, product or service on a scale (1-5). The ratings help to measure how strongly a respondent feels about something.

Likert scale questions:

Likert Scale type questions ask the respondent to provide their level of agreement with a given statement. Responses generally include 5-3 levels of attitudes, as : Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree.

Multiple choice questions:

Multiple choice types of questions provide several options from which the respondent can choose. Multiple Choice questions are very popular and commonly used in surveys because they are easy to understand, respond and analyze.

Checklist Questions

They are commonly used to collect information about habits, behaviors, preferences, or skills, that allow multiple selections.

Picture choice questions:

Picture Choice type questions require the respondent to choose from a set of images and are often used when visual images are applicable to the situation or circumstance or when the choice cannot be adequately expressed in words.

Demographic questions:

Demographic questions gather basic information about respondents, such as age, gender, education level, occupation, and location. They are crucial for segmenting data and analyzing responses by different categories or population groups.

In fact, various factors such as the ethical issues involved in the study plays a great role in the selection of questions, tools and *population*.

Self-assessment task

- ✓ What are the advantages questionnaires?

Section three:
Population and Sampling

At this stage of research, the researcher must select a group of participants for data collection and elicitation through the different tools at hand. This process which is known as sampling is a fundamental technique used in social sciences and behavioural research done through dividing the whole population under study into small subdivisions.

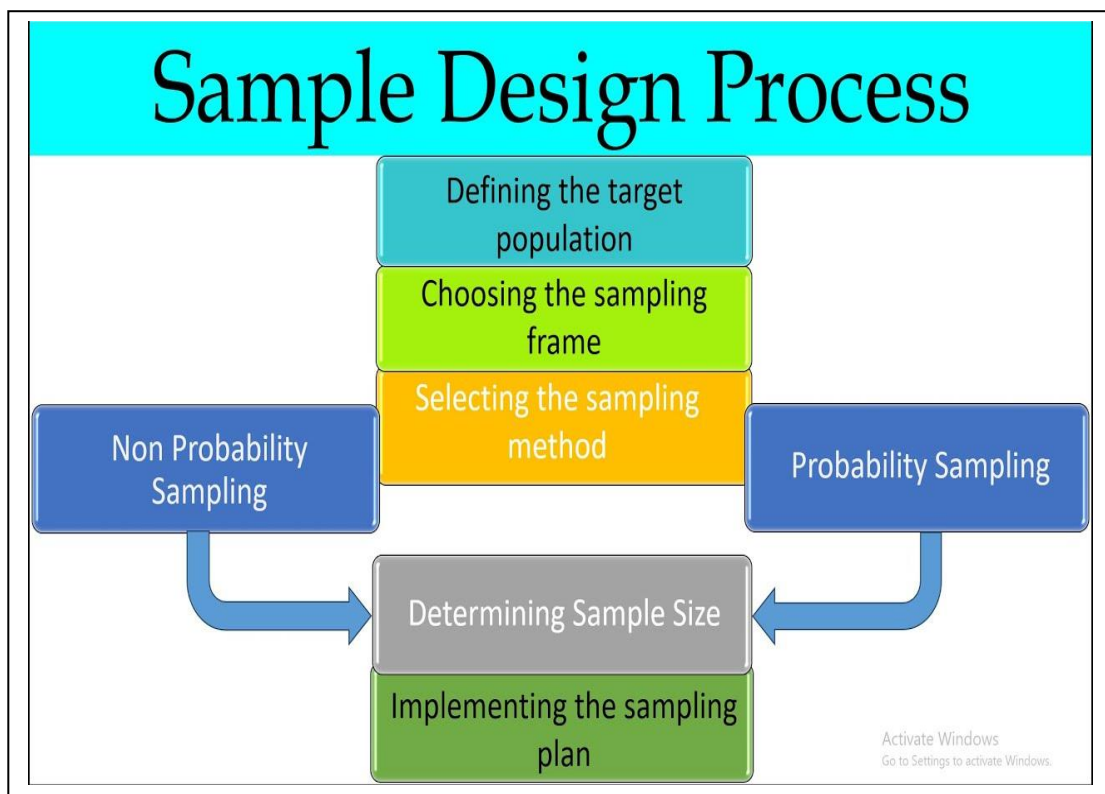


Figure 16: Sampling Design Process

In order to facilitate the compilation of statistics, the researcher opts for either probability (random sample) or non-probability (purposive sample). **"In the former, every member of the wider population has an equal chance of being included in the sample;...In the latter, some members of the wider population definitely will be excluded and others definitely included"** (Cohen, Manion, & Morrison, 2007, p.110). In addition, probability sample is chosen randomly and it is useful to make generalizations since it seeks representativeness of the whole population. Whereas, a non-probability sample does not underline representativeness of the population, but rather a small group or a section of it .(ibid). Non-probability samples include convenience sampling, quota sampling, purposive sampling, dimensional sampling, and so on (ibid, pp. 113-115).

The major sampling strategies in research are *probability* and *non-probability* sampling as it shown in the figure below :

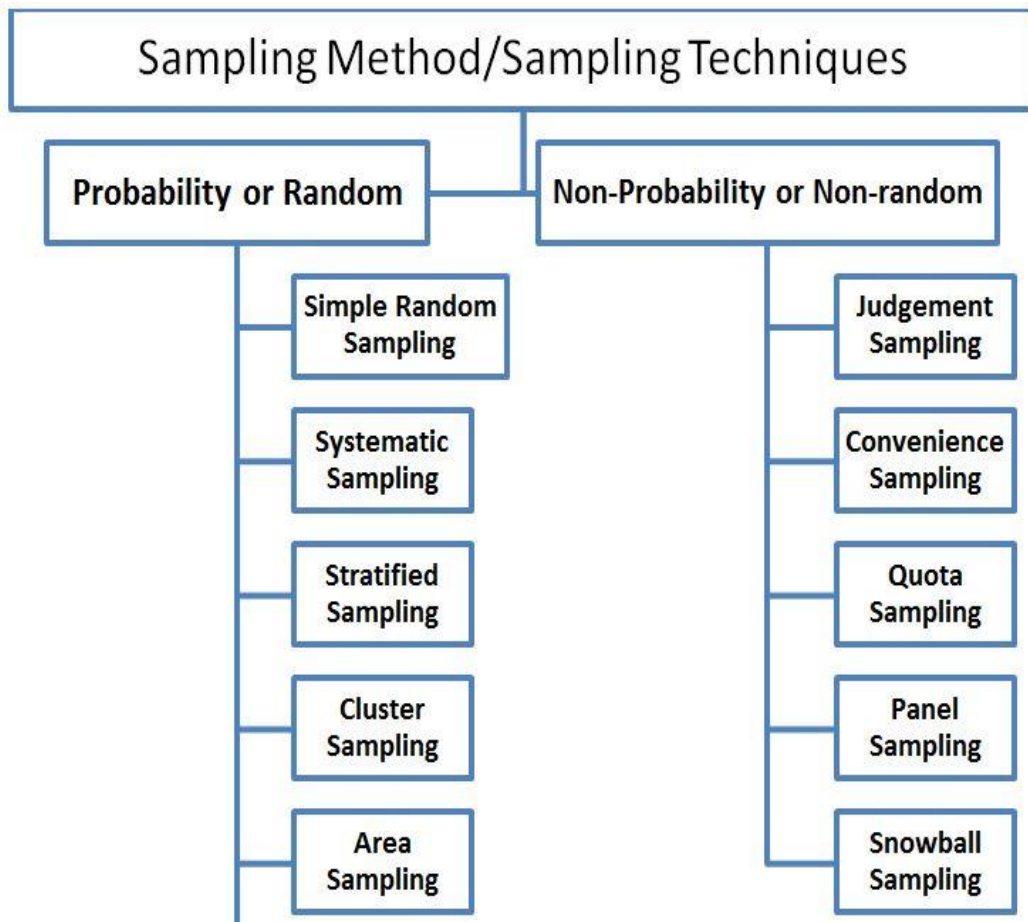


Figure 17: Types of Sampling Strategies

Furthermore, Biggam (2008, pp. 88-90) categorizes sampling into a list that contains the following:

- **Random sampling:** This is a total random selection of a sample of a population. As an example: selecting the participants in street, malls or institutions randomly to distribute a questionnaire, have an interview or join the participant observation. This technique ensures that every individual in the larger population has an equal chance of being selected, which reduces selection bias and increases the generalizability of the findings. It is commonly used in large-scale quantitative studies where representativeness is essential.

- **Simple random sampling:** It is a type of random sampling in which the chance of being selected is for every member in the target community (a small group), taking into account a good choice of place and time. Researchers often use random number tables or digital randomizers to ensure fairness in selection. This method is most effective when the population is small, homogeneous, and clearly defined.

- **Stratified sampling:** the target population is divided up into small particular groups (Strata) that identify some peculiarities and considering a section from each group (Stratum). This technique improves precision by ensuring that each subgroup is adequately represented, especially when the population contains distinct characteristics such as age, gender, or academic level. Stratification increases accuracy and reduces sampling error

- **Cluster sampling:** It is like stratified sampling, nevertheless, the selection of sections from each group (Clusters) must be random.. Clusters are usually naturally occurring groups such as schools, neighborhoods, or departments. Once clusters are selected, all individuals within them may be included. This method is particularly useful when populations are geographically dispersed or difficult to access.

- **Systematic sampling:** when the researcher takes a sample from his target population at equivalent intervals. The researcher may select, for instance, every fifth, or fifteenth name of a student on a list. his method is easy to implement and ensures regular spacing across the list. However, it is important to ensure that the list itself does not follow a hidden pattern that could bias the results.

- **Quota sampling:** It is also known as non-probability sampling in which the number and type of participants is selected earlier in the process without seeking representativeness. Researchers predetermine specific categories (such

as gender or age groups) and fill these quotas through convenience or judgment. Although not statistically representative, it is efficient for exploratory studies and preliminary investigations.

- **Convenience sampling:** It is another type of non-probability sampling. It refers to the 'convenience' to researchers because of the easiest accessibility and availability (participants). This method is widely used in pilot studies, classroom-based research, or when time and resources are limited. While convenient, its major limitation is the high potential for bias, which restricts generalizability.

In summary, sampling design is a key part of the research process because it affects the credibility, accuracy, and relevance of the findings. Researchers may use probability techniques like simple random, stratified, cluster, or systematic sampling. They might also choose non-probability methods such as quota and convenience sampling. It's important for researchers to make sure their chosen strategy fits the goals, context, and philosophical approach of the study. A well-justified sampling design helps researchers gather useful information from a smaller group of the population while reducing bias and improving representativeness. Thoughtful sampling decisions strengthen the overall quality and reliability of the research, which leads to valid interpretations and solid conclusions.

Self-assessment task

- ✓ What are the advantages of action research

- ✓ Identify which sampling technique/method is applied, then comment on its advantages and limitations.
 - a) A researcher wants to study students' English level at a university. He divide students into groups according to faculty/institute (Law, Mathematics, Sciences, etc.) and select participants from each group
 - b) A teacher distributes questionnaires to the first 20 students who enter the classroom.
 - c) A researcher selects every 10th name from a list of students/participants.

Section four:
Validity and Reliability

The methodology section or chapter in dissertations, thesis and research papers replies to the questions: how are the data generated? and how are data analysed and interpreted? Therefore, it permits the reader to evaluate validity and reliability of the overall study.

I. Validity

Validity refers to the appropriateness of the inferences made about the results of an assessment. Inferences being “...**conclusions derived from empirical evidence bearing on score meaning**...” (Messick, 1989, p. 6). It is concerned with a matter of degree and not a numerical value as stated by Linn and Gronlund (2000, p. 75). It is an evaluative judgment.

1. Types of validity:

There are three types of validity (Guba, 1990)

- a. ***Face and content validity***: Each question or item in the study must denote a logical link with an objective. The mechanism of the study should be argumentative. Hence, establishment of this link is known as “Face validity”
- b. ***Concurrent and predictive validity***: Predictive validity is reviewed by the degree to which an instrument can anticipate for an outcome. The student can evaluate the Concurrent validity by judging the outcomes obtained by one instrument in comparison with another instrument to estimate its outcomes.

- c. **Construct validity:** Construct validity, as the term implies, is a more sophisticated technique for establishing the validity of a research tool. It is based upon statistical procedures to build the results as whole. It ascertains the contribution of each construct/component to the total variation observed in a target phenomenon.

In this context, Norton (2009) put forward three major dimensions to boost the validity of research. These are informed consent; privacy and confidentiality; and protection from harm (see unit 1).

The study which meets the different types of validity throughout the process will testify for accurate data and findings.

II. **Reliability:**

The research method is reliable only when it can be used by different researchers in different studies under the same condition to obtain the same result. Therefore, Reliability is essentially concerned with ‘error in measurement’ (McDowell & Newell 1996, p. 37) i.e., it is concerned with the method’s consistency.

In addition, ‘**reliability is a statistical measure of how reproducible the instrument’s data are**’ (Utwin 1995, p. 6), it is concerned with the questions:

1. **How reliable is an instrument ?**
2. **How unreliable is it ?**

In other words, reliability reveals the degree to which a measurement instrument produces consistent results when applied repetitively to the same phenomenon, under the same circumstances.

III. The Difference between Validity and reliability:

Throughout the process of undertaking research, the balance between validity and reliability must be shown through considering the balance between the columns in the following chart (fig.5) :

Contrasting Thinking Approaches

Reliability	vs.	Validity
> Production of consistent, replicable outcomes		> Production of outcome that meets objectives
> Substantiation based on past data		> Substantiation based on future events
> Use of limited number of objective variables		> Use of broad number of diverse variables
> Minimization of judgment		> Integration of judgment
> Avoidance of the possibility of bias		> Acknowledgement of the reality of bias

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Figure 18: Reliability Vs Validity (Roger L. Martin, 2021)

Reliability ensures *consistency*, while validity ensures *accuracy*. Reliable data provide a stable foundation, but only valid data can support meaningful conclusions. Together, they determine the rigour and trustworthiness of your research.

Consequently, various factors can control the researcher's choice of sampling strategy, among which there are: the nature and purpose of the topic, settings and characteristics of the whole population (social, economic, cultural, linguistic... etc), i.e. the suitability of the choice with the abovementioned factors.

In fact, research approaches should work as on complementary foundation rather than on a contrastive basis, since designs vary according to the focus and purpose of research . However, a concept or phenomenon (your topic) can be studied by number of researchers at different settings using different methods for finding out different dimensions.

Self-assessment task

- ✓ How do we evaluate the quality of research?

Practice:

- I. What is the difference between a conclusion and a discussion?
- II. How is the research design selected by the researcher?
- III. Select the appropriate design for the research question:
 - How do ESP teachers adapt materials in medical English classes?
 - What are students' perceptions of task-based learning?
 - How is identity constructed in postcolonial novels?
 - How do bilingual speakers code-switch in daily interaction?

Answers:

I. The difference between a conclusion and a discussion:

The role of discussion and conclusion in carrying out research differs in many ways yet it is complementary in nature. The role of a discussion in research writing is to interpret research results in relation to research questions, a theoretical framework, and existing research studies (Literature review). Therefore, it focuses on *how* and *why* the results matter. A conclusion acts as a synthesis of research studies since it involves highlighting research findings, emphasizing their significance, pointing out shortcomings and limitations in research, and proposing directions for further research. A conclusion does not include research interpretation or present new information.

II. The research design is selected by the researcher based on the nature of the research problem and the objectives of the study. The researcher first clearly defines the problem and identifies the type of data needed to answer the research questions. Factors such as the purpose of the study, the variables involved, the time available, and the resources at hand also influence the choice of design. In addition, the researcher considers the appropriate methods of data collection and analysis to ensure validity and reliability. By carefully examining these elements, the researcher chooses a research design that best suits the study and allows accurate and meaningful results.

III. The appropriate design:

Table 3: The Appropriate Design to Research Question

Research Question	Appropriate Design
How do ESP teachers adapt materials in medical English classes?	<ul style="list-style-type: none">• ESP teachers adapting materials

	→ Case study / Qualitative interviews
What are students' perceptions of task-based learning?	<ul style="list-style-type: none"> • Students' perceptions → Phenomenological study
How is identity constructed in postcolonial novels?	<ul style="list-style-type: none"> • Identity in novels → Qualitative textual / discourse analysis
How do bilingual speakers code-switch in daily interaction?	<ul style="list-style-type: none"> • Code-switching → Ethnographic / Sociolinguistic study

CONCLUSION

Research is an organized pursuit of knowledge and understanding. It is a systematic process, a methodical action, and an ethical activity to answer (a) question (s) and/or to solve a practical problem.

In fact, although various types of studies employ different methodologies, the scientific method provides a consistent foundation for each research study. The evidence derived from a study is only as good as the care with which the researchers ask their questions, select and implement their research methods, and analyze and interpret their data.

The researchers need to decide on the most suitable approaches for conducting their own research. Thus, they need to be able to make the appropriate choice that fits the particular circumstances.

Research is an organized and purposeful pursuit of knowledge and understanding. It involves a systematic process, a methodical approach, and an ethical commitment to discover, explain, or refine what is known. At its core, research seeks to answer questions, test hypotheses, and solve problems that contribute to the body of knowledge in a particular field. Although various disciplines and types of studies—quantitative, qualitative, or mixed-method—employ different methodologies, they are all grounded in the principles of the scientific method. This universal foundation ensures that research is conducted with rigor, transparency, and integrity.

The strength and credibility of any research endeavor rest on the soundness of its methodology. The evidence and conclusions drawn from a study are only as reliable as the precision with which researchers formulate their research questions, design their studies, collect data, and analyze and interpret their findings. A poorly designed methodology can undermine even the most innovative ideas, while a well-constructed one can transform a simple

question into a meaningful contribution to knowledge. Thus, researchers must be deliberate and reflective when selecting research designs, sampling methods, data collection tools, and analytical techniques that align with their objectives and the nature of their inquiry.

Moreover, ethical considerations are at the heart of all research methodologies. Responsible research demands honesty, transparency, respect for participants, and sensitivity to the broader social, cultural, and environmental contexts in which it is conducted. Upholding these ethical standards not only ensures the credibility of the findings but also strengthens public trust in research as a vital tool for progress.

Ultimately, the choice and execution of an appropriate methodology determine the overall quality, relevance, and impact of a research study. A strong methodological foundation allows researchers to produce valid, reliable, and meaningful results that can inform theory, guide practice, and inspire further inquiry. Therefore, developing a deep understanding of research methodology is essential for all scholars and practitioners who aim to contribute thoughtfully and responsibly to their fields. Through careful planning, ethical conduct, and methodological rigor, research fulfills its ultimate purpose to expand human understanding and foster innovation for the advancement of research and society.

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GLOSSARY

DEDUCTION An inference in which the conclusion follows necessarily from one or more premises. When the conclusion does so follow, the deduction is said to be valid.

DESIGN

A procedural plan that is adopted by the researcher to answer questions validly, objectively, accurately and economically.

EMPIRICISM

(EMPIRICAL) The view that knowledge or truth comes from experience/experiment or through the senses, in opposition to *rationalism*.

EPISTEMOLOGY

The branch of philosophy which studies the resources, validity and nature of knowledge. Theory of knowledge.

ETHICS

The study of moral conduct. The term may also be applied to the system or the code followed.

INDUCTION

Reasoning that attempts to reach a conclusion concerning all the members of a class after inspection of only some of them. Inductive knowledge is empirical. The conclusion of an inductive argument, unlike that of a deductive one, is not logically necessary.

INFERENCE

A conclusion derived either from general premises

LOGIC	(deduction) or from factual evidence (induction). Not to be confused with implication; one proposition is said to imply another when their relation is such that if the first is true the second must also be true.
METAPHYSICS	The branch of philosophy that deals with the nature and problems of clear and accurate thinking and argument.
Operationalization	A critical study of the nature of reality. Metaphysics is often divided into ontology and cosmology.
PREMISE	Turning abstract concepts into measurable observations. Although some concepts, like height or age, are easily measured, others, like spirituality or anxiety, are not.
RELIABILITY	
VALIDITY	A proposition or statement supporting a conclusion.
VARIABLE	It is a statistical measure of how reproducible the instrument's data are'
	The appropriateness of the inferences made about the results of an assessment.
RATIONALISM	It is something that varies either within the same individual (or entity) such as motivation, or from one to another such as, age and gender.
	The view that the knowing some truth is based on logic and prior experience.

APPENDICES

THE RESEARCH PROPOSAL TEMPLATE

The Research Proposal is a comprehensive description of the planned research. It is developed under the direction of the assigned supervisor. Throughout the proposal, the student is required to persuasively demonstrate that the study will contribute to a public problem. The full research proposal must be between 5 and 10 pages and should exhibit the following titles:

- I. A title page
- II. A detailed description of the project: Background and statement of the problem (this in the light of a thorough literature review), Research question and hypothesis, aim and objectives
- III. Study population and sampling
- IV. Data collection methods and instruments
- V. A time schedule for the project (**It is necessary**)
- VI. An overview of the structure of the paper
- VII. References (what is available)
- VIII. Appendices (copy of questionnaire, interview,... etc.)

ASSESSMENT CHECKLIST

Use this checklist as a good practice guide for assessment design, evaluation and renewal.

Alignment of assessment with course and program aims	Yes	No	Unsure
1. Assessment is an integral part of my course planning.			
2. Course assessment contributes to overall program goals/ aims/ objectives.			
3. Assessment enables students to demonstrate forms of learning described in all course learning objectives.			
4. Assessment contributes to the development of disciplinary mastery.			
5. Assessment contributes to the development of other program level goals including accreditation standards and graduate skills or attributes.			

Assessment of learning	Yes	No	Unsure
1. Assessment judges student performance against explicit, relevant criteria and standards.			
2. Assessment task is appropriate, given students' prior learning in my discipline.			
3. Examiner expectations about performance standards for specific assessment tasks are made transparent for students through the use of marking guidelines, assessment instructions and or marking rubrics.			
4. Assessment tasks meets all course learning objectives, both disciplinary content and relevant graduate skills where appropriate.			
5. There is a moderation process for reaching consensus amongst all teaching team members about expected standards of student performance in assessment.			