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Research Methodology: Lectures for Undergraduate Students

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Dedication

To all those who are thankful to all those on whose shoulders they stand to see farther and further seeking truth.

Foreword

Research methodology course is interesting because it is inevitable. You can be a medical doctor with virtually little knowledge in literature, but you need a research methodology course to conduct medical research and reporting your findings in journals. You may be a musicologist with no knowledge in microbiology, but you still need a research methodology course to conduct your research on music. You may be a mathematician of renown, but you cannot escape having sound knowledge of the rules of research that you find in research methodology course to solve your mathematical complex equations.

Researching is a skill; it needs mastery. Research is a systematic process that follows fixed patterns. In other words, research need be consistent from beginning to end. It is based most often on theoretical frameworks or worldviews commonly known as paradigms. In *The Psychology Research Handbook* (2006), Leong and Austin quote Jacobs-Lawson who states that two questions often arise near the beginning of any course on research methods. And these questions are : Why is it important to have sound research skills? How are research skills acquired? Researchers are, therefore, bound to master research skills because this quintessential for conducting a trustworthy research.

There is no royal road to the mastery research methodology except by taking the bull by the two horns and deal with it confidently in the best of one's abilities and skills. Practice, practice, and practice is the key to work one's way through the confusing and tortuous pathways of theories and their jargon.

Purpose

As it is an introductory course, this monograph on research methodology is meant for initiating EFL students to undertake studies on how to start researching on firm bases. It offers theoretical as well as practical knowledge background to undergraduate students whose knowledge of research methodology is virtually superficial if not inexistent. It is quietly hoped that this monograph would assist undergraduate students to come to grips with the basics of academic and scientific research principles.

Audience

This monograph targets Algerian EFL graduate students who are willing to be eased into research methodology. owing to their struggle to grasp the complex nature of the course on account of their poor background knowledge and shaky mastery of the language, the author has gone the extra mile to present the course contents in a sober, student-friendly style. Illustration through concrete examples from EFL students' surroundings are generously provided to help them come to grips with the evasive nuances of the concepts. In fact, this monograph is written with the needs of Algerian students' needs in mind.

Organization

The monograph is presented as a series of lectures. These follow the syllabus designed and developed by the teachers of research methodology at the Department of English Studies. The

lectures are mindfully ordered to move from general to particular. The last part of the monograph contains a few examination papers which were constructed specifically to gage undergraduate students' uptake.

Features

Each lecture specifies outcomes to be achieved by the completion of reading and deliberating over the various rubrics.

A food-for-thought questions section is meant to help students to think about aspects of the lecture.

Key terms are listed to draw students' attention to the necessity to grasp their meaning and functions.

A point to ponder and wonder undertakes to stimulate students' imagination and intellect.

The contents of the lectures are written in a pedagogical style so that students will have a chance to react by collaborating with their peers and teacher to deliberate over their implications.

The lectures contain a whole section of tasks with various degrees of difficulties.

In the appendix section term papers are included with a quiet hope that students train to answer examination questions to overcome test anxiety.

How to use the Monograph

Socratic teaching method, i.e., question-answer seems to be an appealing teaching method.

All good teacher teach inductively as Mary Finocchiaro suggests, and, therefore, teachers wishing to use the monograph need pay heed to this piece of advice.

Acknowledgments

All thanks are due to the Almighty Allah who made it possible for me to write this monograph.

A token of heartfelt appreciation and gratitude to the inspiring authors of the many books that I have consulted and whose ideas enriched and emboldened the monograph.

Appreciation is extended to students whose interaction with the tutorials and lectures contents directed and redirected the course of drift.

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(**Major**) Sciences of Language   (**Module**) Social Sciences & Humanities

(**Class**) Undergraduate   (**Instructor**) Dr. Ahmed Bacher

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Introduction   to   Science and Scientific Method

Outcomes: *By the completion of this tutorial, you will be able to :*

1. ***Define*** science
2. ***Outline*** its goals ;
3. ***Elicit*** its products & methods ;
4. ***Single out*** its types and scopes.

Food-for-Thought Questions

1. What is *science* ?

2. What are its goals and products ?

3. In what way are social sciences different from natural sciences & formal sciences ?

4. To what extent are these three sciences complementary ?

5. To what extent can we claim that social studies are beneficial ?

6. Are inductive and deductive reasoning methods mutually exclusive ?

7. What is the role of skepticism in science ?

Terminology Used in This Tutorial :

Science, hard science, soft science, quantitative, qualitative, empirical, analytical, critical, pure research, applied research, social studies, formal sciences, natural sciences, induction, deduction

> **Men love to wonder, and that is the seed of science**
>
> **Ralph Waldo Emerson**

Newton's *Apple Incident* **:**

It was late summer of 1666, young Isaac Newton was sitting in his garden at Woolsthorpe Manor, Lincolnshire. Suddenly, an apple fell from a tree. Young Isaac Newton was intrigued by the incident. He was curious to know why the apple fell straight down, rather than sideways or even upward. This led him to explain this natural phenomenon by experimentation. He finally concluded that Earth has gravity acceleration that equals 9.8m/s and came up with Newton's Second Law (i.e., $F = m\,g$).

Introduction

When people use the term *science* (or *scientific*), they often refer to the quality of being systematic and objective. To a great extent, this is correct. Broadly speaking, science attempts to discover and establish general rules that govern behavior and the world all while being orderly and objective. Moreover, science and error are interrelated and, therefore, it does not claim absolute truth. Science cherishes constant research and verification of already established facts. In sum, science aims to produce more and more accurate natural explanations of how the natural world works, what its components are, and how the world became the way it is now.

> **Touch a scientist and you touch a child**
>
> **Ray Bradbury**

Tutorial 1 is composite in nature (i.e., collected from different sources including my own thoughts) and introduces you to *science* and its types and scope. My objective is to help you identify what is meant by science and scientific method(s). This would help you come to grips with what it means to be *scientific* and assist you in conducting *research* in your (under)graduate studies.

Defintion of ''Science''

The word **science** comes from Latin (*viz*, scientia) meaning **knowledge**. Science is an "empirical" field, that is, it develops a body of *knowledge* by *observing things* and *performing experiments*. According to Oxford Advanced Learners' Dictionary (**OALD**), science is *knowledge about the structure and behaviour of the natural and physical world, based on facts that you can prove, for example by experiments*. Bernard and Bernard (2013: 3) note "Science is about the systematic creation of knowledge that provides us with the kind of control over nature [...] that we have always sought". Coolican (2009: 4) observes "Science --- not a subject but a way of thinking".

> **The most rewarding work is usually to explore a hitherto untouched field.**
>
> **Edgar Bright Wilson , 1990**

Categories of Science

Science comes to be classified into two categories. The first type is **Pure (Basic) science,** which refers to the **acquisition of new knowledge regardless of its application**. The second type is called **Applied Science,** which refers to the application of scientific findings to find practical solutions. Differently stated, while pure/ basic science is interested in knowing (i.e., scientific research) for its own sake, applied science proves to be concerned with the practical **use of the findings (i.e., to meet human needs)**.

Scientific Reasoning

Logical, sensible, scientific thinking in obtaining knowledge utilizes two kinds of reasoning tools : induction and deduction. "In general, the less we know about a research problem, the more inductive we'll be- the more we let observation be our guide- and the more we know about a problem, the more deductive we'll be" (Bernard & Bernard 2013: 12).

1. **Induction** : In their book *Quantitative Health Research : Issues and Methods*, Curtis and Drennan (2013:134) state ''Induction refers to research where theories are developed or generated from, for example, observation […]''. In other words, inductive reasoning relies on specific events and **infers** (i.e. , reads between the lines) general rules or abstractions. It should be noted that inductive reasoning leaves room for **uncertainty** (not a 100% percent sure). Consider the following example :

   > Wael has blue eyes ; his father has blue eyes, too. His sister, Feriel, most likely has blue eyes.

2. **Deduction** : In their book *The A-Z of Social Research : A Dictionary of Key Concepts in Social Research* , Miller and Brewer (2003: 67) define **deduction** as ''[…] the process of **reasoning** by which **logical conclusions** are drawn from a set of general premises. The goal of deduction is to **confirm** or **reject** a hypothesis. One classical example is the following :

   > Man is **mortal**
   >
   > **John** is a man
   >
   > Therefore, **John is mortal**

Note that real scientific research is not purely inductive nor purely deductive (Bernard & Bernard 2013: 12). Scientists relies on these working together to solve problems.

Goals of Science

According to Diggle et. al. [1](2011: 1), the goal of science is to understand nature. Beside understanding natural phenomena, science intends to control these; think of hurricanes, Covid-19, and cheating in the examinations, etc. It is widely acknowledged that science has three goals. The first goal of *science* is to research to *understand* The second goal of science is to *explain* . The third goal is to dispense *solution to solve a problem.*

> **The art and science of asking questions is the source of all knowledge.**
>
> **Thomas Burger**

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[1] Diggle, P.J., Chetwynd, A. G. and Chetwynd, A. (2011).*Statistics and Scientific Method: An Introduction for Students and Researchers*.OUP

All in all, goals of science could be outlined as follows :

1. Investigate to **understand** the natural world.
2. *Explain* events in the natural world.
3. Use those explanations to make **predictions/ dispense solutions.**

Science Functions Checklist : The following checklist acknowledges the functions of science.

---

1. *Science focuses* on the natural world ;

2. *Aims* to explain the natural world ;

3. *Uses* testable ideas ;

4. *Involves* the scientific community

5. *Leading* to ongoing research

6. *Benefits* from scientific behavior

Types of Science

Science is divided into *hard* and *soft* sciences :

A. *Hard Sciences* :

1. **Natural sciences** : Natural sciences seek to uncover the rules that govern the natural world. They rely upon quantitative (i.e., empirical/ experimental) methods of investigations. We can point out to some such as *astronomy, biology, chemistry, physics, and Earth sciences (e.g., geology) as natural sciences*.

> **The scientist is motivated primarily by curiosity and a desire for truth**
>
> **Irving Langmuir**

2. **Formal sciences :** Formal sciences refer to the disciplines concerned with formal systems (not the content), such as *logic, mathematics, statistics, theoretical computer science, information theory, game theory, systems theory, decision theory, and portions of linguistics.* According to Einstein, pure mathematics is, in its way, the poetry of logical ideas.

B. *Soft Sciences* **:**

Social Studies : William Thompson (1824) first coined the term *social studies* to mean both social sciences and humanities. *Social studies refer to the systematic study of human thought, behavior [2]and society.*

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[2] Bernard, H. R. & Bernard, H. R. (2013). *Social Research Methods: Qualitative and Quantitative Approaches*. SAGE

a. **Social Sciences** : A *social science* is a field of study that undertakes to study with society, people, behaviors, cultures, and attitudes. It uses empirical methods of investigation. Some such fields of study comprise : *anthropology, economics, political science, sociology, psychology, linguistics, and geography, etc.*

b. **Humanities** : The humanities are a group of disciplines that seek to understand, appreciate and critique the human conduction in all its depth and range of meaning. Humanities rely upon the interpretive, critical and/ or reflective methods of investigation. Some such disciplines in humanities we may count *history, languages, philosophy (of certain subjects), religion, performing arts, and cultural anthropology, etc.*

> **In science credit goes to the man who convinces the world, not the man to whom the idea is first occurred**
>
> **Francis Galton**

Scientific Methods/ Procedures : The meticulous process of *gathering* and *analyzing* data is called the "scientific method". Science follows a certain pattern or system in its attempt to uncover the underlying reasons behind natural phenomena. "The real purpose of the scientific method is to make sure nature hasn't misled you into thinking you know something you actually don't know" (Robert Persig 1999 in Coolican 2009: 25)

1. *Observation* : Observation refers to the application of the five senses (sight, hearing, touch, smell, and taste) in the operation of noticing a natural phenomenon.

2. *Hypothesis & Prediction* : The hypothesis is an "educated guess," formed as a statement that you propose to be the answer to the research question. The hypothesis is, therefore, your general statement of how you think the scientific phenomenon in question works.

> **Many scientists owe their greatness not to their skill in solving problems but to their wisdom in choosing them.**
>
> **Wilson, B. (2012). An introduction to scientific research.**

3. *Experimentation* : Experimentation means to conduct a practical experimentation (e.g. in a laboratory) to test or verify the hypothesis.

4. *Conclusion/ Result/ Rule* : This is a summary of the experiment's results, and how those results match up to your hypothesis.

5. *Repitition/ Replication* : An experimentation that cannot be repeated is a miracle. In science, an experimentation needs to be carried out repeatedly and on different occasions with relatively the same results.

Pillars of Sciences : Science reposes on three pillars. These are positivism, rationalism, and skepticism.

1. **Positivism :** It usually refers to the experiments that scientists conduct. It is also known as experimentalism, empiricism, or quantitative research. John Locke (1632-1704) observes that humans are born *tabula rasa*, i.e., clean slate. What is known stems from experience. "We come to understand what is true from what we are exposed to" (Bernard and Bernard 2013 :8).

2. **Rationalism :** It considers reasonable, i.e., logical, thinking as the chief source of obtaining knowledge. Richard Feynman advises "Have no respect whatsoever for authority; forget who said it and instead look what he starts with, where he ends up, and ask yourself "Is it reasonable?"

> **Without the products of research, man would be still living in the neolithic age**
>
> **Catane, Juliet**

3. **Skepticism :** Originally from Greek meaning those who are not satisfied with the actual explanation and still searching for truth. Skepticism refers to the application of doubt to the scientific findings. In science, nothing is taken for granted; everything ought to be taken with a pinch of salt. The famous American physicist Richard Feynman notes "[...] science is culture of doubt". An Arab proverb advises to *believe half of what you hear*.

> **Scientists are explorers**
>
> **Richard Feynman**

Characteristics of Science

Science has some inherent characteristics that differentiate it from other non-scientific human activities. Guy et. al. (cited in Catane 2000: 4) outlines these five characteristics:

1. It is **empirical**, which means it rests on sense data.

2. It is **logical**; it believes that there is an ultimate link between logical thinking and empirical fact.

3. It is **generalizing**; it has no inherent interest in individual cases as it seeks general principles.

4. It is **abstract**; it is not interested in concrete things but it is increasingly concerned with what is called "ladder of abstraction" [...] the scientist can always look for ways of combining characteristics of data to seek the most general understanding of a phenomenon that it can be.

5. It is **public** not private; it is concerned with things that can be publically observed and tested.

<div align="center">**Quiz**</div>

<u>Task One</u> : *Are the following Statement true or false ? Write (T) or F) in the space provided.*

1. _____ . Science is error-free.

2. _____ . Science is about understanding natural phenomena.

3. _____ . Experimentation is a key operation in scientific methods.

4. _____. Hypothesis is your attempt to explain why things happen the way they do.

<u>Task Two</u> : *Compare and contrast.*

1. Natural Sciences & Formal Sciences

2. Social Sciences & Humanities

3. Inductive & Deductive Reasoning

4. Pure Science vs. Applied Science

<u>Task Three</u> : *Classify in the grid below the following disciplines.*

Poetry-geometry-geology-algebra-archeology-sculpture-literature-algorithms-law-fine arts-political science- microeconomy-linguistics-neuroscience-psychology-geophysics-literary criticism-astronomy-history-biology

Humanities	*Social sciences*	*Formal Sciences*	*Natural Sciences*

<u>Task Four</u> : Write in no more than 300 words on the following topic.

<u>Topic One</u>: Equipped with his five senses, man explores the universe around him and calls the adventure Science. - Edwin Powell Hubble

<u>Topic Two</u>: Science and everyday life cannot and should not be separated." – Rosalind Franklin

(Major) Sciences *of* Languages   **(Grade)** Third /Senior Class

(Module) Research Methodology   **(Instructor)** Dr. Ahmed Bacher

(Term) First Term   **(Year)** 2020-2021

The Nature of Research

Outcomes: *Upon the completion of this tutorial, you will be able to*:

1. ***Identify*** the field of research (particularly in education)

2. ***Point out*** to its foundations

3. ***Discuss*** pertinent issues related to research and research methodology in education

4. ***Define*** different concepts in research methodology

5***. Undertake*** reading and researching relevant literature

Food for thought Questions: *Discuss the questions with your peers and teacher.*

1. What is meant by research?

2. Why is there a need to engage in research?

3. What are the main objectives of research?

4. What are the basic tools that research uses?

5. In what way are scientific research and common sense complementary?

> **Real science is not about certainty but about uncertainty**

6. Should there be any conflict between qualitative and quantitative research? Why?

7. Can induction be totally independent from deduction in scientific research? Why?

8. Why do facts not constitute truths?

9. To what extent are scientists living up to the normative ideals they appear to espouse? (Briggle and Mitcham 2012: 15)

Terminology Used in this Tutorial

Make sure you understand the following terms

research/ inquiry- methodology- qualitative research- quantitative research- basic research- applied research- action research- deduction- induction- independent variable- dependent variable- ethics

Point to Ponder and Wonder

Peruse the following story narrated by Francis Bacon, then discuss its implications with your classmates and teacher.

In the year of our Lord 1432, there arose a grievous quarrel among the brethren over the number of teeth in the mouth of a horse. For thirteen days the disputation raged without ceasing. All the ancient books and chronicles were fetched out, and wonderful and ponderous erudition such as was never before heard of in this region was made manifest. At the beginning of the fourteenth day, a youthful friar of goodly bearing asked his learned superiors for permission to add a word, and straightway, to the wonderment of the disputants, whose deep wisdom he sore vexed, he beseeched them to unbend in a manner coarse and unheard-of and to look in the open mouth of a horse and find answer to their questionings. At this, their dignity being grievously hurt, they waxed exceeding wroth; and, joining in a mighty uproar, they flew upon him and smote him, hip and thigh, and cast him out forthwith. For, said they, surely Satan hath tempted this bold neophyte to declare unholy and unheard-of ways of finding truth, contrary to all the teachings of the fathers. After many days more of grievous astrife, the dove of peace sat on the assembly, and they as one man declaring the problem to be an everlasting mystery because of a grievous dearth of historical and theological evidence thereof, so ordered the same writ down."

Introduction

Research is basically about knowing with a view of understanding and dispensing solutions. It is an innate activity that accompanies humans from birth to death. Babies cry out because they are looking for physical and emotional comfort while the elderly keep looking for spiritual comfort. Students research an unknown word in their dictionaries, academics conduct research to explore new horizons and hopes. Sinners desperately seek forgiveness. Detectives seek to uncover criminals. Politicians look for ways to get reelected. Career men and women look for promotion; jobless people look for decent jobs. All seek a sense of belonging. And, all look for love. (Re)search is what defines humans and adds to their human identity. For many academics and scientists, research is a way of life, which defines their whole existence.

Description

The current tutorial aims to ease you into the realm of research and research methodology. It attempts to address fundamental questions about research and its nature. It is within the range of the tutorial to raise students' awareness of the importance of research in higher education.

> All research is scientific, and all researchers are scientists regardless of their field of research
>
> Goddard and Melville

Inquiry and/ or Research

Some qualitative researchers would like to make a difference between the term "inquiry", which seems to be their preference for their field of study and " research". They consider *research* the domain of empirical sciences whereas inquiry lends itself to qualitative investigation. Although this distinction is "catchy", many qualitative researchers still qualify their investigations as research.

The Nature of Research

Research has number of relative cognates (i.e., synonyms) such as inquiry, quest, investigation, and study. Oftentimes, scholars of different scientific backgrounds use freely all these terms interchangeably.

Research is obviously derived from Latin (re+ cerca) meaning to repeatedly search or look for something. The etymology of the term "research" implicitly discloses the true nature of research: the ongoing process of trying and retrying to find facts that lead to uncover the hidden truths.

Collins English Dictionary defines "research 'in the following terms:' "systematic investigation to establish facts or collect information on a subject. In other terms, research is an orderly process to find out facts on a subject or the process of data collection concerning a subject.

Longman Dictionary of Contemporary English comes forth with the following definition " to study a subject in detail, especially in order to discover new facts or test new ideas. This means that research is a thorough study to establish facts that were not already known or it could also mean conducting experiments to confirm new hypotheses.

> Without the products of research, man could still be in the neolithic age.
>
> Juliet Catane

Leedy (1976, cited in Catane 2000: 1) defines research as " simply a systematic quest for undiscovered truth". Thus, Leedy considers research as an orderly process that aims to disclose the truth that would explain why things happen the way they do.

Catane (2000: 1) states "Research ... is a very practical way of discovering possible answers to existing problems". Differently couched, research lends itself to finding solutions to actual challenges. In the same breath, Catane (*ibid.*) notes that research proves itself to be a scientific activity which attempts to identify the variables, relate them to one another, and explain the relationships that bind them. Research, therefore, attempts to account for the correlation between variables.

As for Willimann (2011: 1) research "is a term used liberally for any kind of investigation that is intended to uncover interesting new facts". Differently couched, the main objective of research is reveal facts that were not known before and they need be so attractive and valuable to the scientific community and other stakeholders (i.e., politicians, businessmen, and society at large).

> **In fact, a researcher's most valuable ability is the knack of being puzzled by ordinary things [...]**
>
> **Turabian, K. (2007).A Manual for Writers of Research Papers, Theses, and Dissertations (7th ed.)**

Creswell (2012: 3) identifies research as " a process of steps to collect and analyze information to increase our understanding of a topic or an issue". Research is, therefore, seen as a series of interrelated operations to gather data (numbers, facts, etc.) to obtain a more comprehensive understanding of a research issue or problem.

 Research could also be seen as the process of purposeful, systematic, objective, focused search for fact-based knowledge to reach the ultimate truth and, hence, create new knowledge that would benefit the society at large.

Research Goals

Much effort and commitment are required to attain research aims as research is an ongoing process of searching and researching for the ultimate truth. McBurney and White (2012: 1) note " The goals of

science make it different from other human activities. These include the **description** and **discovery** of **regularities**." In the abstract, scientific research aims to find out **common features** which characterize issues under investigation. But, the main goal of scientific research, according to McBurney and White (*ibid*.) "is developing a **theory** to **explain facts and laws**. Science may be considered a **problem-solving activity"**. Arthur *et al*. (2012: 9) spell out the four aims of research. These include:

> There are only two kinds of researchers: those who have got problems and those who are going to have problems. **p. 1**
>
> **Anne Berkeley Thomas Research Skills for Management Studies**

1. **Scientific**: This kind of research sets out to understand the world, to build, test and support theory, to discover or create knowledge (*ibid*.). Scientific research undertakes to review critically previous knowledge, expand it, recreate it, and enrich it. Scientific research could be likened to a bicycle: If it does not move forward, it falls down.

2. **Political**: This research aims to change the world. [...] Research funders increasingly call for research to have an "impact" (*ibid*.). The international community tries to cooperate to fight global warming, diseases such as COVD-19, and improve quality of life, etc.

3. **Therapeutic**: Such a research sets out to help individuals [...] the individuals are participants in the research. (*ibid*.). The ultimate aim of research is to seek to heal patients and relieve their pain or discomfort.

4. **Esthetic**: Saunders (cited *ibid.*) states that esthetic aim sets out "to affirm, or represent human experience, to "engage, surprise, shock, delight, connect the unconnected, stir the memory and fertilise the unconscious" or "to communicate something ultimately unsayable". The esthetical aim targets to stimulate emotions. A good example would be Bacon's story in **The Point to Wonder and Ponder** rubric on page 2.

> The most rewarding work is usually to explore a hitherto untouched field.
>
> Edgar B. Wilson, 1990

Features of Research

Unlike other human activities, scientific/ academic research has a certain number of characteristics. Arthur *et al*. (2012: 11) mention six (6) characteristics of research. These are:

1**. Critical**: Research does not take occurred issues for granted. Rather, it is self-evaluative in that it undertakes to verify "explanations" by applying the principle of skepticism (i.e, doubt). Everything is relative, and nothing is absolute.

2. **Systematic**: Research is an orderly process which follows a fixed pattern of steps. It is essentially "a deliberate, planned, intentional activity" (*ibid*.).

3. **Transparent**: Research is public not private in the sense that " its aims, methods, assumptions, data, and claims are stated explicitly and clearly" (*ibid*.). Research findings need be shared with the scientific community first, then made public.

4. **Evidential**: Research is fundamentally fact-based; it is to come up with evidence to back up one's claims. It needs to "appeal to evidence" (*ibid*.)

5. **Theoretical**: Research is theory-based and theory- oriented. Arthur *et al.* (*ibid.*) state " research is guided by theory and seeks to build and test theory". Differently stated, research is based on what other pioneers have produced and seeks to produce documented new knowledge.

6. **Original**: An original research is the one which has not as yet been carried out previously or elsewhere in the same manner. It "adds to existing knowledge" (*ibid.*) in a **significant** way.

Other characteristics of research that Arthur and his fellow researchers seem to have ignored, and which are *by no means* less important, are that research should be ethical, objective and unbiased. The latter qualities are discussed below:

> Research is an art of scientific investigation
>
> Sam and Aroma, 20l

7. **Ethical**: Research needs to abide by strict moral obligations and values such as academic/ scientific integrity or maltreatment of human or animal subjects.

8. **Objective and Unbiased**: Research cannot be unduly biased, influenced by certain way of thinking, or emotionally controlled. It is cerebral. Researchers need be dispassionate and detached of personal biases, stereotypes, taken-for-granted beliefs, and preconceived ideas.

Research Uses

Since research is a systematic process of fact-finding, it is absolutely necessary for researchers to rigorously sort out things. Wallimann (2011: 8-9) outlines the operations that researchers carry out to find out facts and ultimately the hidden truth. These are:

> **If somebody is already ethical when she enters the scientific profession, she will continue to be ethical; if she is not ethical, when she enters science, then no amount of instruction can make her ethical (np).**
>
> **Resnik, D. B.**

1. **Categorize**: Research seek to box issues, objects, findings into typologies.

2. **Describe**: Relying on observation, researchers try to "examine situations to establish what is the norm" (*ibid.*). In other words, researchers address the following:' 'What can be predicted to happen again under the same circumstances?" (*ibid.*)

3. **Explain**: Researchers should aim to interpret complex issues.

4. **Evaluate**: To evaluate refers to the quality of making educated judgments. Researchers, therefore, try to make "judgements about the quality of objects or events" (*ibid.*)

5. **Compare**: By comparing and contrasting, researchers outline similarities and differences.

6. **Correlate**: To correlate derives from Latin meaning establishing relationships between or among variables. It is to try to address the extent to which variables have an impact on one another.

7. **Predict**: Normally, under similar circumstances, future outcomes could be predicted.

8. **Control**: Once the correlation between variables is understood and established, finding ways to put them under control becomes inevitable.

Typology of Research

According to Arthur and his fellow researchers (2012: 9), research could be categorized into:

1. **Basic/ Pure Research vs. Applied Research**: Basic (or pure) research is conducted for the advancement of knowledge, with no concern about whether the research is directly or immediately useful in any way (*ibid*.). Differently stated, basic research is conducted for research's sake. Applied research aims to put research findings to good use for the wider public.

2. **Empirical Research vs. Theoretical Research**: Empirical research attempts to establish factual knowledge by providing general rules that ultimately govern natural phenomena. Navikov and Navikov (2013: 22) corroborate "Empirical acquisition of knowledge is the only way to the truth". Theoretical/ conceptual research, on the other hand, tries to "focus on concept or theory that explains and describes the phenomenon" (*ibid*.). Unlike empirical research, theoretical research does not resort to experimentation. Rather, it relies on observation and aims at generalizations (*ibid*.). It is noteworthy to mention that both empirical and theoretical are "inherently interconnected" (*ibid*.). Jonker and Pennick (2010: 27) affirm that research cannot possibly be carried out without theory.

3. **Nomothetic Research vs. Ideographic Research**: In Ancient Greek, *nomos* [3]refers to "the law". Nomothetic research is "[...] directed towards the discovery of general laws [...] such laws will allow researchers to make predictions" (*ibid*.). By understanding and explaining common cases, nomothetic researchers will be able to extend their conclusions to include further cases. Ideographic research, however, focuses on studying individual cases "in considerable length" (Navikov and Navikov 2013:22) hence "ideo", belonging to individual. Arthur *et al*. (2012:10) note "It aims to understand what is unique and distinctive about a particular context, case or individual".

4. **Interventional Research vs. Descriptive Research**: By definition, interventional research is all about the intervention (or introduction) of some change and study its effects. Descriptive research attempts to "provide information" (Wang and Park 2016: 85) describing "what is, without attempting to change it" (Arthur et.al. 2012: 10).

Researchers' Basic Tools

Lee (cited in Leedy, in Goddard and Melville (2004: 3) points out to four basic tools that are regularly used by researchers in their quest for facts and truth. These are:

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3 In Arabic نـامـوس

1. **Library and information resources**: Libraries may be likened to Ali Baba's cave- a treasure cavern. A library is a facility where books are cataloged for easy reach, reading, borrowing, or even Xeroxing (i.e., making photocopies). According to Duncan (1989: 1), there are three types of libraries: public libraries, school libraries, and special libraries (police, museum, etc. sometimes referred to as archives). The three largest libraries in the world are:

Name	Country	Number of books	Numbers of visitors	Budget
British Library	UK	170-200 million	1.75 million	141 million
Library of Congress	USA	170+ million	1.9 million	$696.112 million
Shanghai Library	China	56 million	Not provided	Not provided

Table1. The three largest libraries in the world

Researchers and students need have special skills to be able to put the library facility to good use and make most of what this facility has to offer. Books are arranged in a systematic way so as to facilitate access to information. Understanding the cataloging system, structure of information, search and use skills (reading and taking notes, asking the librarian, returning the books to their original position, etc) are necessary skills that have to be mastered to enjoy autonomous learning in libraries.

2. **Measurement techniques**: Qualifying and quantifying data (i.e., information) is an essential part of research. An informed training in using the right tools and techniques to obtain and measure data is a pre-requisite for a good researcher. By noting or recording your observation such as in "EFL students with a long history of reading for leisure, have a wider vocabulary lexicon, write better, and speak better" or "learning 10, 000 words of English will help EFL learners read novels and use dictionary 4 to 5 times in every page", you have come up with a measurement. To do that, tools such as questionnaires, surveys, and tests are utilized. The collected data will be through different scales (i.e., rating scales and/ or attitude scales).

3. **Statistics**: In its broadest definition, the term "statistics" refer to numbers. These summarize data and infer properties of an entire population. Giri and Banerjee (2008: 81) consider statistics "the aggregate of the scientific methods which deal with the collection, presentation, analysis, and interpretation of numerical data". A researcher ought to know how to collect data (through questionnaires, surveys, interviews, or experimentation) to analyze data (to transfer data into calculations) and interpret data (what these numbers really mean).

4. **Facility with language**: Researchers need be able to use language to reflect precisely and concisely their thoughts. Academic language avoid informality, colloquialism and verbosity. It is not meant to impress, and therefore avoids flowery and pompous expressions. it should be kept simple and to the point. For Marcus Tullius Cicero " Brevity is a great charm of eloquence". And in the same vein, William Shakespeare puts claim that

brevity is the soul of wit. Moreover, researchers need to demonstrate their mastery of using relevant terminology.

Equally important is the fifth basic tool that need be added and expounded. Neither Lee, nor Leedy, nor Goddard and Melville included it in their outline.

5. **Research Skills**: Research is an orderly process, and for that reason, researchers need to hone their skills such as writing literature review, managing time and resources, saving files in a computer, taking notes, keeping records, classifying information, summarizing, analyzing and interpreting data (using SPSS for instance), reporting, and giving credit to other researchers using the most appropriate referencing system, etc. According to NUI Galway website, research skills refer to the ability to search for, locate, extract, organize, evaluate and use or present information that is relevant to a particular topic.

Conclusion

In the abstract, research is an inborn quality of humans. Academic and scientific research is not random. Rather, it is a conscious, systematic, rigorous if flexible process of gathering, analyzing, and interpreting data by using books (i.e., relevant literature) in libraries, research skills and measurement techniques. The choice of the design (empirical, nomothetic, and ideographic, etc.) depends on the nature of the investigation that the researcher intends to undertake. In the process of research, the researcher utilizes a combination of uses (categorization, description, and evaluation, etc.).

Successful researchers are those who possess the knowledge and skill that enable them to overcome the problem inherent to the process of research p.1

Anne Berkeley Thomas

Research is expected to be dispassionate, transparent, original and ethics-based should it be accepted by the academic community.

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[https://en.wikipedia.org/wiki/List_of_largest_libraries

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Task One: Are *the following statements true (T) or false (F)? Insert T/F in the space provided.*

1. _____ . Descriptive research studies the nature of an issue and introduces change.
2. _____ . Research is partly cerebral (i.e., objective) but mostly emotional (i.e., subjective).
3. _____ . Scientific research aims to find out common features which characterize issues under investigation
4. _____ . Prediction in research refers to the fact that similar circumstances lead to similar results.
5. _____ . Pure/ basic research is for advancement of knowledge for economic and social benefits.
6. _____ . Research derives from Ancient Greek meaning to seek or to search again.

Task Two: *Read the definitions on the right then insert the corresponding term in the space provided.*

1. _____ . It is to try to address the extent to which variables have an impact on one another.
2. _____ . It is boxing in a class or group.
3. _____ . It is the practice or science of collecting and analyzing numerical data in large quantities, especially for the purpose of inferring proportions in a whole from those in a representative sample
4. _____ . It is a type of research design that seeks to solve a specific problem or provide innovative solutions to issues affecting an individual, group or society
5. _____ . They refer to the ability to search for, locate, extract, organize, evaluate and use or present information that is relevant to a particular topic.
6. _____ . Researchers ought to abide by these moral values (what is good or bad).

Task Three (Cloze Test): *Read the text and fill in the words from the box*

publication- process- applying- evaluate- ability- need- research- credit-finding- ethically-information- hypothesis- question

Information literacy is the __1__ to find, evaluate, and use __2__ efficiently, effectively, and __3__ to answer an information __4__. An information need can be anything from determining a fair price for a good used car to developing a new product. Writing a __5__ paper is an information literacy __6__. It involves __7__ and __8__ information to answer your research __9__ to either support or disapprove your __10__. To do this well, you want to __11__ the information you use to ensure its quality while recording the __12__information you need to give __13__ to the people whose ideas you use (p.2).

Lanning Scott (2012).*Concise Guide to Information Literacy*. ABC. Clio

Task Four (Jumbled Statements) *Re-order the following statements to make a coherent paragraph* [Giri and Banerjee].

a. It helps in finding and evaluating patterns shown by data arising in different fields of activity.
b. Statistics has numerous and various applications.

c. Statistical methods have their use in formulating and examining hypotheses and in making efficient design of experiments and surveys.

d. It is also useful for examining laws of physical sciences and social sciences.

e. The fundamental function of statistical techniques is to reveal the significance of complex data by various diagrams, different averages, etc.

f. Further, it facilitates comparison of data both chronologically and geographically.

1	2	3	4	5	6

Task Five: Briefly, *compare and contrast the following concepts*

1. Research vs. Inquiry
2. Nomothetic Research vs. Ideographic Research
3. Empirical Research vs Theoretical Research

Task Six: *Read the two passages then answer the questions in your own words*

Knowledge produced through research investigation is generally valued more highly than, and can be contrasted with, a common sense or opinion based understanding of the world. Common sense is based on unquestioned, taken-for-granted assumptions, while opinions reflect personal prejudices, preferences and ideals. Research-based knowledge, on the other hand, is based on empirical evidence, i.e scientific evidence that comes from observation and experience (p.3).

Walsh, M. and Wigens, L. (2003). *Introduction to research*. Nelson Thornse

Asking why people do research is in many cases the same as asking why people ask 'why?' about the universe in which they live. The pursuit of knowledge purely in order to know *why* is as old as the humankind, and much research is the result of this pursuit. Research can also result from specific real world *needs* -the need for low-cost housing, for example, or a more powerful radio transmitter or even an atomic bomb. A third often overlooked, impetus to do research is the pursuit of postgraduate qualifications: would the study of nuclear physics be as advanced today if Marie Curie had decided against doing her doctorate? (p.3)

Goddard and Melville (2004). *Research Methodology: An introduction*.

Questions

1. In what way is evidence-based research more important than common sense and opinion?

2.What is common sense? In what way is it similar or different from opinion?

3. What are the bases of research-based knowledge according to Walsh and Wigins?

4. Why do people engage in research according to Goddard and Melville?

5. Do you agree with Goddard and Melville on what leads to undertaking research: Curiosity, Need, and Pragmatism? Why?

Task Seven: *Answer the following question in no more than the space provided.*

John W. Creswell (2012: 3). asks: How can research specifically add to research base and existing literature?

Mohammed Keidher University *of* Biskra

*(**Option**) SL*   ***Instructor*** *: Dr. Bashar, Ahmed*

*(**Major**) Research Methodology*   *(**Grade**) Senior Students/ 3rdYear*

Methodology in Research : An Introduction

Outcomes : *By the completion of this tutorial, you will be able to* :

1. ***Identify*** paradigm, design, methodology and methods ;

2. ***Explore*** research techniques and tools,

3. ***Examine*** the research process,

4. ***Evaluate*** different research methods

5. ***Compare*** and ***contrast*** the benefits of methods, and tools.

> **Research is a craft.**
>
> **R. Bernard**

6. ***Raise*** students' awareness of the fact that different designs, methodologies, methods and tools serve different assumptions and needs.

Food-for-thought Questions

Try to answer/ discuss the following questions with teacher and peers

1. *Is there any difference between methodology and method at all?*

2. *Are qualitative and quantitative methodologies inherently interconnected? How and why?*

3. *Is it fair to put claim that quantitative methods are superior to qualitative methods? Why?*

4. *In what way is qualitative research qualitative?*

> **Research is the bedrock of science.**
>
> **Willie Tan**

5. *To what extent quantitative research is quantitative?*

6. *Can it be rightly claimed that science provides "evidence" rather than "proofs"?*

7. *Is it true that all research methodology a means to an end (i.e., improve understanding)?*

Terminology Used in this tutorial

Make sure that you understand the following terms.

Methodology – method- design – exploratory design - confirmatory/ conclusive design - qualitative - quantitative - praxis – paradigm- tools - research techniques - research process - ontology- epistemology- empirical

Point to Ponder &Wonder

Peruse the following then discuss it with your classmates and teacher.

Edward Jenner [4]was born in Berkeley, Gloucestershire on 17 May 1749, the son of the local vicar. At the age of 14, he was apprenticed to a local surgeon and then trained in London. In 1772, he returned to Berkeley and spent most the rest of his career as a doctor in his native town.

In 1796, he carried out his now famous experiment on eight-year-old James Phipps. Jenner inserted pus taken from a cowpox pustule and inserted it into an incision on the boy's arm. He was testing his theory, drawn from the folklore of the countryside, that milkmaids who suffered the mild disease of cowpox never contracted smallpox, one of the greatest killers of the period, particularly among children. Jenner subsequently proved that having been inoculated with cowpox Phipps was immune to smallpox. He submitted a paper to the Royal Society in 1797 describing his experiment, but was told that his ideas were too revolutionary and that he needed more proof. Undaunted, Jenner experimented on several other children, including his own 11-month-old son. In 1798, the results were finally published and Jenner coined the word vaccine from the Latin 'vacca' for cow.

Jenner was widely ridiculed. Critics, especially the clergy, claimed it was repulsive and ungodly to inoculate someone with material from a diseased animal. A satirical cartoon of 1802 showed people who had been vaccinated sprouting cow's heads. But the obvious advantages of vaccination and the protection it provided won out, and vaccination soon became widespread. Jenner became famous and now spent much of his time researching and advising on developments in his vaccine. Jenner carried out research in a number of other areas of medicine and was also keen on fossil collecting and horticulture. He died on 26 January 1823.

Introduction

Nothing in the scientific research is random. Everything follows a certain pattern. The researchers' *way of carrying out their task* is often referred to as research *methodology*. Research methodology is the roadmap that conscientious researchers would scrupulously follow to achieve their primary goal: establish facts and reach the hidden truth. Without such methodological rigor, scientific research would only be another human activity, clumsy and pointless. Jonker and Pennick (2010: 21) corroborate "The essence of methodology is structuring one's actions according to the nature of the question at hand and the desired answer one's wishes to generate". Research methodology lends itself to be the framework that delimits the area of research which gives sense to research and helps avoid the high jacking of its precious findings. "The real purpose of the scientific method" notes Persig (1999) "is to make sure nature has not misled you into thinking you

> **Acceptance without proof is the fundamental characteristic of Western religion. Rejection without proof is the fundamental characteristic of western science**
>
> **Gary Zujav**

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[4] http://www.bbc.co.uk/history/historic_figures/jenner_edward.shtml

know something you actually do not know" (cited in Coolican 2009: 25). Overall, research methodology is the researcher's roadmap to a successful, meaningful, and beneficial research experience.

Description

The current tutorial attempts to cover an interesting topic, which is *research methodology*. The stress will be this time on **methodology** [in research] as an in-depth investigation will lead to exploring conflicting views of methodologies, which seems to characterize this field. One point in case, the conflict between quantitative and qualitative researchers. Each of whom considers his/ her "trade" the only *dependable* way of finding out truth. This journey in quest of a better approach to make sense of research methodology in education will help you understand different concepts and how they might work together to reach a compromise.

> The language of "quantitative" and " qualitative" has always been distinctly unhelpful as a technical guide to research methods, and we would be better off without it"
>
> **Oakly 2000 (in Gomm, R.)**

[Inquiry] Paradigm

Constitutive Definition

Different disciplines, such as philosophy and grammar, use the term paradigm with different connotations, which may be confusing and even daunting to novice researchers. Paradigm (pronounced /ˈper-ə-ˌdīm/) derives from Ancient Greek παράδειγμα (paradeigma), "pattern, example, sample" from the verb παραδείκνυμι (paradeiknumi), "exhibit, represent, expose" and that from παρά (para), "beside, beyond" and δείκνυμι (deiknumi), "to show, to display to point out". In Arabic, paradigm may be translated to نموذج/منظور .

Operational Definition

The American physicist, historian, philosopher Thomas S. Kuhn (1922-1996) in his book *The Structure of Scientific Revolution* (1996), popularized the term *paradigm*. Kuhn believes that science does not progress in a vertical fashion, i.e., piling up of books [i.e., knowledge], but witnesses paradigm *shifts*. Scholars from different historical periods shared and differed in perceptions of how research should be conceived and conducted and with what type of instruments. Lincoln and Guba (1985: 7) note "Every historical age has exhibited some characteristic way of answering the eternal questions of what there is that can be known and how one can go about knowing it". Questions such as: Does the reliance on rationalism, i.e., logical thinking/ reasoning, infallibly lead to the truth? Or do experimentations exclusively lead to dependable breakthroughs, facts and discoveries? To answer such philosophical questions, scholars have undertaken different ways, which are only common among those of whom have had common research grounds, to explore reality.

In every research discipline a *framework* of traditions, steps, beliefs, procedures, and practices have taken shape, and under the influence of Michael Polanyi, T. S. Kuhn coined the term *paradigm*. Kuhn identifies paradigm as the "accepted examples of actual scientific practice- examples which include law, theory, application, and instrumentation together- that

provide models from which spring particular coherent traditions of scientific research" Phillips et. al. (2012: 70). In the same line, Punch (2009: 16) defines a paradigm as a "set of assumptions about the world, and about what constitute proper techniques and topics for inquiring into that world". As for Guba, an inquiry paradigm is a "worldview" and defines it as " a basic set of beliefs that guide action" (cited in Creswell 2007).

According to Punch (2009: 16), paradigms address three major questions:

1. **Ontological question**

Ontology broadly refers to the study of what is **real** or what **exists**. The term derives from Ancient Greek: On[to] being, what exists and logos: study, science. or knowledge. A typical ontological question is: *Is there life after death*? Religions confirm that there is an everlasting one. Atheists, on the other hand, reject the idea of the existence of another life after death.

Chakravarty identifies ontology as "a branch of philosophy concerned with questions of existence" (2017: xi). By asking ontological questions, we are trying to make sense of the real world. Consider the following ontological questions in education: What is reading? What kind of processes are involved in reading? Are there any interaction between author-text-reader? What type of message is put through the text? What cognitive processes determine comprehension of the read text? What cultural aspects that need be mastered to understand [thanks to reading] a written text? etc.

Creswell (2007: 17) illustrates ontology as follows:

Assumption	Question	Characteristics	Implications for practice [examples]
Ontology	What is the nature of reality?	Reality is subjective and multiple, as seen by participants in the study.	Researcher uses quotes and themes in words of participants and provides evidence of different perspectives.

:
Therefore, ontological questions seek to determine the very nature of the observed phenomena, their features, components, and relationships.

2. **Epistemological Question**

How do you know what you know? and "What does it mean to say you know something?" (Dew and Foreman 2014: 19). Imagine standing in front of your bathroom mirror as you got up, how do you know that the person reflected on the mirror is you and whose father is L and mother is A. and finishing a degree in English at M. K. University of Biskra? How do you know all that and many more? Such questions belong to the realm of epistemology, the study of knowledge. Robertson (2009: 11) states that epistemology is concerned with "giving an account of knowledge". In other terms, should national curriculum include themes such as Jihad against non-Muslims? or sex education? Press reported that ISIS (aka DAESH), banned chemistry and philosophy from the schools of Raqqa as not compatible with Islamic *Sharia*. Crumley (2009: 16) identifies epistemology as "[...] the study of the nature of knowledge and justification, and this includes looking at the sources and conditions of knowledge and

justification". Epistemological questions should concern what you know, who provided you with that piece of knowledge, how it is conveyed to you, the occasion of its transfer, where it is conveyed, and why it is transferred at all.

Epistemology is, therefore, concerned with paying a close look at "epistēmē " (Ancient Greek for knowledge- المعرفة) and attempts to account for what is (being) known. It is common knowledge that bees produce honey; birds fly, and bats are mammals. All these are backed by evidence and widely accepted by laypeople and academics alike. In the popular American sci-fi series *X-MEN*, superhuman mutants such as Logan, who can press long, sharp blades out of his hands to fight, are accepted for the sake of entertainment. No one can back up with scientific evidence that such men can have such superhuman power.

Creswell (2007: 17) illustrates epistemology in the grid below.

Assumption	Question	Characteristics	Implications for practice [examples]
Epistemology	What is the relationship between the researcher and that being researched ?	Researcher attempts to lessen distance between him/herself and that being researched	Researcher collaborates, spends time in the field with participants, and becomes an "insider".

In education, epistemological questions such as what is the relationship between motivation and fast reading? How can motivation enhance fast reading? What needs to be done to prove the relationship between motivation and fast reading? What factors can be said to intervene in this relationship? and many more questions seek to explain what is known and its modalities, i.e., forms. Epistemology is all about what is true and how it comes to be accounted for.

In fact, sometimes it is hard not to ask epistemological questions.

Dew, J. K. and Foreman, M. W.

3. **Empirical Question**

According to Punch and Oancea (2014: 377), *empirical* refers to what is "based on direct experience or observation of the world". Hence, experience/ experimentation is at the crux of empiricism. The main objective of an experimentation in research is to provide evidence of the researcher's claims that they are either true or false. Questions such as: How can you provide "hard" evidence that EFL under-achievers have poor learning habits? How can you back up the claim that if learning styles are not properly addressed, EFL learners will not be able to witness a learning curve[5]? An empirical question is expected to provide not only words (**interpretation**) but also numbers and percentiles (**analysis**) to support the researcher's claim(s). As a final analysis, experimentation is widely considered to be the springboard for dependable (reliable and valid) knowledge.

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[5] Learning curve refers to "the course of progress made in learning something" (Merriam-Webster)

4. Rational Question

A rational question, which is based on sensible practical reasons to put it in Macmillan Dictionary words, attempts to address a paradigmatic query using reasonable (logical) thinking. It should be noted that since knowledge could be reached through experimentation, it could also be reached through rational thinking. A rational question emphasizes the reliance on gaining knowledge through reason, thinking that makes sense. On score of that a fourth set of questions need be addressed in a rational paradigmatic question: Do the relationships make sense? Do the results and interpretation add up? Is it reasonable to assume *that*? Do small samples reflect and represent larger populations?

Types of Paradigms: Different paradigms serve different research purposes. Lapan et al. (2011) outline four inquiry paradigms:

3.1. Positivist Paradigm: Accurate description of a phenomenon thanks to numerical measurements. The positivist paradigm is, therefore, quantitative in that it seeks to analyze collected data without engaging in interpretation of the those measurements. A positivist researcher tries hard to uncover the laws that govern phenomena all the more distancing himself/ herself from subjective influences and biases. In fact, positivist paradigm adherents are interested in exploring cause-effect relationships.

3.2. Interpretivist Paradigm: A researcher who is engaged in an interpretivist paradigm sees (social) reality (i.e., learning styles[6], brain dominance[7], motivation, and cheating on tests, etc.) from a subjective perspective. An interpretivist paradigm researcher is expected to provide his/ her own explanation of a social topic because s/he is involved in the research.

3.3.Critical Paradigm: By definition, to be *critical* means that an evaluation need be set. According to Merriam-Webster Dictionary, *critical* refers to "exercising or involving careful judgment or judicious evaluation". Thus, a critical paradigm researcher is supposed to provide **feedback** (i.e., constructive comments, تقيم بناء) after careful consideration clearly with a view of **making a decision**. For instance, e-learning in the Algerian higher education may not be functional in its current situation because the Internet services are poor, staff and students are poorly trained to use it.

3.4. Participatory Paradigm: This paradigm "insists that a research inquiry is intertwined with politics and political agenda and that it contains an action agenda for reform that may change the lives of participants and researchers in the institution in which participants work and live" (Andrew et al. 2019: 12). Hence, a participatory paradigm consists of a *joint* perspective in which different participants collaborate to create change (or reform or innovation).

As a final analysis, a paradigm may fit the following analogy: When you wear blue glasses, you see everything blue, and if you change them-say to green glasses- everything becomes green. So are paradigms. They are also researchers' spyglasses through which they see from

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[6] **Learning styles** are learners' preferred ways of learning. Some learners prefer seeing to learn; others prefer listening and some other learners take pleasure in learning by doing.

[7] **Brain dominance** refers to which brain hemisphere is more dominant in learning: left or right hemisphere.

afar the whole scenery. Consider Max Planck[8]'s view of research: "Experiment is the only means at our disposal. Everything else is poetry or imagination". Clearly, Planck's perception of research is seen through empirical, i.e., experimental, glasses. In his view, short of conducting experimentation, research risks to be unreliable and invalid. Overall, paradigms are the rules, procedures, and philosophy that developed around a particular way of researching the world/ realities. A research need make provision to ask an **ontological** question (what is ...?), an **epistemological** question (How do you know that?), an **empirical** question (How can my claim be evidential?), and a **rational question** (Does my claim make sense?).

Research Design

By definition, *design* refers to *shape* or *form* created or drawn pending realization. It may have a French cognate *dessiner* or *dessin* (to draw and a drawing respectively), which may suggest the nature of the English word *design*. The term is widely used in circles where creativity and innovation in fashion, cars, planes, and perfumes, etc. have primacy. Such names as Coco Channel, Yves Saint-Laurent, Nina Ricci, Dolce Gabbana, Joseph Abboud, Azzedine Alaia, Ferrari, Shiro Nakamura, Andrei Tupolev, Alec Issigonis, and Joanna Gaines are household names in creative designs that have made breakthroughs in people's lifestyles. The Arabic equivalent of *design* is التصميم{م. التصاميم}.

Research design means many things to many people. Spector (1981: 9) notes " [a]ny scientific investigation [...] must begin with some **structure** or **plan**. This structure defines the number and type of entities or *variables* to be studied and their relationship to one another" and he further indicates "such structure is termed design". Design (1984, cited in Maxwell, *ibid.*) states that research design concerns the arrangement of elements or details in a product or work of art". In more concrete terms, Gorard (2013: 8) identifies research design as " [...] a way of organising a research project or programme from its inception in order to maximise the likelihood of generating evidence that provides a convincing answer to the research questions for a given level of resource". Creswell (2007: 5) considers research design "the entire process of research from conceptualizing a problem to writing research questions, and on to data collection, analysis, interpretation, and report writing". In short, the *actual* phases of research from beginning to end- put in a sequential order- constitute research design.

Designs are not classified randomly. Lodico et al. (2010: 26) point out "[d]esigns are often [...] classified by (1) the methods used to design the study and to collect data (for example quantitative vs. qualitative approaches), and (2) how the information is shared (for example, the dissemination of the findings). Design is, therefore, used to "denote either the general method of data collection [...] or the overall plan of conducting a research project [...]" (Vogt et. al. 2012: 340). The table below illustrates the perception of research design (drawn upon Vogt et. al.).

Methods of data collection	Overall Plan
Surveys Interviews Experiments, etc.	Methods of data collection Sampling Ethics Data coding Strategies for data analysis and interpretation

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[8] Max Planck (1858-1947) a German theoretical physicist. In 1918, he discovered energy quanta and won him Nobel Prize in Physics.

Research design is the conceptual framework or **structure** of a research project which will eventually guide research to accurately answer the research problem. Maxwell (2013:1) corroborates "A [research] design is an underlying **scheme** that governs the functioning, development, or unfolding" of an inquiry project". In other words, the concept of design is a plan thanks to which the research project is directed and redirected with a view of addressing research questions in a convincing manner. Basically, research design is presented as the *overall planning of elements prior to the execution of the research project*.

A research designer is often compared to an architect whose task is to **draw** (or design) a blueprint (or sketch plan) that the researcher intends to execute. In this case, the architect's questions would be around the area, the type of building, location, and the client's wishes. Eventually, the client receives a "blueprint", which represents lines, squares, and other geometrical patterns of the would-be building. Yin (1989, cited in De Vaus 2001: 9) sums it up "research design deals with a *logical* problem not a *logistical* problem" (*italics* added). In wide brief, the researcher ought to consider few pertinent questions prior to undertaking actual research: What is my research all about? What I am supposed to prove? Who would benefit from my research? Who is going to finance my project? How long would it take? What method(s) best fit(s) my data collection needs? and what kind of physical and moral constraints should my research overcome? etc. The designing phase of a research project is basically about gathering sufficient verifiable intelligence before taking the decision to launch a storming action. Research design is, therefore, primarily interested in the **drive**, **scope** and **focus** of the research in its broadest terms.

Research design targets research **consistency**, every single step in the research falls in straight line. In the same breath, De Vaus (2001: 9) explains "The function of research design is to ensure that the evidence obtained enables us to answer the initial question as unambiguously as possible". Hence, the relationship between variables proves to be the main focus of research design: The outcomes of the research need be reliable and valid. De Vaus (*ibid*.) puts forward the following question to elicit overall objective of research design: " What type of evidence is needed to answer the question (or test the theory) in a *convincing way*?" Research design aims to establish consistency from abstract conception to final realization so that results would faithfully reflect the goals of research.

Research design is characterized by four major elements:

1. **Validity**: Collins English Dictionary suggests that the term validity derives from Latin meaning robust, which denotes the sound foundation of an object or reasoning. Research design that is characterized by validity is the one which is sound and firm because it is based on sound theory. McNeill and Chapman (2005: 9) identify validity as "the problem whether the data collected is a true picture of what is being studied". Cookson and Campbell (1979, cited in Reis et al. Brewer :3) validity refers to the best available approximation to the truth or falsity of *propositions*" **.** Consider the following example: You go into a coffee shop and you order a cup of coffee, but the waiter brings a mint tea. How would you react to the waiter's impertinence? His service will not be considered valid because he brings a different order.

2. **Reliability**: Research design that features reliability targets to be credible and trustworthy. McNeill and Chapman (2005: 9) define reliability in the following terms "If a method of collecting evidence is reliable, it means that anybody else using this method, or the same person using it at another time, would come up with the same results". Consistency and stability in obtaining the same results by the same or another researcher on another occasion

elsewhere meets the reliability criterion. Consider the following illustration: If you add two teaspoons of sugar to a glass of water, it will turn sweet. The result will be the same anywhere else in the world, any time, and by any one. The result of the sugar-water experiment is said to be reliable.

3. **Neutrality**: By definition, neutrality refers to non-alignment or unbiasedness. A good research design does not favor one approach or methodology over another especially as it is logical in nature.

4. **Generalizability**: A generalizable design is the one that can be applied to other disciplines from natural science and on to formal and social sciences. Differently stated, research design assumptions may well be extended to other fields.

Types of Research Design: Research designs are categorized as follows:

1. **Exploratory Research Design**

To explore" and "exploration" are usually used to refer to the discovery of virgin territories. Christopher Columbus is said to be the first European to explore the New World- the Americas in 1492. In the same line of thought, an exploratory design is undertaken "when they [i.e., researchers] have little or no scientific knowledge about the group, process, activity, or situation they want to examine but nevertheless have

> **[...] no one research method or design is appropriate for answering all research questions (np)**
>
> **Ledford, J.R. and Gast, D.L. (2009)**

reason to believe it contains elements worth discovering" (Stebbins 2001: 6). You might for example explore the implementation of artificial intelligence (AI) devices to teach English to Algerian EFL students.

2. Descriptive Research Design

According to Merriam-Webster, to *describe* is " to represent or give an account in words". In a descriptive research design, "the researcher attempts to report what already exists [...] the researcher's purpose is to understand and report the characteristics of a current or past situation" (Boudah 2010: 10). Faithful, realistic depiction of a social reality, i.e., educational in our case, (for example, test anxiety) seems to be the coin of the realm. In descriptive research designs, the focus is on one variable and its correlation. Research methods that are consistently associated with descriptive research design are surveys, correlational and qualitative (case study, grounded theory) (ibid.). Cross-sectional design (CSD) and longitudinal design (LD) make up descriptive design.

2.1 Cross-sectional design

Cross-sectional design (CSD) is also known as survey *design*. A cross-sectional design targets the collection of data at a specific period of time. Research tools such as content analysis, diaries, official statistics, questionnaires, structured observation, and surveys (one-shot designs) are employed to collect data. CSD is concerned with multiple cases i.e., a representative sample of the population, to collect quantifiable data. The cases should be different in terms of age, gender, educational backgrounds, and economic status, etc.

2.2 Longitudinal design

Unlike CSD, longitudinal design (LD) covers an extended period of time wherein surveys and questionnaires are used to collect data. types of LD are cohort study, panel study, and retrospective study. fewer respondents and could be conducted by different researchers at different institutions on different occasions. According to Bryman (2012: 712), an LD "refers to a research design in which data are collected on a sample (of people, documents, etc.) on at least two occasions". So, the examination of the sample need be conducted over distanced periods or occasions the least of which are two. It is mainly used in medicine, economics, etc.

3. Causal [Experimental] Research Design

Literally, causal research design (CRD) is interested in identifying **the cause** of an educational "malaise" or "healthiness". According to Check and Schutt (2011: 118) a cause is "an explanation of some characteristic, attitude, or behavior of groups, individuals, or other entities (families, organizations), or events". Some EFL students' motivation gradually gives way to demotivation, i.e, loss of motivation, because of some teachers' severity. Therefore, teachers' tough/ rough attitudes causes the weaning

> **Data collected through experimentation can provide much stronger evidence of cause and effect than data collected through descriptive research.**
>
> **Shukla, P. (2010). Essentials of Marketing Research (part 1)**

of motivation. CRD targets to investigate the underlying reasons or causes why phenomena happen the way they do. This design involves the comparison of two entities in order to define the "cause" and its effect. The goal of causal research is to answer "what if" questions to find out how to make things happen" (Remler and van Ryzin 2014: np). Consider the following question: ***What if*** I learn 10, 000 English words in context, would that help me read novels in English with ease and rely less on my dictionary to understand?

Cause	Effect
Learn 10, 000 English words in context	1. read novels with ease
	2. rely less on dictionary to understand

Table 4. Cause-effect

Experimental research designs attempt to uncover the "cause" that led to the appearance of the observed phenomenon and or predict its occurrence.

Elements of Design

The eight essential elements of research design are:

Elements	Questions
1. Accurate purpose statement	What does the study purport itself to study?
2. Techniques to be implemented for collecting and analyzing research	What kind of data is sought for?

	What are the relevant tools that need be used to collect data?
3. The method applied for analyzing collected details	What are the best method(s) that can be adopted to obtain data? How best can data be analyzed?
4. Type of research methodology	What type of research methodology best suits the study? What is the nature of the population? How large will be the sample?
5. Probable objections for research	What might be an obstacle in achieving the research goals?
6. Settings for the research study	Where does the study take place? When does the study take place?
7. Timeline	How long does the study span? How much time is required to complete the study?
8. Measurement of analysis	What are the tools and techniques to analyze collected data?

Table 5. drawn upon Essential elements of design [https://www.questionpro.com/blog/research-design/

If researchers fail to plan their research studies, they are, in fact, planning to fail. In *The practice of social research*, Babbie (2015: 89) notes "Before you can observe and analyze, however, you need a plan. You need to determine what you are going to observe and analyze: why and how". Research is usually referred to as *systematic*, which is another term for plan. A reliable and valid research need be meticulously planned from start to finish.

Research Methodology

Methodology derives from three Ancient Greek words: **Meta** (after) **hodos** (way) and **logus** (study or research). Etymologically, methodology refers to the way that is sought to realize a research project or solve a research problem. It is, therefore, the systematic manner to go about conducting research. Research methodology is about the way that research is designed, conducted, analyzed, reported, interpreted. Conducting methodology research studies will regenerate evidence-led movements in the way that studies are designed and run. Lapan et. al. (2011: np) methodology refers to "form of inquiry" and " a way of thinking". Methodology is primarily concerned with *how* research should be carried out. According to Egon Guba (1924-2008), methodology refers to the way an inquirer should do about finding out knowledge.

Sam and Aroma (2010: 19) perceive methodology as " [...] a way to systematically solve the research problem". Methodology is the "how" a research study ought to be conducted to attain happy ending, i.e., dependable and valid results.

Overall, methodology is **the scientific science of methods** that aims to study how to attain reliable and valid results. Christopher Candlin in his preface to Mickey and Gass's *Second Language Research: Methodology and Design* (2005) sums up research methodology to the "how of the research". Differently couched, research methodology could be identified as the methodical approach to research problem: *How the researchers go about identifying the research problem and all the steps necessary to reach valid and reliable results that support one's claims*.

Creswell (2007: 17) illustrates methodology in social sciences as follows:

Assumption	Question	Characteristics	Implications for practice [examples]
Methodology	What is the process of research ?	Researcher uses an inductive logic, studies the topic within its context, and uses an emerging design	Researcher works with particulars (details) before generalizations, describes in detail the contexts of the study, and continually revises questions from experiences in the field.

To go back to the building example, research methodology could be similar to that which is done by a building company, which would focus on the logistical aspects of the building project such as the financial resources, time frame, materials needed, building teams, and building site nature, etc.

As a final note, methodology is the science that deals with how knowledge is acquired, i.e., the way research is conducted and the justification for such choices and decisions.

Research Method

According to Bernard (2000: 8), the term method witnessed a shift in meaning from abstract (equated with epistemology) to concrete meanings (strategic choices and techniques). Research method is a procedural process which is basically concerned with the **actual techniques and tools to measure the variables**. Crotty (1998) defines research methods as

> **No one is an expert in all the methods for research.**
>
> **R. Bernard**

"[t]he techniques or procedures used to collect, gather and analyse data related to some research questions or hypothesis". Each research has its corresponding instruments to maximize the reliability and validity of the results and minimize, on the other hand, errors originating from bias or miscalculation. Lapan et al. (2011: np) point out "[r]searchers often refer to these data collection tools, such as interviews or tests, as **methods**". A *method* could be, therefore, understood to be the procedures, technique(s) and tool(s) that researchers use to

collect data according to the principles of a given methodology. Researchers may engage in face-to-face interviews, hand out a questionnaire, analyze content, and/ or run an experiment, etc.

Sam and Aroma (2010: 19) spell out nine (9) research methods illustrated in the table below:

Methods	Purpose
Historical	To reconstruct the past objectively and accurately. Fox (1969, in Sevilla *et al*. 1992: 67) points out "Broadly, it involves any appeal to past experience to help in knowing what to do in the present and future". If you try to recreate a class of English in Algeria in the 60's with a view to investigate how students used to learn a foreign language with rudimentary tools and kits, then you are undertaking a historical research method.
Descriptive	To describe systematically a situation or area of interest factually and accurately. If you undertake a descriptive research method, then you are interested in the present situation to determine the its causes. Singh (2010:229) corroborates "A descriptive study describes and interprets what is". It relies on observation as a main tool of reporting the research findings. As a researcher observing how EFL students react to the implementation of ICTs to teach pronunciation/ spelling then reporting the findings of the observation sessions is considered a descriptive method.
Development	To investigate patterns and sequences of growth and/ or change as a function of time. By investigating your EFL students' achievements over a period of time seems to indicate that you are engaged in a development research method.
Cause or field	To study intensively the background of current status, and environmental interactions of a given social unit, an individual. group, institution, or community. When you observe, interact, and try to understand why your EFL students behave in a particular way (say, drop the third person singular 's' in the present simple), then you are conducting a field research method.
Correlational	To investigate the extent to which variations in one factor correspond with variations in one or more factors based on correlation coefficient. Sherri Jackson (2007 :18) defines

	correlation method as " a method that assess the degree of relationship between two variables". Gavin (2008: 371) notes "Correlation the observation whether the variables vary in the same direction and proportion at the same time". Researching the relationship between reading and the enhancement of writing is a correlational research method or the correlation between education and socio-economic status (i.e., income)
True experimental	To investigate possible cause and effect relationship by exposing one or more experimental groups to one or more treatment conditions and comparing the results to one or more control groups not receiving the treatment (random assignment being essential). Investigating how phonics and phonemic awareness contributes to the improvement of EFL students' listening and spelling skills by quantifying the findings proves that your research is experimental.
Causal-comparative or ex-post facto	To investigate possible cause and effect relationship by observing some existing consequence and searching back through the data for plausible casual factors. If you try to investigate why EFL tertiary students write poorly (i.e., too many spelling and grammatical mistakes) then you are undertaking an ex post facto research method
Action	To develop new skills or new approaches to solve problems with direct application to classroom or other applied setting. In other words, action research is specific context-based aiming to find practical solution(s) to the very problem that prevails in that specific context. Trying to discover why your late afternoon classes cause your students to feel bored and implement strategies such as introducing humor to minimize the effects of boredom may be considered action research.
Hermeneutic	It is generally understood to be the subjective interpretation of texts and work of arts. If you attempt to interpret poetry from your own perspective, then you are engaged in hermeneutic research method.

Research Tools/ Instruments

Every research method has its specific **data gathering tools**, which would eventually help attain valid and reliable information if judiciously and carefully utilized. The term *data* is the plural form of the Latin word *datum* meaning verbal and numerical information in context such as your name, age, preferences, and weight, etc. Punch and Oancea (2014: 376) define data as "observable information about the world; direct experience of the world". Research tools help gather and analyze data. Pathak (2008: 109) corroborates "Any researcher requires various data gathering tools- which facilitate original research investigations and observations leading to useful and valuable results".

1. Quantitative research

Methods are characterized by the manipulation of the variables, and, therefore, require tools that help control "the situation" to attain accurate and verifiable data. Tools such as surveys, observation, document screening, scales, tests, and (quasi-)experiments are what a quantitative researcher is most likely in need.

2. Qualitative Research

Qualitative research methods, which rely upon "asking questions regarding how people make meaning out of the world" (McBurney & White 2009: 220), seem to resort to such tools as interviews, focus group (i.e., discussion group), observation, document analysis, oral history or life stories.

Summary

Research follows rigorous pathways to answer research problem. These pathways are termed differently by different scholars. **Paradigm** is researchers' worldviews of the principles of research during a given period of time. Paradigms need to address four questions: (1) **ontological** (what is ...?), (2) **epistemological** (How do we know what we know?), **empirical** (how can the claim be backed by evidence?) and **rational** (does the claim make sense?). **Positivist paradigm** targets objective explanation; **interpretivist paradigm** champions subjective interpretation; **critical paradigm** favors feedback, and **participatory paradigm** consists of a joint action of stakeholders. Planning the research study is generally known as **design**; it is a step prior to taking action to conduct research. **Exploratory design** "explores" new phenomena; **descriptive design** in both its branches (cross and longitudinal) attempts to report characteristics, and **causal design** seeks to determine cause-effect relationship. **Methodology** is concerned with how research should be conducted; it is made up of one or multiple methods, i.e., modes and techniques to collect data. Each **method** (viz,. historical, action, mixed-method, etc.) addresses a research topic from a particular perspective thanks to specific **instruments** to collect data. These range from observation and surveys and on to tests and experiments.

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Task One: *Are the following statements true (T) or false (F)? Insert T/F in the space provided.*
1. _____ . Methods are concerned with the modality of research, how research need be conducted.
2. _____ . Epistemology refers to the nature of knowledge.
3. _____ . Data refer only to numbers in context.
4. _____ . Tests are instrument typically used as qualitative data collection tools.
5. _____ . Critical paradigm seeks an evaluative feedback with a view of taking decisions.
6. _____ . Hermeneutic research method is a quantitative research method.

Task Two: *Read definitions on the right and come up with the term. Use the space provided.*
1. _____ . It is the study of existence, classification of existence, and how people determine if things exist or not.
2. _____ . It emphasizes subjective interpretations in the research of meanings of texts, art, culture, social phenomena and thinking.
3. _____ . It is undertaken when very little is known about a novel phenomenon.
4. _____ . It collects data to make inferences about a population of interest (universe) at one point in time.

Task Three: *Match items from Column A with those in Column B.*

A	B
1. Action research method	a. It aims to establish cause-effect relationships by controlling and manipulating events. There must an experimental group which receives the treatment and a control group.
2. Ex Post Facto	b. It collects data on several variables and wants to know about the relationships among them (Anderson, Anderson and Arsnault)
3. True Experimental research method	c. Teachers are urged to research the challenges facing their classes and find suitable and practical solutions.
4. Correlational research method	d. [...] the researcher takes the effect (dependable variable) and examines the data retrospectively to establish causes, relationships, or associations, and their meaning (Cohen et al.)

Task Four (Scrambled statements): *Re-order the scrambled statements into a coherent paragraph by filling in the grid below.*

a. where this can mean anything from being true, to being cogent to being legally acceptable.
b. The technical concept of validity, as it has evolved in within educational and psychological measurement,
c. It derives from the Latin word *validus*, meaning 'strong', 'healthy' or 'worthy' (Wiktionary, 2013).
d. has been associated with all these meaning at one point or another.

e. In everyday life, validity is the quality or state of being valid,

Newton, P. and Shaw, S. (2014). Validity in Educational and Psychological Assessment

1	2	3	4	5

Task Five: Fill in the gaps with words from the box then fill in the grid below.

experimental- variable- researcher-test-observation- Experiments-knowledge-control

An experiment enables a researcher to __(1)__ a hypothesized relationship between an independent variable and a dependent __(2)__ by manipulating the independent variable. __(3)__ are usually performed in an environment that permits a high degree of __(4)__ of nuisance variables. Such environments rarely duplicate real-life situations, but still an experiment is a useful way of obtaining __(5)__. An experiment is characterized by the (1) manipulation of the __(6)__ of one or more independent variables, (2) use controls such as randomly assigning subjects or __(7)__ units to the experimental conditions, and (3) careful __(8)__ or measurement of one or more dependent variables.

Kirk, R. E. (2013). *Experimental Design: Procedures for Behavioral Sciences*.

1	2	3	4	5	6	7	8

Task six: *Peruse the passage then answer the question in your own words.*

In correlational research, the goal is to determine whether two or more variables are related. A variable is anything that can take on different values such as weight, time, and height. For example, a researcher may be interested in whether age is related to weight. In this example, the researcher may discover that age is indeed related to weight because age increases, weight also increases. If a correlation between two variables is strong enough, knowing about one variable allows a researcher to make a prediction about the other variable.

Marczyk, DeMatteo, D. and Festinger, D. (2005). Essentials of Research Design and Methodology.

1. To what are the authors referring?
2. What is the objective of the correlational research method?
3. In what way do the authors define a variable?
4. Is the example given by the authors convincing?
5. What happens when the correlation is powerful?

Task Seven: *Discuss the citation in a three-paragraph essay.*

[...] qualitative and quantitative approaches to research differ in many ways, each with its unique features (Hancock and Algozzine 2006: 8)

M. K. University of Biskra

(module) Research Methodology   **(Grade) Senior Undergraduate**

(Major) Sciences of the Language   **(Instructor) Dr. Ahmed Bashar**

Introduction to Research Process

Outcomes: *By the completion of the following tutorial, you will be able to*:

1. **identify** the various steps of the research process;

2. **examine** each step;

3. **point out** to its components;

4**. identify** key terms and jargon pertinent to research process;

4. **raise** your awareness of the importance of the systematicity of each step;

5. **undertake** readings regarding research process in education.

> **Systematisation is common in all research (p4).**
>
> **Olsen W. (2012). Data collection: Key debates and methods in social research.**

Food for Thought Questions

1. *What is the research process?*

2. *Is there one single process for all research methodologies?*

3. *Do qualitative research rely on statistics? If not, then is it the quantitative?*

4. *How can a research problem be identified and developed?*

5. *Where do good ideas for research originate? (Johnson and Christensen 2010:60)*

6. *How can you tell data analysis from data interpretation?*

7. *What is after all a good research?*

Terms to be Mastered

Research process- research problem- review of literature- research questions- data collection- data analysis- data interpretation- primary data- secondary data- reporting findings- hypothesis testing

Point to Ponder & Wonder

Peruse the following passage, then discuss it with your peers and teacher.

"I did not invent penicillin. Nature did that. I only discovered it by accident."

Fleming's legendary discovery of penicillin occurred in 1928, while he was investigating staphylococcus, a common type of bacteria that causes boils and can also cause disastrous infections in patients with weakened immune systems. Before Fleming left for a two-week vacation, a petri dish containing a staphylococcus culture was left on a lab bench and never placed in the incubator as intended. Somehow, in preparing the culture, a *Penicillium* mold spore had been accidentally introduced into the medium—perhaps coming in through a window, or more likely floating up a stairwell from the lab below where various molds were being cultured. The temperature conditions that prevailed during Fleming's absence permitted both the bacteria and the mold spores to grow; had the incubator been used, only the bacteria could have grown.

Fleming's laboratory notebooks are sketchy, and his subsequent accounts of the discovery are contradictory. The evidence of the first culture, which he photographed, indicated that he observed lysis, the weakening and destruction of bacteria—as in his lysozyme studies. But sometimes he described the key observation as an instance of inhibition or prevention of bacterial growth in areas affected by the mold "juice," evidenced by a clear zone surrounding the mold. Although these two effects occur under quite different conditions, Fleming probably forgot which observation came first, for in the months subsequent to the original observation he conducted many experiments while varying conditions systematically.

He discovered that the antibacterial substance was not produced by all molds, only by certain strains of *Penicillium*, namely, *Penicillium notatum*. Although he could not isolate it, he named the active substance "penicillin." He studied methods of producing the impure product and determined its stability at different temperatures and over various lengths of time. He investigated its effect on many microbes, curiously omitting the familiar spirochete that causes syphilis (which Salvarsan controlled but did not eliminate). He tested its toxicity on a laboratory mouse and a rabbit. Forever after, it has been a puzzle why he did not inject these or other laboratory animals with staphylococcus or other disease-causing bacteria before injecting them with the fluid containing penicillin. Perhaps the explanation lay in his belief that cures come from within the body itself, rather than from an external agent. So he was not looking for a curative agent but rather focused on his new find as a topical antiseptic. In later years he claimed that the difficulties he had experienced in isolating and stabilizing penicillin, let alone the problems of producing sufficient quantities for clinical trials, had prevented him from realizing the full fruits of his research.

In fact, in the 1930s, little notice was taken by the scientific community of his paper published in the *British Journal of Experimental Pathology* (June 1929). Those few scientists who sent for samples and tried to gain more understanding of the properties of penicillin did not or could not capitalize on Fleming's discovery.

https://www.sciencehistory.org/historical-profile/alexander-fleming

Introduction

Research follows a flexible if rigorous pattern usually referred to as *research process*. Paul (2012 : 7) corroborates ''research should not be treated as if a rigidly sequential process''. Different phases of the research process could be

> **... most scientists would probably prefer to comment on research product rather than the research process.**
> **Haslam and McGarty in Research Methods and Statistics in Psychology**

undertaken simultaneously, which It should be interesting to make an analogy here, research process may be likened to a train made of a locomotive and many compartments. If they do not go on the same line while they are in motion, they go *loco*. The logic of research process is to achieve two main goals : reliability and validity of the research findings. The more the results are accurate, the more they are accepted by the scientific community.

Description

The present tutorial eases you into the ABC of the research process in both qualitative and quantitative research methodologies. The main concern of the tutorial, hence, is to help you undertake research on firm bases, which will eventually add to your meaningful experience as novel researchers. On score of that, the current tutorial covers a wide range of topics with a special reference to the way research is initially undertaken, processed, and concluded.

Definition of *Research Process*

By definition, a *process* is a sequence of operations which work together to produce a result. Research process, therefore, is a sequence of operations that lead to the successful realization of a research project. Research process can also be understood to be the logical, systematic operations undertaken by researchers to answer the questions concerning a particular topic of interest to the researcher himself and to the scientific community. Mligo (2016 :17) defines the research process as follows ''The research process describes the way you begin your research, the way of proceeding with it, and the way ending with it''.

Johnson (1986: 30) proposes the following four questions, which underpin the framework of any research :

1. What are you going to do ? (The **subject** of your research)

2. Why are you going to do ? (The **reason** for doing research)

3. How are you going to do ? (Research **methods**)

4. When are you going to do it ? (The **design** of the work)

Overall, a good quality research process needs to define the research problem/ question, justify for such selection, design the research methodology, and the deadline of the research study.

Steps of the Research Process

Each research methodology seems to be characterized by its definite operations and/ or steps.

1. **Identification of the research problem**

Researchers see the world as a set of problems to be researched and fixed. A research problem is generally understood to be what frustrates the fulfillment of a policy or project. If the research topic is assessment, then a research problem could be whether or not assessment methods and marks are reliable and valid because of cheating. Johnson and Christensen

(2008 :74) identify research problem in the following terms :"an education issue or problem within a broader topic''. Research problem lends itself, therefore, to be a topic within a topic.

Creswell (2012: 59) identifies research problems as "[...] educational issues, controversies or concerns that guide the need for conducting a study". Overall, research problem targets an **informational void** that the researcher intends to fill in.

Research Topic vs. research problem

Modern research tendencies prefer to study particular "things" (usually referred to as variables) within a broader realm and how these "things" influence one another. Hence, the differentiation between research topic and research problem becomes necessary.

> **From a research standpoint, specifying a research problem in your study is important because it sets the stage for the entire study p.59**
>
> **Creswell, J. (2012).**

Research topic refers to the **broad subject** or **area** of research. Creswell (2012: 60) corroborates "the broad subject matter addressed by the study" is referred to as research topic. Consider the following topics: EFL assessment, critical reading, ICTs, and feminism in Arabic Literature.

Research problem refers to the **research gap** that the researcher intends to fill in through research. Research problems are pervasive and evasive at the same time, which may be what frustrates most particularly novice researchers. Research problem originates from:

> **It is important that the question for investigation hold deep interest or be one about which the researcher is really curious. The choice must necessarily be personal [...] p48.**
>
> **Ary, D. *et. al*. (2013). Introduction to research in education**.

        a. the researcher's own observation(s)

        b. the researcher's own experience

        c. the researcher's readings of the academic literature, attendance of as well as participation in conferences, or watching documentaries, etc.

        d. suggested by an authority such as supervisor and/ or other researchers.

The aim of the research problem is primarily to disclose an information gap in research. On

> **Choosing a research question is the first step in the research process**
> **McBride in The Process of Research in Psychology**

score of that, research problem need be expressed accurately, comprehensively, and concisely. The problem need be relevant stimulating intellectually, and engaging (i.e., researchable).

Creswell (2012: 62) notes "One important reason for engaging in research is to add to existing information and to inform our educational practices". Thus, filling the information gap reduces ignorance area and expounds knowledge area.

Nature of the Research Problem

Research problem/ question could be **causal** or **descriptive**. A causal question seeks to establish a cause-effect relationship between variables such as the more you read, the better you write or test anxiety results from the fact that exam paper does not resemble classroom practices. A descriptive question, on the other hand, attempts to establish the existence of a research problem and how it manifests itself. Consider the following example: A motivated class achieves better or implementation of ICTs facilitates learning.

> **Questions based on opinion, personal philosophies or beliefs are generally not researchable p. 24**
>
> **Morrell and Carroll. (2010). Conducting educational research**

Statement of the Research Problem

Both qualitative and quantitative research problems seem to differ on the focus of the research. According to Johnson and Christensen (2010: 71), while **quantitative** research problem puts emphasis on the need to provide an explanation, prediction, or even statistical description of a phenomenon, **qualitative** research problem targets to take an insider's (i.e., participants' in the study) perspective to understand an event or issue. Consider the following:

> **In any field, find the strangest thing and then explore it.**
>
> **John Archibald Wheeler**

Quantitative	Qualitative
EFL students with a long history in reading tend to read better, spell better, have richer vocabularies, and better grammatical structures.	Students have developed negative attitudes toward term examinations; they think that the period of examination is so stressful that the possibility of cheating becomes evident.

Phrasing/ Formulation of the Problem

The art and science of phrasing the problem go through different phases as the research proceeds. The statement of the problem, which aims to outline the research study, includes five (05) components according to Creswell (2012:64):

1. **The Topic**: Stimulating introductory sentences to "lure" potential readers to "read beyond the first page" (*ibid*.). A narrative hook, first statement that serves to catch readers' eye", may be used. It could be statistical data, provocative data, a clear need for research, purpose of the research.

2. **The Research Problem**: A statement or couple of statements in which the information is explicitly stated. For instance "Research on boredom in Algerian tertiary EFL classes is virtually inexistent".

3. **Justification of the importance of the research**: The rationale for the study's worth need be clearly stated. Subjective (i.e., personal) and objective reasons can be outlined.

4. **Deficiencies in the existing Knowledge**: To spell out what is missing the previous studies as far as the research problem is concerned.

5. **Targeted Audience**: Research studies are not meant to be put on library shelves. Rather, they are meant for different stakeholders such as decision makers, researchers, teachers, students, and parents, etc. (Op. Cit., 70)

2. **Review of Literature**

Literally, literature review or review of literature refers to the process of ''revision'',

> **The literature review is one of the most important parts of any piece of academic writing.**
> **Oliver Paul, 2012.**

i.e., reading and evaluating what has already been written about the topic of interest. Efron and David (2018: 2) define literature review as ''a systematic examination of the scholarly literature about one's topic''. Therefore, literature review is an orderly detailed study of the specialized literature on the topic of research, which has been published by scholarly journals and academic circles.

> … **a good quality literature review is a piece of research in its own right.**
> **Avery, H.**

Literature review is by its very nature an evaluative study of previously published research. It aims to provide ''… a justification for research (Jamison 2006 :7). In other words, literature reviewers need to provide an answer to why they conduct research in that particular topic. It is a quintessential part of research because it was provide thorough if succinct summary, analysis and evaluation of the consulted literature. It is important because it situates the current research in comparison with previous research and how both are interconnected and/ or overlapping. In so doing, the research makes

clear his intentions and potential contribution to knowledge, which is the essence of scientific research.

According to Hart in *Doing a Literature Review : Releasing the Social Science Research Imagination* (1998 : np), literature review needs to fulfill the following :

1. Distinguishing what has been done from what needs to be done.

2. Discovering important variables relevant to the topic.

3. Enhancing and acquiring the subject vocabulary.

4. Establishing the context of the research problem

Overall, literature review enriches, matures, and guides the current research, which in the long run adds to its reliability and validity.

Literature review involves both critical reading and critical thinking. The literature reviewer needs to answer the following questions:

1. *Who is the author?*

2. *What kind of evidence does s/he put forward?*

3. *What kind of research design does s/he follow?*

3. *What types of research techniques and tools does s/he use? And do they correspond to the nature of the research problem?*

4. *Are the samples relevant to the nature of the research?*

5. *How accurate and conscientious is the author in collecting, analyzing, and interpreting data?*

6. *Are the conclusions convincing?*

7. *In the final analysis, is this research an authentic contribution to knowledge in any way?*

In drafting the literature, primary and secondary sources can be reviewed chronologically or thematically. First-hand information and second-hand information can be traced in terms of time of publication or in terms of themes, i.e., research topic/ subject. In so doing, Literature review can be claimed to adhere to one of the following according to University of Southern California:

1. **Argumentative Review**

The argumentative review targets to accept or reject the arguments provided by the research.

2**. Integrative Review**

The integrative review blends different perspectives (evaluation, analysis, and synthesis) to come up with a consistent framework.

3. **Historical Review**

The historical review traces back throughout period of time a topic or theme with a view of placing the research problem in a historical context.

4. **Methodological review**

The methodological review questions the methodology, method, and data collection tools in an objective way.

5. **Systematic Review**

The systematic review undertakes to outline the clarity of the research questions, collect, report, and analyze data.

6. **Theoretical Review**

The theoretical review, as its name suggests, targets to examine related theories with a view of establishing a theoretical gap.

> **Your research questions [...] are at the heart of your research design p.65**
>
> **Maxwell, (2005). A qualitative design: An interactive Approach (2nd ed.)**

3. Research Design/ Methodology

  The choice of the design depends on the nature of the research: quantitative and/ or qualitative. Research that targets calculations, i.e., numerical data, has certainly a quantitative orientation. By way of illustration, implementing take-home exam as a strategy to reduce test anxiety and eventually cheating (on tests) appears to be oriented toward the quantitative design. Research that investigates **participants' perceptions of the world** is *necessarily qualitative*. Gauging students' attitudes toward cheating in the examination seems to suggest a qualitative research design. Morrell and Carroll (2010: 26) note "[...] the type of methodology you ultimately choose to use is determined by your question". Neither the supervisor's whims (viz. claiming no expertise in either design) nor the researcher's wishes (viz. accessibility to samples) should be the underlying reasons for the selection of a particular design/ methodology.

4. Research Question(s)

Research questions are the query that the researchers targets to address in order to come to grips with the information gap. According to Maxwell (2005: 65), research questions are concerned with "[...] what you specifically want to understand by doing your study". Research Questions are formulated by using Wh-questions and/ or auxiliary questions; they usually

precede hypotheses. Salskind *et. al.* (2015: 75) identifies research questions as "[...] a more specific, testable version of a hypothesis".

Quantitative and qualitative questions seem to differ at the level of **structure** (Johnson and Christensen 2010: 74). Whereas quantitative questions are **specific** and target causation (cause-effect), **qualitative** questions appear to be **generic** and aim at understanding a phenomenon.

Research Hypothesis

Salkind (2015:13) considers research hypotheses " [...] if-then statements that are an important part of the scientific method". It should be noted that quantitative studies, which are interested in producing numerical data, tend generally to be phrased in conditional "if something is applied, something occurs". On the other hand, qualitative studies, which seek meaning and understanding, could be couched in declarative sentences.

> **Data is another word for bits of information p. 65**
>
> **Walliman, N. (2012). Research methods: The Basics**

The formulation of hypotheses follows a certain protocol:

4. 1. **Quantitative hypothesis** is formulated in the form of **if-then**; If close reading is implemented regularly in EFL classes, learners' critical reading skills will be significantly enhanced.

4. 2. **Qualitative hypothesis** could appear as a **declarative** statement such as: Students resort to illicit means to cheat in examinations may be due to lack in training to respond positively to examination papers.

5. Data Collection

Data collection, literally refers to the process of gathering data, is an important, an above all, inescapable phase in the research process. This logistical process, if duly, dutifully, ethically and methodically conducted, will determine the reliability and validity of the whole research. During this crucial phase, the researcher attempts to address the following questions :"How best are the intended data collected? And thanks to what techniques?" To fill in the information gap, a special "care" need be, therefore, taken to design and select the most appropriate techniques and tools to collect the data in question. It is, in the final analysis, a daunting undertaking particularly so for novice researchers..

Data are generally understood to be the numerical and verbal information. Olsen (2012: 11) succinctly notes " data could be words or numbers". Numerical and verbal data are factual in the sense that they provide concrete or tangible information and according to which decisions are made. Consider the following example:

Last Name: Johaina

First Name: Adnani

Date of Birth: October 26, 2000.

Address: 28, Shahid Abulfida St, Tolga 07003, Biskra. ALGERIA

Gender: Female

Height: 1m69

Weight: 50

Mobile Phone Number: 0542153289

Email Address: j.adnani20@hotmail.fr

These data could be categorized as follows:

Numerical Data	Verbal data
26.10.2000	Johaina Adnani
28	October
07003	Shahid Abulfida
1.69	Tolga/ Biskra/ Algeria
50	M(eter)
0542153289	j.adnani@hotmail.f

Data could be primary or secondary. **Primary data** are data firsthand collected by the researcher himself/ herself whereas **secondary data** are found in the literature. Walliman (2012: 69) states:

> Data that has been observed, experienced or recorded close to the event are the nearest one can get to the truth, are called primary data. Written sources that interpret or record primary data are called secondary data, which tend to be less reliable.

Firsthand data, therefore, prove to be more convincing than second-hand data. Walliman (*ibid*.) claims that primary data has four basic types, which are illustrated in the table below:

Types	Examples
Measurements	Voting polls, exam results, car mileage, oven temperature
Observation	Five senses recording and recording instruments such as tape recorder, camera, etc.
Interrogation	Asking and probing people's convictions, likes, dislikes
Participation	Data from one's experience such as decoding and encoding messages.

Table 1. Basic types of primary data (drawn from Walliman 2012: 69)

This source-based identification of data (where data are obtained) distinguishes it from the other characteristics-based identification, i.e., quantitative and qualitative data. While quantitative data are numerical information, qualitative data are verbal.

Data are measured in quantitative and qualitative research on nominal, ordinal, interval, and ratio scales. Table below illustrates the aforementioned scales

Scales	Definitions	Examples
Nominal	Placement of objects and individuals into mutually exclusive categories (Ary *et al*. 2019:101)	10% of male students feel bored in class while 90% of female student feel motivated to learn.
Ordinal	[...] the numbers [...] indicate only the order of the categories (Ary *et al*. 2019: 102)	A is taller than B The number Female respondents is larger than that of male respondents
Interval	Regular (equal) differences on a scale	Temperature, blood pressure (Gray 2009: 556)
Ratio	Regular interval differences starting up from zero.	Sales costs (Gray 2009: 556)

Qualitative data lend themselves to nominal and ordinal while quantifiable data tend to be interval and ratio (Gray 2009: 556).

Data collection instruments vary according to whether the researcher is engaged in quantitative or qualitative research. As the former is particularly interested in quantifiable, i.e., numerical, data, it favors experimental instruments such as surveys, questionnaires, scales, interviews, observation, etc.

> **This is the age of "evidence" and all around claims about the need for all to make evidence based decisions p.vii**
>
> **Teo, T. (2013). Handbook of quantitative methods for educational research.**

6. Data Analysis & Interpretation

Once raw data are collected, classified, and sorted out for exploitation, a corollary phase takes place, that which targets to transfer data into figures and meaningful implications and insights. It is assumed that the researcher has taken every pain to collect data ethically and dutifully applying accurate techniques and instruments. Analyzing and interpreting data seem to be the phase where the researcher discloses his/ her critical reading and critical thinking skills and know-how beside his/ her ability to efficiently utilize calculating and/ or software programs to transform raw data into numbers and/ or meaningful

insights . Mikkelsen (2005: 151) confirms "[t]he broad aim of data analysis is to look for meaning and understanding". In wide brief, truthful data begets truth.

Data could be approached from three perspectives: literally, interpretively, or reflexively. According to Mason (2002: 150) in *Qualitative researching* (2nd ed.), the deciphering of the collected data could be treated from three-dimensional perspective.

> 6.1 **Literal Reading of Data** (LRD): LRD refers to the interest in their literal form, content, structure, style, layout, and so on.

> 6.2 **Interpretive Reading of data** (IRD): IRD is concerned with the construction or documentation of a version of what might be the meaning and representation of data. "Whatever form of interpretive reading you adopt, you will be involved in reading through or beyond the data in some way [...]" (2002:151).

> 6.3 **Reflexive Reading of Data** (RRD): RRD may be taken to mean that the researcher becomes a part of the data s/he has generated and seeks to explore his/her role in the generation and interpretation of those data.

The best research uses data in an original way or offers some new and exciting interpretation of existing data p.3

Olsen, W. (2012) Data collection: Key debates and methods in Social Research

The empirical world is a chaos of observation, until we impose an order on it p. v

Lewis-Beck in *Series Editor's Introduction* in Coxon, P. M. (1999). Sorting Data: Collection and Analysis

Data analysis and interpretation is an arduous task that involves a great deal of thinking and planning. Mertens and McLoughlin (2004: 191) claim "Interpretation of data is a thoughtful exercise, requiring much more effort than simply checking levels of statistical levels in the results". Calculations (i.e., analysis) can be accurately achieved through special software programs while interpretation is, to a fair degree, problematic. Interpretation requires all the stakeholders (researcher, supervisor, participants, etc.) involved in the research study. Mertens and McLoughlin state (*ibid*. 192):

For both quantitative and qualitative analyses, there is a two-step process involved: First, we conduct the analyses, and second, we interpret the data to develop finding. The analyses are mechanistic; the interpretation is a human process that should engage the researchers and participants, as well as other groups.

Subjectivity is the enemy of a sober, convincing interpretation. Data interpretation depends upon addressing the following question: What do these numerical analyses really mean?

7. Reporting and Dissemination of the Findings

In a world defined by technology and competition, the publication of scientific research findings could be taken for an indicator for power and scientific advancement. Authoritative researchers are those who publish regularly to make the expression "publish or perish" truer than ever. Coolican (2009: 14) notes:

> People are considered charlatans …claim to demonstrate effects … yet will not publish clearly, or at all, the predictions, the methods, and the results of their research work so that the research community, the public, can check whether outcomes support declared claims..

Researchers compete to participate in conferences and write in well-known journals to disseminate their research findings and by the same token confirm their status.

Parson *et al*. (2013: 130) suggest four questions that need to be considered whilst reporting findings:

1. What assumptions do you bring to your work?

2. How do these assumptions shape how you construct your narrative and insights?

3. What will you do with what you have come to know?

4. How will you represent the answers to the three questions to the public?

Stringer (1999. cited in Parson *et al. ibid*.) proposes four items that need to appear in reporting the research findings:

> **Report writing is (should be) a creative process [...] Report writing is also a skill [...] it must be learned through practice p. 632**
>
> **Gray, D. E. (2009). Doing research in real world.**

1. **Introduction**: identifies the problem or presents the question

2. **Literature Review**: details what is known about the problem.

3. **Methodology**: discusses research design and data collection

4. **Results**: identifies the practical implications of the study.

> **A researcher may have conducted the most ground-breaking research ever known but it will not add to the knowledge base unless it is communicated clearly to a wide audience p.160**
>
> **Vialle and Kervin (2006). Research for educators**

Reporting findings establishes the researcher's expertise and know-how. Leedy and Ormrod (cited in Mligo 2016: 97). comment " Ultimately what you put on paper and how you put it there reveals your knowledge, the quality of your thinking, and the standards of your

excellence more eloquently than anything else". As a final analysis, a sound research process leads to a high-quality research report.

Summary

Research process is a consequential series of stages through which a serious academic and scientific work is begun and completed. The first stage is the identification of a researchable problem or question wherein an information gap or void need be located. A research problem is best be personally motivated and it is either causal or descriptive. If it is causal, it requires an experimentation to uncover cause-effect relationships. A descriptive research problem is concerned with inquiring insiders' perceptions of the social world (or reality). The second stage is reviewing relevant literature: A critical reading and summary of previously published works. Designing research by selecting the design that best answers the research problem comes next. Qualitative or quantitative design can be selected to address the research problem and test the hypothesis. Once data are collected, analyzing (i.e., calculating) and interpreting data (namely, what the numbers really mean) are undertaken. Writing up with a view of disseminating results is the final stage to avoid being "charlatans" to put it in Coolican's terms.

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(https://libguides.usc.edu/writingguide/literaturereview):

TASKS/ QUIZZES

Task One: *Are the following statements true or false? Write T/F in the space provided.*

1. _____ . Quantitative research targets participants' perception of the social reality.

2. _____ . A causal research problem is concerned with the establishment of cause-effect.

3. _____ . Primary data has three basic types observation, measurements, and participation.

4. _____ . Data analysis aims to look for meaning and understanding to take informed decisions.

Task Two: Read definitions on the right and insert right terms in the space provided.

1. _____ . Data that have been observed, experienced or recorded close to the event are the nearest one can get to the truth.

2. _____ . The researcher becomes a part of the data s/he has generated and seeks to explore his/her role in the generation and interpretation of those data.

3. _____ . Researchers use these scales to provide response options where participants check one or more categories that describe their traits, attributes or characteristics (Creswell 2012: 165).

4. _____ . This scale is concerned with Regular interval differences starting up from zero.

5. _____ . These materials are available in the previously published literature.

Task Three: (Cloze Test)

Task Four: (Jumbled Statements). *Re-order the following statements to make a coherent paragraph. Use the grid to insert the letters.*

a. Reviews of literature are well planned out, typically starting at the broadest part of the topic and gradually refining and narrowing the discussion down to a more focused perspective.

b. The main purpose of the literature review is to report the state of knowledge on your topic and place your proposed study in a research context by providing an overview of past research studies, published articles, documents that relate to your topic.

c. For the purpose of this textbook, the word literature is defined as all published articles, records, and documents that are related to the topic of the study.

d. The literature reviews in proposals and published studies are held to different standards.

e. This includes empirical research, reviews of literature, theoretical articles, and even opinion pieces (although a good literature review for a topic with ample empirical research will keep opinion pieces to a minimum).

Lodico, M. G., Spaulding, D.T. and Voegtle, K. H. (2006). Methods in Educational Research: From Theory to Practice.

1	2	3	4	5

Task Five: *Read the text then answer the questions*

Following data analysis, the researcher is ready to write the final report. A research project is of little value unless the findings are communicated to others. The final report will tell what you did, what you found, and how your study is related to the body of knowledge in your area. Writing the final report is not as difficult a task as a beginning researcher might think. Much of the introduction, literature review, and methodology has already been done in the initial proposal. Only minor revisions and switch to the past tense should be needed on these preliminary sections (p.605).

Ary,D., Chesser Jacobs, L. and Sorensen, C. (2006). Introduction to Research in Education.

1. When is the final report written?

2. How important is the dissemination of research findings?

3.What does the final report specify?

4. What tense is favored in writing up the final report? Why?

Task Six: *Compare and contrast*

1. Research topic vs. Research Problem

2. Literal Reading of Data and Interpretive Reading of Data

Task Six: *Write an argumentative essay on the following topic.*

Topic One:

"For a beginning researcher, the difficulty is not developing answers to questions, but coming up with questions to ask yourself" (Creswell: 59).

Topic Two:

It is important that the question for investigation hold deep interest or be one about which the researcher is really curious. The choice must necessarily be personal [...] p48.

Ary, D. *et. al*. (2013). Introduction to research in education.

Documentation of Sources According to APA 7th ed. (2020)

Introduction

The newest edition (7th) of the *Publication Manual of the American Psychological Association* was initially published in October 1st, 2019. APA's *Publication Manual* stems from the "practical needs of users" with the "aim to support the many ways in which people communicate". It is claimed "when style works best, ideas flow logically, sources are accredited properly, and papers are organized predictably and consistently". Efficient communication seems to be, therefore, achieved through logical flow of ideas, acknowledgment of sources, and consistency. The Publication Manual is not only concerned with referencing, but also with other topics of interest for the dissemination of knowledge such as writing style and grammar, bias-free language guidelines, mechanics of style, paper format, and publication process, etc.

The full implementation of the *Publication Manual of the American Psychological Association* 7th edition in both students' research projects and professional circles is set to be as from August 31st, 2021.

There is no royal road to the easy mastery of all the details in the 7th edition or any other edition for that matter. It is through practice that entails trial and error that all those "troublesome", demanding details fall into place. Pythagoras advises "choose always the way that seems the best, however rough it may be; custom will soon render it easy and agreeable". Excellence is a matter of habit that is forged through hard work, i.e., repetitive practice.

Essential Components of the Documentation of Sources

In order to meet the three criteria of APA *The Publication Manual*, i.e., accuracy, concision, and inclusiveness, researchers wishing to acknowledge their sources need to answer four (4) main questions:

1. **Who** produced the material? [Author(s)]

2. **When** was the material produced? [Copyright year]

3. **What** is this material? [Title]

4. **Where** was the material in question published? [Publisher]

The order in which the answers are constitutes the key components of a workable reference list. In-text citation, however, requires the page number that need to appear in parentheses next to the copyright year.

1. In-text Citation

In-text citations appear in two ways: narrative and parenthetical citations.

1.1 **Narrative In-text Citation**: When quoting in the natural flow of the "prose", narrative in-text citation is used. The following example illustrates this type of citation:

> Unlike creative writing, academic writing is different in terms of tone, style and lack of emotional involvement. Schwartz *et al*. (2012: p. 27) state "[s]cientific writing has its own voice, with the appropriate levels of formality, detachment and objectivity".

It should be noted that a narrative in-text citation that exceeds 40 words is to be detached from the main body, indented, and centered. This type of quoting is called blockquote, which as its appellation suggests it is a quote that stands a block paragraph. An example of a blockquote below will make it clearer:

In defense for APA use, Schwartz *et al*. (2012: p. 3) argue:

> Regardless of whether you are writing a paper as psychology, sociology, or nursing student, if you are asked to write in APA style, you are asked to do so to help communicate your ideas in writing in a way that will be more easily understood by others in your field. APA reflects the scientific method in that its goals are precision and objectivity in writing, as well as standardization of style and format.

No quotes ("...") are to be added to centered/ blockquote citations because they stand as separate paragraphs. And no need for italicizing it or reducing its type font.

In case of two authors, the last (or family) names of both authors need be mentioned in narrative in-text citation as in the following illustration:

Tauber and Mester (2007: p. 3) note "By adopting some creative and nonverbal techniques, we can help more students learn more in all levels and types of education".

It should be noted that authors names are joined by "and" in in-text citations.

1.2. **Parenthetical Citation**: It is generally used at the end of the *paraphrased* statement. Consider the example below:

> The best piece of advice that could be given to novice researchers is painstakingly quote or paraphrase ideas, thoughts, and words from another author (Malkovich 2015: 61).

1.3**. Secondary Source**

Unlike a primary source, which comes from first-hand account, secondary source is "a record that was created some time after an event. So, it is one or more steps far removed from the

original event" (Hamilton, 2005: p.4). Secondary sources may comprise anthologies, dictionaries, directories, manuals, research papers, and textbooks, etc. The one quoting from another source is considered a secondary source.

A citation that is taken from a secondary source is referenced as follows:

Empirical means that something (or its impact) is observable (Ragin, 1994, as cited in Punch, 2005, p. 27)

Two researchers are citing Ragin (1994): The first one is Keith Punch (2005) and the second one is this researcher. Dr. Ahmed Bacher/ Bashar, (2020).

2. **Referencing/ Writing up Reference List**

Reference lists, as the appellation suggests, are the full list of referenced materials and are kept one step appendices. Reference lists should, however, not be confused with bibliographies. While the former, i.e., **references**, refer to all the references that have been actually read and quoted in the research, the latter, i.e., **bibliographies**, indicate the whole set of references that have been consulted but not quoted in the actual body of the research.

Reference lists are ordered **alphabetically**. The first letter of the last/ family names of the cited authors will decide the precedence of the names over the others. Last/ family names in "A" will obviously come first; names beginning with "Z" come last.

2.1. **One-Author Books**

As illustrated below, four main components make references: (1) author's name, (2) year of publication, (3) title of the book, and finally (4) the publisher.

1	2	3	4
Last/ Family Name(s)	**Year of publication**	**Title**	**Publisher**
Tracy, S. J.	(2020)	*Qualitative research methods* (2nd ed.)	John Wiley & Sons, Inc.

APA 7th ed. has dropped the publisher's location. Tracy's book Qualitative research methods second edition was published early this year (2020) by John Wiley &Sons, Inc. and this publishing house is in the US state of New Jersey. "New Jersey" no longer is needed in this latest edition of APA.

2.2**. Multiple-authors Books**

Books could be authored by more than one author. Unlike APA 6th edition, the 7th edition is inclusive in that it allows to give credit to all the authors who participated in authoring the book.

2.2.1 Two authors

Multiple Authors	Year	Title	Publisher
Booth, W. C., Colomb, G. G. **&** Williams, J. M.	2008	*The craft of research* (3rd ed.)	The University of Chicago Press

Two observations should be made at this stage: (1) an ampersand (**&**) joins the first and second author's names; book titles are to be *italicized*.

2.2.2 Multiple Authors

Multiple authors could range from 3 to as many as 20 authors. it is now possible to include as many as twenty (20) authors as in the example below:

Bacher, A., Bechar, M., Benmoussa, Y, Bougoufa, Z., Bouhitem, T., Chenini, A. H., Cheriet, A., Chaouch, R., Dadi, M., Elbez, F., Fadlallah, H., Fathallah, N., Guettaf-Temmam, A. H., Hukmollah, W., Laala, Y, Sigueni, L., Slimani, S., Temagoult, S., & Turqui, B. (2020). *Research methodology: Nuts and Bolts*[9]. University of Biskra Press

2.3. **Edited Books**

An edited book is a collection of research papers and/ or chapters written by various authors. This should not be confused with 1st, 2nd, 3rd, ... edition, which refers to reprinting of the same book. Note that *The craft of research* has been reprinted three times at three different dates.

2.4. **Translated Books**

Books that are translated into English need be referenced as shown below:

Author	Year	Title of the Book	Translator	Publisher
Monod, J.	(1971)	*Chance and necessity : Essay on the natural philosophy of modern biology*.	(Wainhouse, A. trans.).	Alfred A. Knopf

It should noted that the translator's last/ family name and the initial of their first name followed by trans. are comprised between parentheses).

2.5. **No-author Books**

Some books are published by an organization, and, therefore, no author(s0 names appear. In such case, referencing is carried out as follows:

---

[9] This is an example only. Neither the book nor the University of Biskra Press exists.

CreativeCloud Publications. (2020). APA booklet: In-text citations & reference list: Easy APA sources formatting. CreativeCloud Publications

The extra examples below are provided by the Publication Manual APA 7th edition.

Example (print version):
Merriam-Webster's collegiate dictionary (11th ed.). (2005). Springfield, MA: Merriam-Webster.

> ➢ Place the title in the author position.

> ➢ Alphabetize books with no author or editor by the first significant word in the title (*Merriam* in this case).

In text, use a few words of the title, or the whole title if it is short, in place of an author name in the citation: (*Merriam-Webster's Collegiate Dictionary*, 2005).

Example (electronic version):

Heuristic. (n.d.). In *Merriam-Webster's online dictionary* (11th ed.). Retrieved from http://www.m-w.com/dictionary/heuristic

If the online version refers to a print edition, include the edition number after the title.

2.6.Online Books

Online materials are abundant and provide researchers with a gold mine of information. Online books are reference as shown below:

author	Year		Publisher	URL/DOI
National Health Committee	2015	*The introduction of fit for purpose omics-based technologies-Think piece.*	Ministry of Health.	http://health.govt.nz/publication/introduction-fit-purpose-omics-based-think-piece

Please note that if a DOI is provided instead of URL, then the DOI need be specified.

2.7. Book Chapters & Sections

Some consulted books, either in the university libraries or online, are a collection of chapters, each of which is written by a different author. The author and the title of the chapter that has come to be quoted needs to be referenced in the manner showed below:

Author of the chapter	Year	Title of the Chapter	Author(s) of the Edited Book	Title of the Edited Book	Chapter page(s)	Publisher
Beauchaine, T. P.	2013	Taximetrix	Little, T. D.	*The Oxford handbook of quantitative methods.*	612-634	Oxford University Press

Suppose the quote is taken from page 615, this page number should appear in in-text citation. But, in the reference list the pages of the chapter (i.e., 612-634) must be specified.

2.8. Anthologies/ encyclopedias

Roughly speaking, anthology refers to a compilation of selected texts. It is interesting to know that anthology derives from Ancient Greek meaning "flower gathering", for *anthos* means "flower". The selected texts are collected for their esthetic aspects exactly as flowers are picked.

Editor	Year	Title	Publisher
Gratton, J. & Le Juez, B.	1994	Modern French short fiction: An anthology	Manchester University Press

This is how it appears on the reference list:

Gratton, J. & Le Juez, B. (1994). Modern French short fiction: An anthology. Manchester University Press.

Encyclopedia, which refers to information from different fields of knowledge, are referenced in the manner shown below:

Keränen, L. (2014). Biopreparedness and biosecurity. In T. L. Thompson (Ed.), *Encyclopedia of health communication* (Vol. 1, pp. 113-116). SAGE Reference.

2.9. Journals

Journals are specialized magazines that target one area of research; its contributors and audience share an esoteric body of knowledge. English Teaching Forum (ETF), an American

journal meant for second and foreign language teachers outside the U.S. borders. To document a paper from ETF, the order is shown below:

Sowell, J (2019). Using models in second-language writing classroom. *English Teaching Forum,* 57(1) pp. 2-13.

(1) **Author's Name**: Jimalee Sowell (First Name+ Last/ Family Name)

(2) **Year**: 2019

(3) **Title of the paper**: Using Models in Second-Language Writing Classroom

(4) **Journal**: English Teaching Forum (in *italics*) followed by a comma (**,**)

(5) **Volume**: 57

(6) **Number**: 1 [issue number must be included in parentheses]

(7) **Pages Number**: from page 2 to page 13 followed by a dot (**.**)

(8) If the journal has an online version from which the paper or portion of it is quoted, the URL or DOI address needs to be mentioned after pages number as illustrated below:

Sowell, J (2019). Using models in second-language writing classroom. *English Teaching Forum,* 57(1) pp. 2-13. https://americanenglish.state.gov/resources/english-teaching-forum-2019-volume-57-number-1

2.10 Tables

Tables and figures are common in research publications whose presence summarizes large amounts of data. They are referenced in the manner shown by the authors of Purdue Online writing Lab:

Table 1

Title

Stub Heading	Column Spanner		Column Spanner	
	Column Heading	Column Heading	Column Heading	Column Heading
Table Spanner				
Row 1	123	234[a]	456	789
Row 2	123	987	543	876
Table Spanner				
Row 3	432	567	543	908
Row 4	256	849	407[*]	385

Note. This is a general note, referring to information about the entire table. Notes should be double spaced.

[a]Specific notes appear in a new paragraph; further specific notes follow in the same paragraph.

[*]A probability note appears in a new paragraph.

(module) Research Methodology   (Grade) Senior Undergraduate

(Major) Sciences of the Language   (Instructor) Dr. Ahmed Bashar

Introduction to Research Proposal

Note: The lecture is presented through discrete points from a PPT presentation.

Definition of Research Proposal

- A **research proposal** is generally viewed as a *concise description* of a serious, academic *research project*.

- A **research proposal** is the student researcher's first ''**plan**'' to approach the theme under investigation; it is **systematic**ally arranged, **clear**ly defined, **academic**ally written, and well **reference**d (Bashar, 2015). It is not very long (10 pages max.).

- A **research proposal** is a piece of work that, ideally, would **convince scholars** that your project has the following three merits : **conceptual innovation**, methodological rigour ; and rich **substantive content**. (School of Advanced Study, University of London)

Objectives of Research Proposal

- The *merit/ worth* of your research project (*beneficial* for mankind) ;

- The *value* of your research project in the *contribution to knowledge* ;

- The candidate's readiness to undergo an exceptional ''journey'' in search for *truth* ;

- The candidate's ability to *spot a problematic issue* that is worth investigating (i.e., identification of the issue, motivation to search it, and method of solving the problem) ;

The candidate's ability to *read*, *research*, and *report* his/ her findings.

Components of the Research Proposal

- Title

- Abstract

- Table of Content(s)

- Section 1: Introduction

- Section 2: Review of related literature

- Section 3: Methodology

- Section 4: tentative Outline

- References

  The Introduction of the Research Proposal

- Background of the study

- Statement of the problem

- Research Objectives

- Research Questions

- Significance of the study

- Delimitation of the study

- Assumptions of the study

- Definitions of key terms

- Structure of the study

  Background to the Study

- ''It (i.e., BOS) is to establish a framework for the research, so that readers can **understand** how it is **related to other research**'' (Wilkinson 1991: 96).

  BOS attempts to address the following questions:

- *How did you come to want to investigate your topic?*

- *What are the past ''events'' that led you to think about your topic?*

- **Example**

  Most research on cheating on tests seems to be deterrence-driven. Students frequently feel that exams are meant to punish them for their laziness and/ or incompetence; they feel that exam periods are scheduled to that effect. This attitude turns out to be depressing and demoralizing. This investigation attempts to survey students' attitudes toward cheating on tests quite apart from what needs to deter this phenomenon.

  Statement of the Problem

- The problem statement **describes** the **context** for the study and it also identifies the **general analysis** approach (Wiesrma 1995: 404)

- A problem statement is a clear **description** of the issue(s), it includes a **vision**, issue **statement**, and **method** used to **solve** the problem.

  The questions that need be addressed are:

- *What seems to be the problem?*

  What solutions might there be to relieve the bad effects of the problem?

- **Example**

  Students consider the examination period ''quite stressful'', which amounts to a period of nerve-raking psychological condition. The latter appear to put more pressure on them so much so that they resort to cheating on tests although this practice goes against their Islamic and moral education. With a view of minimizing cheating on tests, the administration and staff should try to understand the underlying reasons that tempt students to cheat, and in the same breath try to take students' concerns into their consideration in the process of scheduling, constructing, and administering tests

  Research Questions

- It is a **prediction** of a **relationship** between one or more **factors** and the **problem** under study that can be **tested**.

- A research question poses a **relationship** between two or more **variables** but phrases the relationship as a **question** (Kerlinger, 1979; Krathwohl, 1988).

  Example

- *What is the impact of cheating on tests on student achievement?*

- *Is cheating on tests gender-related?*

- *Is cheating on tests culture-laden?*

- *What kind of information is likely to be tempting?*

  How does cheating on tests occur?

  Hypothesis Structures (Quantitative)

1. If clauses

2. Depend on/ rely on

   Example

1. **If** students are trained to answer the types of the test, they will feel less anxious and therefore less inclined to cheat on tests.

2. Examination standards-abiding students' behavior **depends upon** students being aware of and familiar with the examination paper format/ layout and content especially when the exam paper resembles the in-class practices.

Research Methodology

Research methodology discusses the **methodology** that the student researcher adopts to conduct his/ her **research**.

Example

By its very nature, the issue of CIE requires a paradigm that meets the drive and scope of the current study, which undertakes to explore the issue from students' perspectives. On the score of that, a descriptive-interpretive methodology appears to be *apropos*. On the *descriptive* level, the attempt is to describe the phenomenon of CIE by collecting quantifiable data through the survey method (i.e., questionnaire) with the premise of disclosing causal relatioships between the population and the issue at hand. At the *interpretive* level, the attempt is on trying to understand the CIE phenomenon and find out the motivations of the students. CIE is perceived as a social construct, and therefore, the attempt is on trying to get access to the inner world of the generators of the process, analyze and establish connections, paradigms, and eventually drawing inferences.

Data Collection Tools

- RT are the student researcher's **devices** such as questionnaires, surveys, classroom observation, and other decices that would help him/ her **collect data** for **analysis** (Bashar, 2015).

- **Example**

A questionnaire is envisaged to be constructed in order to collect data. It will be self-reporting; open-ended question-items with options to help respondents check their accurate understanding of the questionnaire.

Population and Sample

- **Population** generally indicates the **overall number** of agents that belongs to an institution.

- **Sample** refers to the **limited number** of agents that the student researcher intends to target in his/ her investigation.

Example

The population of the Branch of English Studies is estimated at 1, 600 students (57% of the population is female students). Freshman students represent 35% of the total population.

This studies, however, will only target 50 freshman students, representing thus around 20% of the freshman population.

Significance of the Study

- Any serious investigation should add to knowledge.

- It should address the following question:

    To whom this research will be beneficial? Why?

    Example

    This study will be of great importance to all stakeholders (parents, administration, teachers, and students). For the parents, it will … . As for administrators (decision makers, curriculum developers, syllabus designers, etc.), it will … . As for teachers, it will … . Finally, students' concerns will be addressed.

    Delimitation of the Study

- DOS specifies the time span of the research

- DOS specifies the population and sample

- DOS specifies the topic to be investigated

- DOS defines the key terms (to avoid equivocation)

    Example:

    The present investigation undertakes to investigate cheating on test among freshman students (class 2015) at the Branch of English studies at Mohammed Kheidher University of Biskra. It should be acknowledged that cheating on tests is taken to mean any illicit resort to means to influence marks and obtention of degree. Different scholars utilize different terms such as cheating in examination, academic dishonesty, etc. to refer to cheating on tests. In this study they are used interchangeably.

    Limitations of the Study

- LOS is generally understood to refer to the objectives challenges that prevented a better approach to the topic.

    Example

    It is expected that the return rate of the questionnaire will be of 25%. The administration is expected to be in the post-examination period which might be problematic as the students feel tired and bored especially as the examination period spans over two weeks. Some teachers do not like to have an ***outsider*** in their classes, and, therefore, it is expected that some teachers will be reluctant to fully cooperate. Finally, as my sponsors are not ready to devote a larger sum of money, this study will only limit itself to a representative population.

Structure of the Study

The student researcher tries to **outline** the chapters through which s/he develops his/her theme.

Example

Chapter One **examines** ….

Chapter Two **investigates** the ….

Fieldwork **analyzes** and **comments** ….

Implication for teaching **discusses** ….

(module) Research Methodology   (Grade) Senior Undergraduate

(Major) Sciences of the Language   (Instructor) Dr. Ahmed Bacher

Introduction to the Oral Defense

Note: *The lecture is presented in discrete points from a PPT presentation.*

Baldacchino (1995: 74) the term 'viva' is an abbreviation of 'viva voce' meaning 'an **oral examination**' …. The viva is a **defence** (of the thesis).

Literally, 'viva voce' means by or with **living voice**, i.e., by word of mouth as opposed to writing. So the viva examination is where you will give a **verbal defence** of your thesis. Put simply, you should think of it as a verbal counterpart of your written thesis. Your thesis demonstrates your skill at presenting your research in writing. In the viva examination, you will demonstrate your **ability to participate in academic discusion** with research colleagues (University of Leicester).

Open-to-the public, **oral examination** of the student's **academic work** wherein the student **defends** his/ her approach to a **serious academic subject.**

(NB: *If the student wishes **to tape** the OD/ VV, s/he is **granted** th*at)

Objectives of the Oral Defense

The formal purposes of the OD/ VV are:

1. To insure that there is **no plagiarism** involved (Rebecca Radcliffe-Coventry University- The Guardian January 8th, 2015.)

2. To insure that the student **understands** and can **explain** his/ her thesis (Rebecca Radcliffe-Coventry University- The Guardian January 8th, 2015.). Differently stated, it is to test the student's **breadth of knowledge**.

3. To insure that the student can **account for his/ her choices and decisions, and integration of concepts and techniques**

4. To insure that the student can **contribute to knowledge**

5. To insure that the student can be considered **competent** in the field of research in question

Procedures in the Oral Defense

The **chairperson** usually sits in the center; the supervisor and examiner on his/ her left and right. The three of them face the audience. The student should be seated so as to be able to face the board of examiners and play the PPT.

1. The chairperson **welcomes** the student, guests, and the other members of the audience

2. The chairperson **introduces** the members of the Jury/ Board of Examiners

3.The chairperson **explains** briefly the student's work

4. The chairperson **outlines** the proceedings of the OD/VV

5. The chairperson **invites** the student to start his/ her OD/ VV for **10 mns to 15 mns**

Guidelines for the Oral Defense

The students **starts with introducing him/herself and thanking** the Jury/ board of examiners

The student **welcomes** his/ her audience and guests

The students explains **the title** and **the hypothesis**/ hypotheses to be tested

The students **examines the questions** to be addressed

The students **clarifies the research methodology**, population, sample, tools, limitations of the research

The students **focuses on main findings** and their implications

The student **proposes (some) recommendations**

The student **concludes** the OD/ VV

The students **thanks again the examiners**

Components of the Oral Defense

The **purpose** of your study and the research questions

What **literature** you have found particularly helpful

The **methodology** used (population+ sample+ tools and process for data collection and analysis 'descriptive+ interpretive+exploratory+historical+quasi-experimental+experimental' + rationale for the selection of sample and method of analysis 'SPSS')

Major **findings** and **conclusions** from the findings

Recommendations you would make for action and further research

Roberts, C. (2004). The dissertation journey. P180.

Roles of the Jury

A. **The** Chairperson is both a moderator (controls the proceedings) and examiner (his/ her assessment comes after the examiner's)

B. The Examiner proposes his/ her assessment of the work from different perspectives:

1. Linguistics (grammar minutia(e)+spelling+ writing mechanics)

2. Discourse (word choice+ semantic interpretations+ formality of the diction)

3. Stylistics (expressing thoughts according to L2 norms)

4. Methodology of research (numbering of titles/ chapters + referencing, etc.)

C. The Supervisor gives an appraisal of the candidate and thesis. The supervisor can also play the role of an examiner.

Evaluation Standards

The student is assessed on two levels:

1. **Written Thesis**: Overall **quality** and **significance** of the thesis.

a. Is the review coherent and well-referenced?

b. Is the offered analysis thorough and insightful?

c. Is the design appropriate for this type of research?

2. **Oral Defense/ VV**: The expert **presentation** and **defense** of facts/ findings

 a. Does the student present a clear, succinct, logical review of the study with the student articulating strong connections between the rationale and conclusions?

b. Is the presentation presented in a manner that clearly demonstrated the student's research topic?

c. Does the student demonstrate clear understanding of the topic and methodology of research?

Student's Responses

The student has the right to:

1. **offer** his/ her feedback of/ attitudes toward the Jury's assessment.

2. **choose** a number (but not all) of the questions (asked by the examiners).

3. **replay** his/ her slides to clarify, support, refute and/ or enrich a statement.

4. **defend** his/ her approach, choice, and/ or thoughts forecefully if politely.

5. **inquire** about aspects concerning the content, methodology, style, mechanics of writing, etc. with a view of clarifying and/ or refining his/ her thesis

Tips for the Student

1. Be **nice** and **polite** all along

2. **take notes**

3. Show **interest** in what your examiners give you as feedback

4. **Follow** their **pace** when they direct you to a specific page or information

5. Keep **good eye contact** (with board of examiners)

6. Be **ordered** and **organized**

7. **Control your voice** pitch and tone (neither too low nor too high)

8. Call your examiners by their titles and last names.

Writing a Thorough Literature Review

Definitions of Literature Review

A literature review is an evaluative writing about the existing published literature on the [...] topic (p. 22)

O The review is an evaluative writing rather than a list of prior research results (p. 22))

O Literature review involves the systematic identification, location, and analysis of documents containing information related to the research problem

O **References**

Jamison, J. (). Research methods in psychology for high school students.

(Gay 1976, cited in Ochove et al. 1992: 46)

Ochove, S. C., Punsalan, J.A, Regela, B.P, & Uriarte, G.G. (1992). Research Methods. Manilla, The Philippines

O The literature review is one of the most important parts of any piece of academic writing i.e. reading and evaluating what has already been written about the topic of interest. Oliver Paul, 2012.

Efron and David (2018: 2) define literature review as ''a systematic examination of the scholarly literature about one's topic''. Therefore, literature review is an orderly detailed study of the specialized literature on the topic of research, which has been published by scholarly journals and academic circles.

O … **a good quality literature review is a piece of research in its own right.**

Avery, H.

O Literature review is by its very nature an evaluative study of previously published research. It aims to provide ''… a justification for research (Jamison 2006 :7). In other words, literature reviewers need to provide an answer to why they conduct research in that particular topic. It is a quintessential part of research because it was provided through succinct summary, analysis and evaluation of the consulted literature. It is important because it situates the current research in comparison with previous research and how both are interconnected and/ or overlapping. In so doing, the research makes clear his intentions and potential contribution to knowledge, which is the essence of scientific research.

Criteria of a Good Literature Review

According to Hart in *Doing a Literature Review : Releasing the Social Science Research Imagination* (1998 : np), literature review needs to fulfill the following :

O Distinguishing what has been done from what needs to be done.

o Discovering important variables relevant to the topic.

o Enhancing and acquiring the subject vocabulary.

o Establishing the context of the research problem

o Overall, literature review enriches, matures, and guides the current research, which in the long run adds to its reliability and validity.

Literature review involves both **critical reading** and **critical thinking**. The literature reviewer needs to answer the following questions:

o 1. *Who is the author?*

o 2. *What kind of evidence does s/he put forward?*

o 3. *What kind of research design does s/he follow?*

o 3. *What types of research techniques and tools does s/he use? And do they correspond to the nature of the research problem?*

o 4. *Are the samples relevant to the nature of the research?*

o 5. *How accurate and conscientious is the author in collecting, analyzing, and interpreting data?*

o 6. *Are the conclusions convincing?*

7. *In the final analysis, is this research an authentic contribution to knowledge in any way?*

Drafting Literature Review

In drafting the literature, primary and secondary sources can be reviewed chronologically or thematically. First-hand information and second-hand information can be traced in terms of time of publication or in terms of themes, i.e., research topic/ subject. In so doing, Literature review can be claimed to adhere to one of the following according to University of Southern California:

o 1. **Argumentative Review**

o The argumentative review targets to accept or reject the arguments provided by the research.

o 2**. Integrative Review**

o The integrative review blends different perspectives (evaluation, analysis, and synthesis) to come up with a consistent framework.

o 3. **Historical Review**

- The historical review traces back throughout period of time a topic or theme with a view of placing the research problem in a historical context.

- 4. **Methodological review**

- The methodological review questions the methodology, method, and data collection tools in an objective way.

- 5. **Systematic Review**

- The systematic review undertakes to outline the clarity of the research questions, collect, report, and analyze data.

- 6. **Theoretical Review**

- The theoretical review, as its name suggests, targets to examine related theories with a view of establishing a theoretical gap.

Main Question of the Literature Review

- **Question One**: What has already been known about my topic (what has already been researched)?

- **Question Two**: How will my research project contribute to existing knowledge? (p.36)

Reference

Ashley, L. D. *Planning your research* in Coe, R., Waring, M., Hedges, L. V. & Arthur, J. ( ). Research method and methodologies in education.

Why Reviewing Literature

- Demonstrate your understanding and ability to critically evaluate research in the field.

- Help you see how these fields and subfields interrelate

- Look at similar research literature surrounding similar topics which, although not directly related to your topic might be interesting to compare to your own

- Helps consider the available resources (Jamison, pp. 36-37)

Functions of Literature Review

- 1. It provides the conceptual/ philosophical framework of the planned research.

- 2. It provides [...] the information about past searches to the intended study. This process prevents unintentional duplication of the past related searches [...]

- 3. It gives a feeling of self-confidence ... .

- 4. It gives [...] information about the research method used, population, sampling ...

○ 5. It provides findings and conclusions of past searches which you may relate to your own findings and conclusion (pp. 46-47)

Reference

Ochove, S. C., Punsalan, T.G., Regela, G.P. & Uriarte, G.G. (1992). Research methods. Manilla, the Philippines

Purpose of Literature Review

"...your task is to build an argument, not a library."

Reference :

*Rudestam, K.E. and Newton, R.R. (1992)Surviving your dissertation: A comprehensive guide to content and process. California: Sage, p49.*The purpose of reviewing [...] literature is to justify the need to run an experiment (p. 22)

○ In a larger piece of written work, such as a dissertation or project, a literature review is usually one of the first tasks carried out after deciding on a topic. Reading combined with critical analysis can help to refine a topic and frame research questions. A literature review establishes familiarity with and understanding of current research in a particular field before carrying out a new investigation. Conducting a literature review should enable you to find out what research has already been done and identify what is unknown within your topic.

Reference

Jamison, J. (). Research methods in psychology for high school students.

How to Proceed with Literature Review

○ [...] the beginning reseacher may start reviewing conceptual literature (encyclopedias) (Fox, cited in Ochove et al. 1992: 51)

○ Select a topic and identify literature to review

○ Analyze the literature

○ Crtiticize the Literature

○ Synthesize the Literature

○ Document the Literature

Reference

Galvin (1999) in Hancock and Algozzine (: 28)

Note: I need to ask questions for each step

Literature Review Form

1. Identification of the Reference

1.1 Author (s)

_____   _____

(author 1)   (author 2)

_____   _____

(author 3)   (author 4)

_____   _____

(author 5)   (author 6)

1.2 Year of Publication

_____

1.3 Title

_____

_____

_____

1.4 Publishing House

2. Structure/ Organizational Pattern of Literature Review

2.1. Objectives of the Literature Review

a. What are you conducting the literature review for?

b. In what way is this literature review beneficial to your research?

c. Is there an information gap that you would like disclose?

2.2 Author's/ authors' Credential(s)

a. Who is the author? Who are the authors?

b. What is his/her/ their area of expertise?

c. Why does s/he write the book or paper? To whom does (s)he/ do they address his/ her their work?

2.3 Theory Advanced

a. What is the central/ core theme of the theory?

b. What are the author's/ authors' main arguments?

c. What have the author's/ authors' argument(s) add to your knowledge/ expertise?

d. What research design or methodology does s/he adopt ? What research design or methodology do they adopt?

e. What are his/her/ their main conclusions or findings?

d. Does the evidence put forward match the objective of the reviewed research?

2.4 Critique of the Theory Advanced

a. Are the arguments convincing?

b. Does the evidence contribute in any way to your research?

c. Is there an information gap in the reviewed research?

d. Are data collection tools appropriate?

e. Does the data analysis and interpretation bring answers to the research question?

f. What are the upside and downside features of the reviewed research?

g. Does the reviewed research enrich, mature, and guide your research in any way?

TERM PAPERS

Second Term Examination Paper in Research Methodology

Section One (6/6): Make Educated Guesses

Task One: *Are the following statements true or false? Write T/F in the space provided*.

1. _____ . Data are generally understood to be numerical information.

2. _____ . Literature review is basically an evaluative research.

3. _____ . Research process concerns itself exclusively with data collection.

4. _____ . The identification of the problem is the first step in research.

Task Two: *Read the statements on the right and come up with the corresponding terms*.

1. _____ . It is the evaluative examination of the research design, method, and research instruments, etc.

2. _____ . They are concerned primarily with what researchers wish to comprehend through research.

3. _____. They are another term for a piece of information.

4. _____. It is a kind of reading that goes beyond the numbers obtained from data analysis.

Task Three: *Compare and contrast between the following terms*.

1. Research topic vs. Research Question

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....

2. Qualitative Hypothesis vs. Quantitative Hypothesis

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....

Section Two (6/6): Read and Analyze

Read the text below and answer thoroughly the questions

In a world defined by technology and competition, the publication of scientific research findings could be taken for an indicator for power and scientific advancement. Authoritative researchers are those who publish regularly to make the expression "publish or perish" truer than ever. Coolican (2009: 14) notes:

> People are considered charlatans … claim to demonstrate effects … yet will not publish clearly, or at all, the predictions, the methods, and the results of their research work so that the research community, the public, can check whether outcomes support declared claims..

Researchers compete to participate in conferences and write in well-known journals to disseminate their research findings and by the same token confirm their status.

1. What defines prestige in academia?

....
....

2. What does "publish or perish" mean?

....
....

3. When are people considered *charlatans*?

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....

4. How do researchers consecrate their standing?

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Section Three (8/8): Think and Produce

Discuss the statement below in the space provided.

Research reposes on sound data collection. Faulty data collection process will necessarily undermine it.

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End of the Examination Paper 2/2

First Term Examination Paper in Research Methodology

(Wednesday, January 27th, 2021)

Time: 1 hr   **Class**: Senior/ 3 Year

Grps: 7+9   **Examiner**: Dr. Bashar, A.

Last /Family Name	First Name	Group	Mark/20

NOTE: [1] Answer all the questions

[2] All questions are marked equally.

Section One: *Are the statements true (T) or false (F)? Insert T/F in the spaced provided.* [6/6]

1. _____. Researchers should take what experts say for granted without applying their critical thinking. They should -at all times- bear in mind that experts are always right.

2. _____. If somebody is already ethical when she enters the scientific profession, she will continue to be ethical; if she is not ethical, when she enters science, then no amount of instruction can make her ethical

3._____. Researchers need special skills such as reading properly cataloging systems to function properly in a library.

4. _____. Good researchers need have their own prejudices, stereotypes, and preconceived ideas to explain their findings.

5. _____. An original research is the one that has not been carried out in the same way; it should be authentic but not necessarily one of its kind.

6. _____. Research does not necessarily need to appeal to evidence; traditional wisdom could be equally beneficial.

Section Two: *Read definitions on the right and insert the right term in the space provided.* [6/6]

1. _____ . It is concerned with exploring particular cases or events and providing the richest picture of what transpires. The aim is to understand a phenomenon in its own, particular, context (Cornford and Smithson, 1996).

2. _____ . This type of research focuses on building knowledge for its own sake, and, therefore, does not have any immediate or planned application. It is usually conducted in laboratories, classes, workshops for the researcher's intellectual growth and ''pleasure''.

3. _____. It attempts to portray characteristics of a population, sample, or phenomenon observed by researchers. It aims to increase understanding of a relatively new problem, situation, or phenomenon that requires identification by asking questions ''What? Who? Where? When? How?

4. _____. The basic tool in this type of research is the experiment where conditions are under control in a laboratory with a view of testing a hypothesis or demonstrating a known truth.

5. _____. [it] is a technical undertaking aimed at solving problems of practical significance in which the scope and extent of the work are determined by the degree of likelihood that it will lead to practical rewards (OEEC).

6. _____. The focus falls [...] on a search for general laws, [...] by its very nature, [it] overlooks (i.e., ignores) individual idiosyncrasies (i.e., particularities), searching instead for those patterns that appear to apply to all, or to the vast majority of cases (Boden, 1996).

Section Three: *Peruse the text then fill in the grid below the text from the box.* [8/8]

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expertise- authority- fact-observation-decision- knowledge- tradition- information

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How do educators know? How do they acquire reliable __(1)__ needed to make valid professional decisions about the teaching-learning situation and the effectiveness of the practices they follow? Throughout history, people have used various sources of __(2)__.

They learned through *personal experience* or *through __(3)__ of others' experiences*. People gained information in the form of stories about people and events. But, it's difficult or often impossible to learn what we need by personal experience. In this case, people often turn to an __(4)__; that is, they seek knowledge from someone who is recognized as having __(5)__ in a particular field. A classroom teacher might turn to another teacher who has been successful using a particular teaching method. This source can be effective. But often experts give answers that represent opinion and not __(6)__ or the answer does not fit the situation. Closely related to authority is __(7)__ (or *custom*). When faced with a problem, we ask "How has this been done in the past? One may learn something from these sources, although it might not be reliable or adequate for making a __(8)__ in a new or somewhat different situation.

Ary, D., Cheser Jacobs, L., Sorensen, C. and Irvine, D.W. (2018). *Introduction to research in education.*

1	2	3	4	5	6	7	8

First term Examination Paper in Research Methodology

(Thursday, January 28th, 2021)

Time: 1 hr　　　　　　　　　　　　　　　　　**Class**: Senior/ 3 Year

Grps: 7+9　　　　　　　　　　　　　　　　　**Examiner**: Dr. Bashar, A.

Last /Family Name	First Name	Group	Mark/20

NOTE: Answer all the questions

Section One [6/6]

Task One: *Are the statements true (T) or false (F)? Insert T/F in the spaced provided.* [2/2]

1. _____. Researchers should take what experts say for granted without applying their critical thinking. They should -at all times- bear in mind that experts are always right.

2. _____. If somebody is already ethical when she enters the scientific profession, she will continue to be ethical; if she is not ethical, when she enters science, then no amount of instruction can make her ethical

3. _____. Good researchers need have their own prejudices, stereotypes, and preconceived ideas to explain their findings.

4. _____. An original research is the one that has not been carried out in the same way; it should be authentic but not necessarily one of its kind.

Task Two: *Read definitions on the right and insert the right term in the space provided.* [4/4]

1. _____. It attempts to portray characteristics of a population, sample, or phenomenon observed by researchers. It aims to increase understanding of a relatively new problem, situation, or phenomenon that requires identification by asking questions "What? Who? Where? When? How?

2. _____. The basic tool in this type of research is the experiment where conditions are under control in a laboratory with a view of testing a hypothesis or demonstrating a known truth.

3. _____. [it] is a technical undertaking aimed at solving problems of practical significance in which the scope and extent of the work are determined by the degree of likelihood that it will lead to practical rewards (OEEC).

4. _____. The focus falls […] on a search for general laws, […] by its very nature, [it] overlooks (i.e., ignores) individual idiosyncrasies (i.e., particularities), searching instead for those patterns that appear to apply to all, or to the vast majority of cases (Boden, 1996).

Section Two : (Scrambled Statements) *Re-order the following statements to make a coherent paragraph* (6/6)

a. It can be risky to make generalizations from one study to another because the data gathered from one group might not have validity for a different group.

e. We study their behavior as individual with different characteristics and personalities and also their behavior as members of groups.

f. Several limitations hinder the application of the scientific method in the social sciences.

c. A group of first graders in one situation will not behave like first-graders in another situation.

b. A major obstacle is the complexity of the subject matter. Educational researchers don't study physical or inert objects but rather human beings engaged in complex behavior.

d. Research in education and social sciences differs from research in natural sciences.

Ary, D., Cheser Jacobs, L., Christine K. Sorensen, C. K. and Irvine, D. W. (2018). Introduction to Research in Education

1	2	3	4	5	6

Section Three: *Peruse the text then fill in the grid below the text from the box.* [8/8]

Information- collection- observing- task-data- sources- methods- gathering

Formal research may seem daunting to the novice but we are already used to gathering __(1)__ in many ways on a daily basis. The __(2)__ we typically use to find things out include __(3)__ situations or particular events, listening to the radio, asking different people, looking things up in a book or surfing the web. All of this normal activity is data __(4)__. We do it to make sense of the world in which we operate. The goal may be simple and straightforward such as to find out what the weather will be the next day. It may involve __(5)__ data from several __(6)__, which is perhaps typical of a school homework task where pupils are required to find out about their neighborhood. They may need to use newspapers, ask local people, find a map. Another data gathering __(7)__ is when we carefully question several friends to find some interesting, perhaps controversial, __(8)__, for instance, what happened at a social event we missed. [...] Clearly, then, different methods of gathering information are appropriate to different situations.

Bartlett, S. and Burton, D. (2007).Introduction to education studies.

1	2	3	4	5	6	7	8

FULL NAME	GROUP	MARKS/20

Task One: *Are the following statements true (T) or false (F)? Write T/F in the space provided*. **(2/2)**

1._____ . The main goal of statistics is to summarize data and infer properties.

2._____ . The esthetic goal of research is to stimulate imagination and emotions.

3. _____ . Good research takes ideas for granted, i.e., accepts ideas without evidence.

4. _____ . Scientific research does not necessarily appeal to (i.e., need) evidence.

Task Two: *Read the definitions, then insert the corresponding terms in the space provided.* **(4/4)**

1. _____ .[It] refers to beliefs about the fundamental nature of reality, in particular social reality. These beliefs are often discussed in terms of dichotomy (e.g. Bryman 2001) between, on one hand, an objective reality which exists independent of the observer, and, on the other, reality as it appears subjectively or, more commonly, as negotiated within groups.

2. _____ . [It] is a set of assumptions, attitudes, concepts, values, procedures, and techniques that constitutes a generally accepted theoretical framework within, or a general perspective of, a discipline.

3. _____ . [It] is defined as a research method that describes the characteristics of the population or phenomenon studied. This methodology focuses more on the "what" of the research subject than the "why" of the research subject.

4. _____ . [It] s the theory of knowledge**.** It is concerned with the mind's relation to reality. [...] Do we know things? And if we do, how and when do we know things? (The University of Sheffield)

Task Three: *Fill in the gaps with the words from the box.* **(2/2)**

environment- observe- experience- sensory- empiricism- observing

Empiricism is the idea that all knowledge comes from __(1)__. We learn by __(2)__, and when we __(3)__, we rely on our __(4)__ perceptions. Each day of our lives, we look, hear, feel, smell, and taste so that we can understand our surrounding. According to the philosophical doctrine of __(5)__, what we observe with our senses is said to be *true*. John Locke (1673- 1704), a proponent of this idea, said that our mind at birth is a *tabula rasa*, a blank slate to be written on by our __(6)__ (p.57).

Johnson, B. & Christensen, L. (2014).Educational research (5th ed.)

1	2	3	4	5	6

Task Four: *Re-order the jumbled statements into a coherent paragraph.* **(3/3)**

a. The final product is a cultural portrait that incorporates the views of the participants (emic perspectives) as well as views of researcher (etic perspective)

b. Ethnographers typically describe, analyze, interpret culture overtime using observation and fieldwork as the primary data collection strategies.

c. What are the meanings of these human actions and interactions within this context?

d. It examines what people do and interprets why they do it.

e. with culture referring to the shared beliefs, values, concepts, practices, and attitudes of a specific group of people.

f. It seeks to understand the relationship between culture and behavior,

g. Ethnography is the in-depth study of naturally occurring behavior within a culture or an entire social group.

1	2	3	4	5	6	7

Task Five: *Compare and contrast using your own words.***(4/4)**

a. Experimental Paradigm vs. **Interventional Paradigm**

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………
………

b. **Critical Paradigm** vs. **Participatory Paradigm**

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………
………

Task Six: *Explain the statement below in your own words.* (**5/5**)

According to Persig (1999), "The real purpose of the scientific method is to make sure nature has not misled you into thinking you know something you actually do not know".

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End of Examination Paper (2/2)