Mohamed Kheidher University *of* Biskra

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

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

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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.

> Real science is not about certainty but about uncertainty.

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?*
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.

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

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.

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.

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.

> 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.)**

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).

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.

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

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.

> 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.**

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.

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

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, 201**

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:

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

2. Describe: Relying on observation, researchers try to "examine situations to establish what the norm is" (*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* [1]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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[1] **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 avoids 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.

> 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**

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

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TASKS & QUIZZES

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?